# OSFP-800GB-DR8-VDM-SKY

MSA Compliant 800GBase-DR8 PAM4 OSFP-IHS Transceiver (SMF, 1310nm, 500m, MPO-16, DOM, CMIS 5.0, VDM)

**Product Description**

This MSA compliant OSFP-IHS Transceiver provides 800GBase-DR8 throughput up to 500m over single-mode fiber (SMF) PAM4 using a wavelength of 1310nm via an MPO-16 connector. It can operate at temperatures between 0 and 70C. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

**Features:**

- Compliant with IEEE 802.3cn and IEEE 802.3ck
- CMIS 5
- Compliant with OSFP MSA
- Electrical Interface: 106.25Gbps (PAM4) x8
- 8 Duplex Channels Transmitters and Receivers
- Optical Interface: 106.25Gbps (PAM4) x8
- MPO-16 APC Connector
- Up to 500m over Single-Mode Fiber with FEC
- Single 3.3V Power Supply
- Maximum Power Consumption: 16W
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



**Applications:**

- 800GBase Ethernet
- Advance Monitoring Capable Transceiver

*For your product safety, please read the following information carefully before any manipulation of the transceiver:*

*ESD*

*This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.*

*LASER SAFETY*

*This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).*

***The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.***

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| **Supply Voltage** | Vcc | -0.5 | 3.6 | V |
| **Storage Temperature** | Tstg | -40 | 85 | °C |
| **Relative Humidity** | RH | 5 | 85 | % |
| **Damage Threshold Per Lane** | | 5 | | dBm |

## Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| **Electrical Signal Rate Per Lane** | | 53.125 ± 100ppm | | | GBd |
| **Optical Signal Rate Per Lane** | | 53.125 ± 100ppm | | | GBd |
| **Supply Voltage** | Vcc | 3.135 | 3.3 | 3.465 | V |
| **Operating Case Temperature** | Tc | 0 | | 70 | °C |
| **Power Consumption** | PC | | | 16 | W |
| **Link Distance with G.652** | Dl | 2 | | 500 | m |

## Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Signaling Rate Per Lane** | | 53.125 ± 100ppm | | | GBd | |
| **Modulation Format** | | PAM4 | | | | |
| **Lane Wavelength (Range)** | λ | 1304.5 | 1310 | 1317.5 | nm | |
| **Average Launch Power Per Lane** | P | -2.9 | | 4 | dBm | 1 |
| **OMAouter Per Lane** | $P_{OMA}$ | -0.8 | | 4.2 | dBm | 2 |
| **Launch Power in OMAouter Minus TDECQ Per Lane** | | -2.2 | | | dBm | |
| **Transmitter and Dispersion Eye Closure for PAM4 (TDECQ) Per Lane** | | | | 3.4 | dB | |
| **Side-Mode Suppression Ratio (SMSR)** | | 30 | | | dB | |
| **Extinction Ratio** | ER | 3.5 | | | dB | |
| **Average Launch Power of Off Transmitter Per Lane** | $P_{off}$ | | | -15 | dBm | |
| **$RIN_{21.4}OMA$** | RIN | | | -136 | dB/Hz | |
| **Optical Return Loss Tolerance** | | | | 21.4 | dB | |
| **Transmitter Reflectance** | | | | -26 | dB | 3 |
| **Receiver** | | | | | | |
| **Signaling Rate Per Lane** | | 53.125 ± 100ppm | | | GBd | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Modulation Format** | | PAM4 | | | | |
| **Lane Wavelength (Range)** | λ | 1304.5 | 1310 | 1317.5 | nm | |
| **Damage Threshold Per Lane** | | 5 | | | dBm | 4 |
| **Average Receive Power Per Lane** | | -5.9 | | 4 | dBm | 5 |
| **Receive Power (OMAouter) Per Lane** | $R_{OMA}$ | | | 4.2 | dBm | |
| **Receiver Reflectance** | | | | -26 | dB | |
| **Receiver Sensitivity (OMAouter) Per Lane** | SEN | Max. (-3.9, SECQ-5.3) | | | dBm | 6 |
| **LOS Assert** | | -26 | | | dBm | |
| **LOS De-Assert** | | | | -8 | dBm | |
| **LOS Hysteresis** | | 0.5 | | | dB | |

**Notes:**

1. Average launch power, per lane (minimum), is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Even if the TDECQ<1.4dB, the OMAouter (minimum) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level. The receiver does not have to operate correctly at this input power.
5. Average receive power, per lane (minimum), is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
6. Receiver sensitivity (OMAouter), per lane (maximum), is informative and is defined for a transmitter with a value of SECQ up to 3.4dB.

