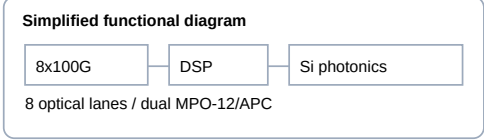


OSFP-800G-C-2DR4

OSFP, 800G, Closed 2xDR4, 500 m
1310 nm, 3 dB, SM, dual MPO12/APC

1. Product overview

800 Gb/s hot-pluggable OSFP optical module with top closed fin. Eight 100 Gb/s PAM4 electrical channels are converted to eight parallel optical channels through an integrated silicon photonics optical path, and vice versa. Dual MPO-12/APC receptacles and an OSFP MSA edge connector provide optical and electrical connectivity.



2. Key features

- Hot-pluggable OSFP; CMIS management over I2C; top closed fin
- 8 channels of 100G PAM4 electrical and parallel optical lanes
- Dual MPO-12/APC optical ports; up to 500 m over single-mode fiber; 15 W maximum

3. Applications

Ethernet, Telecom and InfiniBand. Source application cases: 8x100G DR; 2x400G DR4; 2x200G DR4 (described as 3x200G DR4 in case 3); 1x800G DR8 point-to-point; 2x100G PSM4. Mixed applications of cases 1 and 2 and backward compliance are supported.

CMIS ApSel	Host electrical interface code	Media code	Lane count / assignment
1 / 2 / 3 / 4	50 (400GAUI-4 C2M) / 32 (IB NDR) / F (200GAUI-4 C2M) / 31 (IB HDR)	1C / 1C / 17 / 17	44 (4:4); 11 (lanes 1,5)
5 / 6	4C (100GAUI-1 C2M) / 52 (800GAUI-8-1 C2M)	14 / 0 (Undefined)	11 (1:1); FF (1-8) / 88 (8:8); 01 (1)
7 / 8 / 9	4F (400GAUI-4-S C2M) / 4B (100GAUI-1-S C2M) / 51 (800GAUI-8-S C2M)	1C / 14 / 0 (Undefined)	44; 11 (1,5) / 11; FF (1-8) / 88; 01 (1)
10 / 11	42 (CAUI-4 C2M with RS FEC) / 30 (IB EDR)	F / F (100G PSM4 MSA)	44 (4:4); 11 (lanes 1,5)

Media codes: 1C = 400GBASE-DR4; 17 = 200GBASE-DR4; 14 = 100GBASE-DR.

4. Technical data

Parameter	Specification	Parameter	Specification
Technology / reach	800G OSFP; 2-500 m SMF	Host / optics	8x100G PAM4; dual MPO-12/APC
Connector / supply	60 contacts; 3.3 V	Power / budget	15 W max; 3 dB
Storage / humidity	-40 to +85°C; 0-85% non-condensing	Absolute Vcc / case	-0.5 to 3.6 V; 0 to 70°C
Power filter	470 nH; 0.25 ohm; 47 µF; 0.1 µF	Mechanical (source units)	169.0±2.5; 158.4±2.5; 116.4 max
Mechanical (continued)	13.00 +0.10/-0.20; 1.6 max	Width (source units)	22.58±0.1; 22.88 max

Electrical characteristics - Recommended operating environment; values per lane. TP1/TP1a: module input; TP4: module output.

Module input	Specification	Module output	Specification
Signaling rate (TP1)	53.125 ±100 ppm GBd	Signaling rate (TP4)	53.125 ±100 ppm GBd
DC common-mode (TP1)	-0.35 to 2.85 V	DC common-mode	-350 to 2850 mV
Single-ended input (TP1a)	-0.4 to 3.3 V	Differential output, p-p	600 / 845 mV max
AC common-mode RMS (TP1a)	Low-frequency 32; full-band 80 mV (min)	AC common-mode RMS	Low-frequency 32; full-band 80 mV max
Differential p-p tolerance (TP1a)	750 mV min	Eye height / VEC	15 mV min / 12 dB max
Effective return loss (TP1)	8.5 dB min	Effective return loss	8.5 dB min
Termination mismatch (TP1)	10% max	Termination mismatch	10% max
Stressed input test	IEEE 802.3ck 120G.3.4.3	Transition time (20%-80%)	8.5 ps min
Common-to-differential return loss	IEEE802.3ck Equation 120G-2 (TP1)	Common-to-differential return loss	IEEE802.3ck Equation 120G-1; dB

5. Recommended operating conditions

Parameter	Specification	Parameter	Specification
Case temperature / supply	0 to 70°C; 3.135 / 3.3 / 3.465 V (min/typ/max)	Lane rate / accuracy	53.125 GBd typ, PAM4; -100 to +100 ppm
Pre-FEC / post-FEC BER	2.4x10 ⁻⁴ / 1x10 ⁻¹⁵ max	Link distance	2-500 m; host FEC required for max reach

