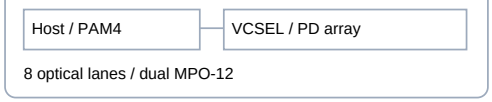
# OSFP-VR8-800G Finned Top

**OSFP, 800GBASE-SR8, 850 nm, 50 m, dual MTP/MPO-12/APC**

## 1. Product overview

800GBASE-SR8 OSFP transceiver for 800 Gb/s systems over multimode fiber: up to 30 m on OM3 or 50 m on OM4. Integrated 850 nm VCSEL and photodetector arrays support PAM4 optical channels. Digital diagnostics are accessible through I2C.

**Simplified functional diagram**




## 2. Key features

- OSFP MSA 5.0; CMIS 5.1; 800GAUI-8, 8x106.25 Gb/s electrical interface
- Up to 106.25 Gb/s per channel, PAM4; integrated 850 nm VCSEL / PD arrays; DDM
- Hot-pluggable; single +3.3 V supply; 16 W maximum; 0°C to +70°C; RoHS 2.0

## 3. Applications

Data centers and cloud networks; high-performance computing networks; enterprise core and distribution layer applications.

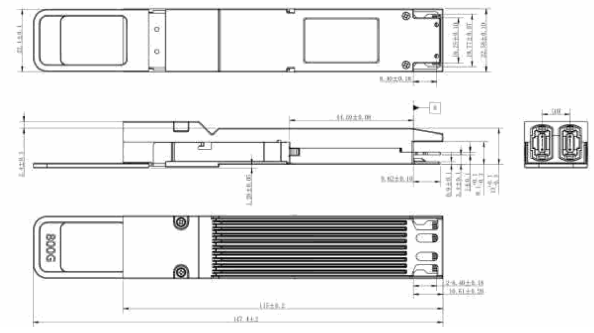
## 4. Technical data

| Parameter | Specification | Parameter | Specification |
|---|---|---|---|
| Form factor / media | OSFP / MMF, dual MTP/MPO-12/APC | Storage temperature | -40 to +85°C |
| Absolute supply voltage | 0 to 4 V | Humidity, non-condensing | 5-85% |

**Electrical characteristics, per lane**

| TX / input | Specification | RX / output | Specification |
|---|---|---|---|
| Differential p-p tolerance | 900 mV min (TP1) | AC common-mode RMS | 17.5 mV max |
| Single-ended tolerance | -0.4 to 3.3 V | DC common-mode | -350 to 2850 mV |
| DC common-mode | -350 to 2850 mV | Differential output p-p | 900 dB max |
| Return loss | Common-to-differential: 802.3ck Eq.120G-1 | Common-to-differential return loss | 802.3ck 120G-1, dB |
| Effective return loss | TBD (min column) | Effective return loss | TBD dB |
| Termination mismatch | 10% max | Termination mismatch | 10% max |
| Signaling rate | 53.125 GBd typ | Signaling rate | 53.125 GBd typ |
| Module stressed input test | See 120G.3.4.1 | Near/far eye height | 24 mV min, each |
| Near/far ESMW | TBD UI typ, each | Near/far vertical eye closure | 7.5 dB max, each |
| Far-end pre-cursor ISI ratio | TBD UI typ | Transition time (20%-80%) | TBD ps |

**Mechanical drawing from source**



## 5. Recommended operating conditions

| Parameter | Specification | Parameter | Specification |
|---|---|---|---|
| Case temperature | 0 to +70°C | Supply voltage | 3.135 to 3.465 V |
| Power dissipation | 16 W max | Distance | OM3: 0.5-30 m; OM4: 0.5-50 m |
| Pre-FEC BER | $2.4x10^{-4}$ max | Nominal supply (features) | +3.3 V |