**Digital Diagnostic Monitor Accuracy**

| Parameter | Accuracy | Unit | Notes |
|---|---|---|---|
| **Measured Transceiver Temperature** | ±3 | ˚C | 1 |
| **Measured Transceiver Supply Voltage** | ±3 | % | 1 |
| **Measured Tx Bias Current** | ±10 | % | 1 |
| **Measured Tx Output Power** | ±3 | dB | 1 |
| **Measured Rx Received Average Optical Power** | ±3 | dB | 1 |

**Notes:**

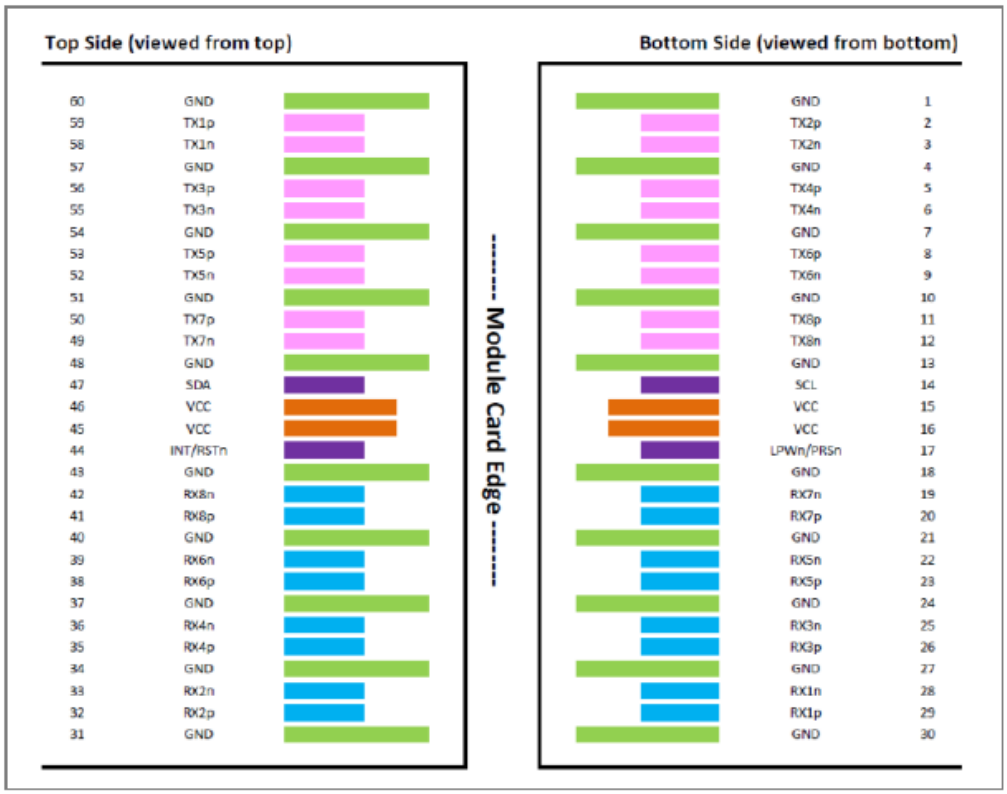
1. Defined over the recommended operating conditions.

