OSFP-DR8-800G Flat Top

OSFP, 800GBASE-DR8, 1310 nm, 500 m, dual MTP/MPO-12

1. Product overview

800GBASE-DR8 OSFP transceiver for links up to 500 m over single-mode fiber via dual MTP/MPO-12 connectors. It supports 800G Ethernet and breakout 2x400G DR4. Built-in digital diagnostic monitoring provides access to real-time operating parameters.

Simplified functional diagram



SMF / 500 m

2. Key features

- IEEE 802.3cu-2021: 2x400GBASE-DR4 optical interface (source wording)
- IEEE P802.3ck D2.2: 2x400GAUI-4 C2M; OSFP MSA HW Rev 4.1, Type 2, dual MPO-12
- CMIS Rev 5.0; two-wire diagnostics; 16.5 W maximum; 0°C to +70°C; Class 1 laser

3. Applications

800G Ethernet; breakout 2x400GBASE-DR4; Data Center; Cloud Networks.

4. Technical data

Parameter	Specification	Parameter	Specification
Form factor / fiber	OSFP / SMF	Storage temperature	-40 to +85°C
Absolute supply voltage	-0.5 to 3.6 V	Humidity, non-condensing	5-95%
Absolute differential data input	1 V max	Absolute control input	-0.3 to Vcc+0.5 V
Absolute control output current	-20 to +20 mA	Host schematic	3.3 V; SCL/SDA pull-ups 2.2 kohm

High-speed electrical characteristics - IEEE 802.3ck C2M; per lane.

Receiver (source label)	Specification	Transmitter (source label)	Specification
Differential p-p input tolerance	900 mV min	AC common-mode output RMS	25 mV max
AC common-mode RMS tolerance	25 mV min (TP1a)	Differential output p-p, short/long	600 / 900 mV max
Differential-to-common return loss	802.3ck 120G-2, dB	Common-to-differential return loss	802.3ck 120G-1, dB
Effective return loss	8.5 dB min	Effective return loss	8.5 dB min
Termination mismatch	10% max	Termination mismatch	10% max
Single-ended tolerance	-0.4 to 3.3 V	Eye height / vertical eye closure	15 mV min / 12 dB max
DC common-mode tolerance	-0.35 to 2.85 V	Transition time (20%-80%)	8.5 ps min

Mechanical drawing from source

5. Recommended operating conditions

Parameter	Specification	Parameter	Specification
Case temperature	0 to +70°C	Supply min/typ/max	3.135 / 3.3 / 3.465 V
Power dissipation	16.5 W max	Low-power mode	PDLP: value blank; W
Signaling speed / lane	53.125 GBd typ	Operating distance	2-500 m
Control VIH / VIL	Vcc*0.7 to Vcc+0.3 V / -0.3 to Vcc*0.3 V	Serial clock / supply noise	400 kHz max; 66 mV p-p max (1 kHz-1 MHz)
Hot-plug instantaneous peak	ICC_IP: value blank; mA	Hot-plug sustained peak	ICC_SP: value blank; mA

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6. Optical characteristics

Transmitter, each lane	Specification
Wavelength, min/typ/max	1304.5 / 1311 / 1317.5 nm
SMSR	30 dB min
Average launch power [1]	-2.9 to +4.0 dBm
OMAouter	-0.8 to +4.2 dBm
Launch OMAouter minus TDECQ	-2.2 dBm min
TDECQ	3.4 dB max
Average launch power, TX off	-15 dBm max
Extinction ratio	3.5 dB min
TX transition time	17 ps max
RIN21.4OMA	-136 dB/Hz max
Optical return loss tolerance	21.4 dB max
Transmitter reflectance [2]	-26 dB max

Receiver, each lane / stress test	Specification
Wavelength L0, min/typ/max	1304.5 / 1311 / 1317.5 nm
Damage threshold	5 dBm min
Average receive power	-5.9 to +4 dBm
Receive OMAouter	4.2 dBm max
Receiver reflectance	-26 dB max
Sensitivity OMAouter [3]	Max(-3.9, SECQ - 5.3) dBm max
Stressed RX sensitivity [4]	-1.9 dBm max
Stress test SECQ, lane under test	3.4 dB typ
Stress test aggressor OMAouter	4.2 typ

[1] Minimum average launch power is informative, not the principal indicator of signal strength. [2] Reflectance is defined looking into the transmitter. [3] Maximum sensitivity is informative, defined for a transmitter with SECQ up to 3.4 dB. [4] Conformance test signal at TP3, BER = $2.4x10^{-4}$.

7. Digital diagnostics and management

Parameter	Specification
Management / calibration	CMIS Rev 5.0; two-wire serial interface; all listed diagnostics internally calibrated.
DDM range; accuracy; source unit	Temperature 0-70; ±3; °C. Voltage 0-Vcc; 0.1; V. TX bias/lane 0-100; 10%; mA. TX power/lane -2.8 to +5.3; ±3; dB. RX power/lane -9.1 to +5.3; ±3; dB.
Low-speed SCL/SDA	Output VOL: 0-0.4 V. Input VIL: -0.3 to Vcc*0.3 V; VIH: Vcc*0.7 to Vcc+0.5 V.
Low-speed controls (source names)	LPMode/TxDis, ResetL, ModSelL: VIL -0.3 to 0.8 V; VIH 2 to Vcc+0.3 V. IntL/RxLos: VOL 0-0.4 V; VOH Vcc-0.5 to Vcc+0.3 V.
OSFP control pins	SCL 14 (clock); SDA 47 (data), LVCMOS-I/O. LPWn/PRSn 17: low power/present. INT/RSTn 44: interrupt/reset; multilevel. Host SCL/SDA pull-ups: 2.2 kohm to 3.3 V.
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

Class 1 laser safety. Source states IEEE 802.3cu-2021, IEEE P802.3ck D2.2, OSFP MSA HW Rev 4.1 and CMIS Rev 5.0 compliance.

9. Ordering information

Ordering number	Product description
OSFP-800G-2DR4	OSFP 800G Flat Top 2xDR4 2x400Gbps 500m, 1310nm 3dB SM Dual MPO12/APC