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6. Optical characteristics

Transmitter / common	Specification	Receiver / stress test	Specification
Center wavelength (min/typ/max)	1304.5 / 1311 / 1317.5 nm	Data rate, each lane / modulation	53.125 ±100 ppm GBd / PAM4
Data rate, each lane / modulation	53.125 ±100 ppm GBd / PAM4	Damage threshold, each lane [3]	5 dBm min
Side-mode suppression ratio (SMSR)	30 dB min	Average receive power, each lane [4]	-5.9 to +4 dBm
Average launch power, each lane [1]	-2.9 to +4 dBm	Receive OMAouter, each lane	4.2 dBm max
OMAouter, each lane [2]	-0.8 to +4.2 dBm	Receiver sensitivity OMAouter [5]	RS = max(-3.9, TECQ - 5.3) dBm
Launch OMAouter minus TDECQ	-2.2 dB min (ER ≥5 dB) -1.9 dB min (ER <5 dB)	Stressed sensitivity OMAouter [6]	-1.9 dBm max
TDECQ, each lane	3.4 dB max	Receiver reflectance	-26 dB max
Extinction ratio	3.5 dB min	LOS Assert	-15 to -9.9 dBm
RIN15.5OMA	-136 dB/Hz max	LOS De-assert	-6.9 dBm max
Optical return loss tolerance	15.5 dB max	LOS hysteresis	0.5 dB min
Transmitter reflectance	-26 dB max	SECQ, lane under test [7]	3.4 dB typ
Transmitter transition time	17 ps max	SECQ - 10log10(Ceq) [7]	3.4 dB max
Average launch power, TX off / lane	-15 dBm max		

[1] Minimum average TX power is informative; below it the TX cannot comply, while exceeding it does not ensure compliance. [2] Minimum OMAouter varies with TDECQ; source Figure 6 also shows maximum OMAouter. [3] Continuous modulated input at this level must not cause damage; correct operation is not required. [4] Minimum average RX power is informative: a receiver below it can comply; above it does not ensure compliance. [5] Sensitivity is informative, for transmitter TECQ up to 3.4 dB; RS is receiver sensitivity and TECQ is that of the test transmitter. [6] Conformance signal at TP3, BER 2.4x10⁻⁴. [7] These are stressed-sensitivity test conditions, not receiver characteristics.

7. Digital diagnostics and management

Parameter	Specification
CMIS / I2C	Adaptive TX input equalization; programmable RX amplitude, pre-cursor and post-cursor; host/line loopback and PRBS generator/checker; CDB firmware upgrade; optional VDM (additional power); other CMIS functions.
Diagnostics / indications	Supply voltage, case temperature, per-lane TX optical power, bias current and RX optical power; warnings and alarms for each DDM function; TX/RX LOL and LOS; TX fault.
Monitor absolute error	Temperature -3 to +3°C; Vcc -0.1 to +0.1 V (over operating range); RX/TX power -2 to +2 dB; bias -10% to +10% (source units: mA). Fiber variation may add ±1 dB, giving ±3 dB total power accuracy.
SCL / SDA	Pins 14 / 47; bidirectional LVCMOS-I/O; host pull-ups to 3.3 V.
LPWn/PRSn / INT/RSTn	Pins 17 / 44; bidirectional multilevel. LP mode and reset: active-low inputs; presence: active-low output (module pull-down); interrupt: active-high output.
Voltage zones	Thresholds: 1.25 V reset/low-power; 2.5 V interrupt/presence. Zone 1: M_RSTn=L, H_INTn=H; M_LPWn=L, H_PRSn=L. Zone 2: M_RSTn=H, H_INTn=H; M_LPWn=H, H_PRSn=L. Zone 3: M_RSTn=H, H_INTn=L; H_PRSn=H. Figure scale: 0.0, 1.0, 2.0, 3.0, 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, host input). RX p/n lanes 1-8: 29/28, 32/33, 26/25, 35/36, 23/22, 38/39, 20/19, 41/42 (CML-O, host output). Vcc: 15,16,45,46 (sequence 2). GND: 1,4,7,10,13,18,21,24,27,30,31,34,37,40,43,48,51,54,57,60 (sequence 1). Other pins: sequence 3. MPO receptacles have two alignment pins; keyway faces up.

8. Safety and regulatory

ESD threshold: 1 kV high-speed data pins; 2 kV other electrical input pins; MIL-STD-883 Method 3015.4 / JESD22-A114-A (HBM). Use ESD-protected handling and packaging. Class I / Class 1 laser per IEC/EN 60825-1:2014. Source states compliance with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3, per Laser Notice No. 56 (May 8, 2019). Unspecified controls, adjustments or procedures may cause hazardous radiation exposure.

9. Ordering information

Ordering number	Product description
OSFP-800G-C-2DR4	OSFP 800G Closed 2xDR4 2x400Gbps PAM4, 1310nm 500M 3dB SM Dual MPO12/APC