**Pin Descriptions**

| Pin | Symbol | Logic | Name/Description |
|---|---|---|---|
| **1** | GND | | Ground. |
| **2** | TX2p | CML-I | Transmitter Data Non-Inverted. |
| **3** | TX2n | CML-I | Transmitter Data Inverted. |
| **4** | GND | | Ground. |
| **5** | TX4p | CML-I | Transmitter Data Non-Inverted. |
| **6** | TX4n | CML-I | Transmitter Data Inverted. |
| **7** | GND | | Ground. |
| **8** | TX6p | CML-I | Transmitter Data Non-Inverted. |
| **9** | TX6n | CML-I | Transmitter Data Inverted. |
| **10** | GND | | Ground. |
| **11** | TX8p | CML-I | Transmitter Data Non-Inverted. |
| **12** | TX8n | CML-I | Transmitter Data Inverted. |
| **13** | GND | | Ground. |
| **14** | SCL | LVCMOS-I/O | 2-Wire Serial Interface Clock. |
| **15** | VCC | | +3.3V Power. |
| **16** | VCC | | +3.3V Power. |
| **17** | LPWn/PRSn | Multi-Level | Low-Power Mode/Module Present. |
| **18** | GND | | Ground. |
| **19** | RX7n | CML-O | Receiver Data Inverted. |
| **20** | RX7p | CML-O | Receiver Data Non-Inverted. |
| **21** | GND | | Ground. |
| **22** | RX5n | CML-O | Receiver Data Inverted. |
| **23** | RX5p | CML-O | Receiver Data Non-Inverted. |
| **24** | GND | | Ground. |
| **25** | RX3n | CML-O | Receiver Data Inverted. |
| **26** | RX3p | CML-O | Receiver Data Non-Inverted. |
| **27** | GND | | Ground. |
| **28** | RX1n | CML-O | Receiver Data Inverted. |
| **29** | RX1p | CML-O | Receiver Data Non-Inverted. |
| **30** | GND | | Ground. |
| **31** | GND | | Ground. |
| **32** | RX2p | CML-O | Receiver Data Non-Inverted. |
| **33** | RX2n | CML-O | Receiver Data Inverted. |
| **34** | GND | | Ground. |
| **35** | RX4p | CML-O | Receiver Data Non-Inverted. |