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## 6. Optical characteristics

| Transmitter, each lane | Specification |
|---|---|
| Signaling rate | 53.125 ±100 ppm GBd |
| Lane wavelength / modulation | 850 nm typ / PAM4 |
| RMS spectral width | 0.6 nm max |
| Average optical power | -4.6 to +4 dBm |
| OMAouter, TDECQ ≤1.8 dB | -2.6 min / 3.5 max dBm |
| OMAouter, 1.8 <TDECQ ≤4.4 dB | -4.4+TDECQ min / 3.5 max dBm |
| OMAouter, TECQ ≤1.8 dB | -2.6 min / 3.5 max dBm |
| OMAouter, 1.8 <TECQ ≤4.4 dB | -4.4+TECQ min / 3.5 max dBm |
| TDECQ / TECQ | 4.4 dB max / 4.4 dB max |
| Extinction ratio | 2.5 dB min |
| TX excursion / transition time | 2 dB max / 17 ps max |
| Average launch power, TX off | -30 dBm max |
| Relative intensity noise12 (OMA) | -131 dB/Hz max |
| Optical return loss tolerance | 12 dB max |
| Encircled flux (typ column) | ≥86% at 19 µm; ≤30% at 4.5 µm; source unit: dB |

| Receiver, each lane / stress test | Specification |
|---|---|
| Signaling rate | 53.125 ±100 ppm GBd |
| Lane wavelength / modulation | 850 nm typ / PAM4 |
| Damage threshold | 5 dBm min |
| Average receive power | -6.4 to +4 dBm |
| Receiver power (OMA) | 3.5 dBm max |
| Sensitivity OMAouter, TECQ ≤1.8 dB | -4.6 dBm max |
| Sensitivity OMAouter, 1.8 <TECQ ≤4.4 dB | -6.4+TECQ dBm max |
| Receiver reflectance | -12 dB max |
| Stressed receiver sensitivity OMAouter | -2 dBm max |
| Stress test: SECQ, lane under test | 4.4 dB typ |
| Stress test: OMAouter, each aggressor | 3.5 dBm typ |

## 7. Digital diagnostics and management

| Parameter | Specification |
|---|---|
| Management / monitor absolute error | CMIS 5.1 / I2C; temperature ±3°C; supply voltage ±5%; bias ±10%; RX power ±3.0 dB; TX power ±3.0 dB. |
| SCL/SDA levels | VOL 0-0.4 V; VOH Vcc-0.5 to Vcc+0.3 V; IOL max 3.0 mA Fast Mode, 20 mA Fast-mode Plus. VIL -0.3 to Vcc*0.3 V; VIH Vcc*0.7 to Vcc+0.5 V. Ci 14 pF max. |
| Bus load / control inputs | Cb 100 pF max at 3.0 kohm pull-up; 200 pF max at 1.6 kohm. LPMode/TxDis, Reset, ModeSelL: VIL -0.3 to 0.8 V; VIH 2 to Vcc+0.3 V; \|Iin\| ≤125 µA for Vin<Vcc. |
| IntL/RxLOS / ModPrsL | IntL/RxLOS: VOL 0-0.4 V at IOL 2 mA; VOH Vcc-0.5 to Vcc+0.3 V with 10 kohm pull-up to host Vcc. ModPrsL: VOL 0-0.4 % at IOL 2 mA; VOH blank, unit dB; may be shorted to module GND (source values). |
| Control pins | SCL 14; SDA 47 (LVCMOS-I/O). LPWn/PRSn 17: low power / present. INT/RSTn 44: interrupt / reset (multilevel). SCL/SDA open-drain with host pull-up; source labels SDA as serial clock. |
| 60-contact pin map | TX p/n lanes 1-8: 59/58, 2/3, 56/55, 5/6, 53/52, 8/9, 50/49, 11/12 (CML-I). RX p/n lanes 1-8: 29/28, 32/33, 26/25, 35/36, 23/22, 38/39, 20/19, 41/42 (CML-O). Vcc: 15,16,45,46 (+3.3 V). GND: 1,4,7,10,13,18,21,24,27,30,31,34,37,40,43,48,51,54,57,60. |

## 8. Safety and regulatory

RoHS 2.0 compliance and OSFP MSA 5.0 stated in source. No laser safety class is specified.

## 9. Ordering information

| Ordering number | Product description |
|---|---|
| OSFP-800G-F-VR8 | OSFP 800G Finned Top 2xVR4 2x400Gbps 50m, 850nm  Dual MPO-12/APC MM |