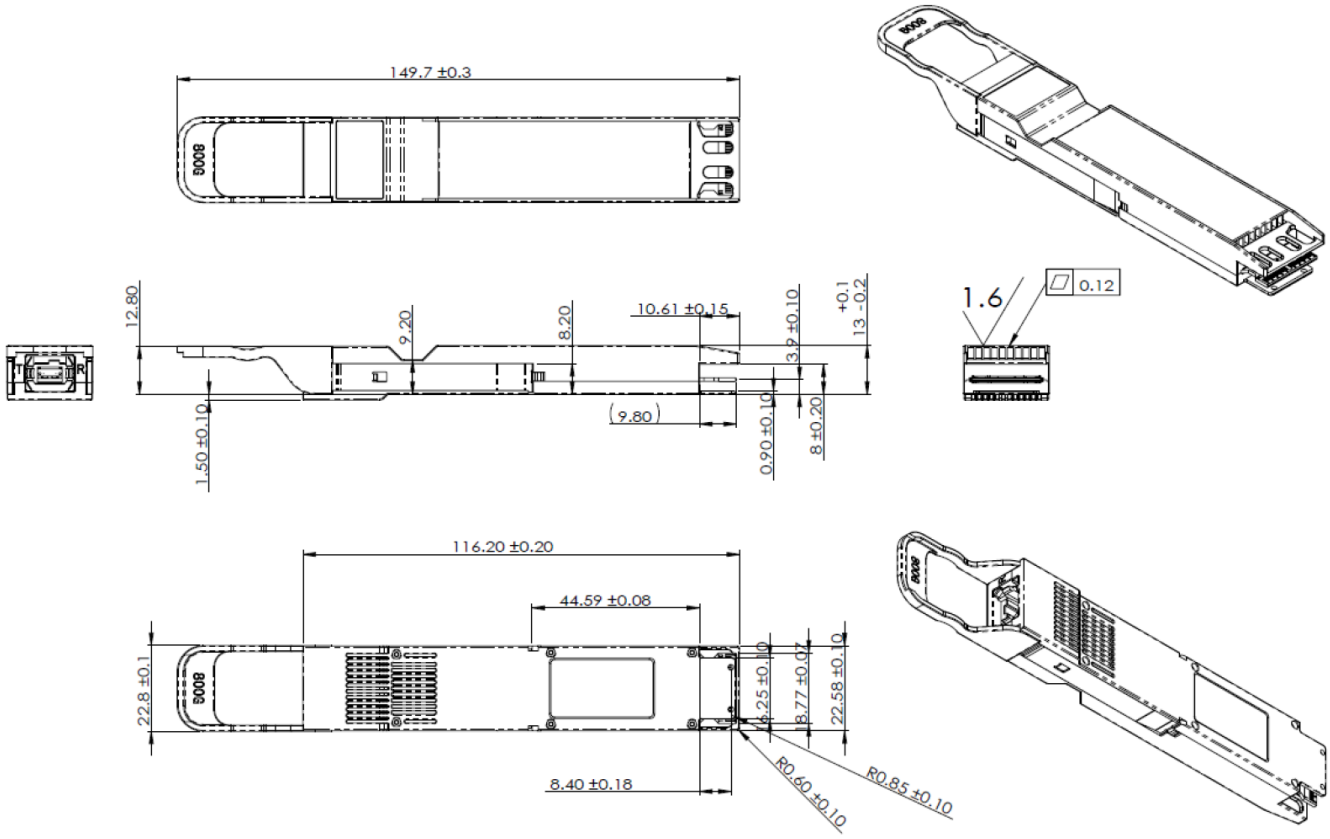
| | | | |
|---|---|---|---|
| **36** | RX4n | CML-O | Receiver Data Inverted. |
| **37** | GND | | Ground. |
| **38** | RX6p | CML-O | Receiver Data Non-Inverted. |
| **39** | RX6n | CML-O | Receiver Data Inverted. |
| **40** | GND | | Ground. |
| **41** | RX8p | CML-O | Receiver Data Non-Inverted. |
| **42** | RX8n | CML-O | Receiver Data Inverted. |
| **43** | GND | | Ground. |
| **44** | INT/RSTn | Multi-Level | Module Interrupt/Module Reset. |
| **45** | VCC | | +3.3V Power. |
| **46** | VCC | | +3.3V Power. |
| **47** | SDA | LVCMOS-I/O | 2-Wire Serial Interface Data. |
| **48** | GND | | Ground. |
| **49** | TX7n | CML-I | Transmitter Data Inverted. |
| **50** | TX7p | CML-I | Transmitter Data Non-Inverted. |
| **51** | GND | | Ground. |
| **52** | TX5n | CML-I | Transmitter Data Inverted. |
| **53** | TX5p | CML-I | Transmitter Data Non-Inverted. |
| **54** | GND | | Ground. |
| **55** | TX3n | CML-I | Transmitter Data Inverted. |
| **56** | TX3p | CML-I | Transmitter Data Non-Inverted. |
| **57** | GND | | Ground. |
| **58** | TX1n | CML-I | Transmitter Data Inverted. |
| **59** | TX1p | CML-I | Transmitter Data Non-Inverted. |
| **60** | GND | | Ground. |

**Pin-Out of Connector Block on Host Board**




| Name | Direction | Description |
|---|---|---|
| **TX[8:1]p** | Input | Transmit differential pairs from host to module. |
| **TX[8:1]n** | Input | |
| **RX[8:1]p** | Output | Receive differential pairs from module to host. |
| **RX[8:1]n** | Output | |
| **SCL** | Bi-Directional | 2-wire serial clock signal. Requires pull-up resistor to 3.3V on host. |
| **SDA** | Bi-Directional | 2-wire serial data signal. Requires pull-up resistor to 3.3V on host. |
| **LPWn/PRSn** | Bi-Directional | Multi-level signal for low power control from host to module and module presence indication from module to host.<br>This signal requires the circuit as described in the OSFP Specification. |
| **INT/RSTn** | Bi-Directional | Multi-level signal for interrupt request from module to host and reset control from host to module.<br>This signal requires the circuit as described in OSFP Specification. |
| **VCC** | Power | 3.3V power for module. |
| **GND** | Ground | Module ground. Logic and power return path. |

**Mechanical Specifications**




**Notes:**

1. Reference to OSFP Type 2 closed top.

# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.