OSFP 1600GBASE-DR8 Optical Transceiver

LO1600-DR8M2C-L

Description

Fly Global Trading Limited's LO1600-DR8M2C-L modules are designed and optimized for 1.6T Ethernet and Datacenter applications. They are compliant with IEEE 802.3dj and OSFP MSA. The modules offer 8 independent transmit and receive channels, each capable of 200Gb/s operation for an aggregate data rate of 1.6Tb/s up to 500m single mode fiber. Digital diagnostics functions are available via a 2-wire serial interface.

Applications

- 2 x 800G DR4 applications with FEC
- 8 x 200GbE breakout applications
- InfiniBand XDR

Standard

- Compliant to IEEE 802.3dj 1.6TAUI-8
- Compliant to IEEE 802.3dj 1.6TBASE-DR8
- Compliant to CMIS5.2
- Compliant to RoHS

Features

- Hot-pluggable OSFP module
- Double MPO12 APC receptacle
- 8 channels full-duplex transceiver module
- Single 3.3V power supply
- Maximum power consumption < 12W
- Commercial operating temperature range: 0°C ~ 70°C
- Link distance up to 500m over single-mode fiber
- Built-in digital diagnostic functions
- I^2C management interface

Ordering Information

Part Number	Description
LO1600-DR8M2C-L	OSFP, 1.6TBASE-DR8, 500m on SMF, Double MPO-12,0°C ~ 70°C

LO1600-DR8M2C-L

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Note
Maximum Voltage Supply	V_{cc}	-0.3		3.6	V	
Storage Temperature	T_{st}	-20		85	°C	
Relative Humidity	RH	5		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage (Vcc-GND)	V_{cc}	3.135	3.3	3.465	V	
Power Supply Current	I_{cc}			3600	mA	1
Operating Temperature (Case)	T_{op}	0		70	°C	
Power Consumption				12	W	
Transmission Distance				500	m	
Data Rate	DR		106.25		GBd	
Notes:						
1. Max. current at V_{cc}=3.3V.						

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Input Differential Impedance	Z_{in}	90	100	110	Ω	
Differential pk-pk input voltage tolerance	V_{in-pp}	900			mV	
Receiver						
Output Differential Impedance	Z_{out}	90	100	110	Ω	
Differential Data Output Swing	V_{out-pp}			900	mV	

Optical Characteristics
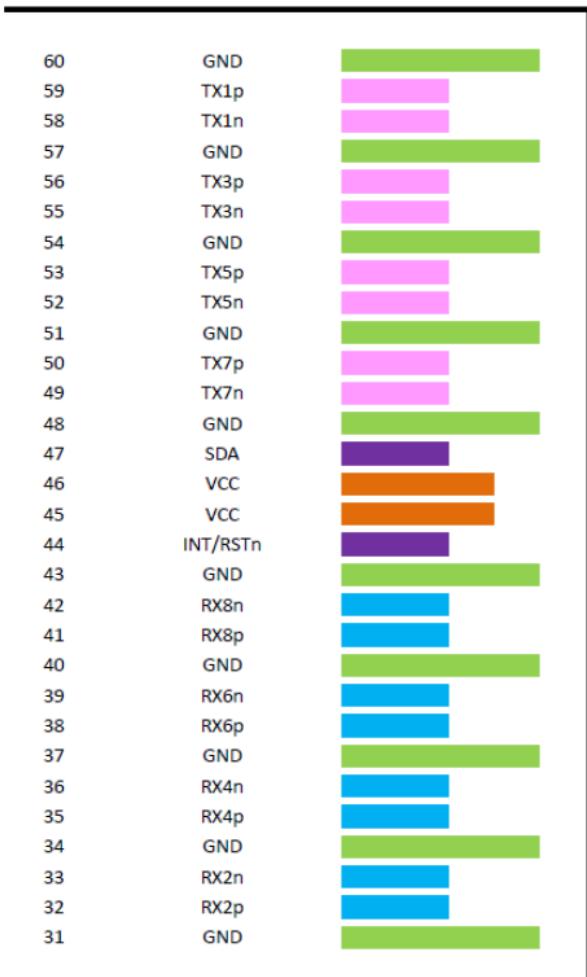
Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Wavelength (range)	λ	1304.5	1310	1317.5	nm	
Side-mode suppression ratio	SMSR	30			dB	
Optical Output Power	P_o	-2.9		4.0	dBm	
Optical Modulation Amplitude (OMA)	P_{oma}	-0.8		4.2	dBm	
Laser Off Power	P_{off}			-15	dBm	
Extinction Ratio	ER	3.0			dB	

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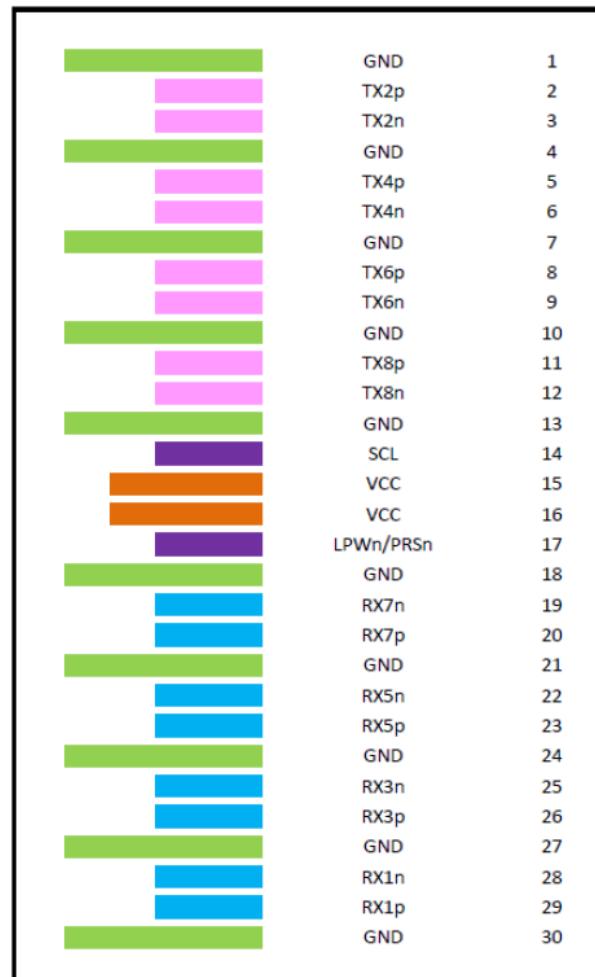
Transmitter and Dispersion Penalty Eye Closure for PAM4, Each Lane	TDECQ			3.4	dB	
Optical Return Loss Tolerance	T_{RL}			21.4	dB	
Receiver						
Wavelength (range)	λ	1304.5	1310	1317.5	nm	
Average Receive Power, per channel	P_{IN}	-5.9		4.0	dBm	
Receiver sensitivity (OMAouter), each lane	P_{sens}			-4.4	dBm	
Stressed Receiver Sensitivity (OMA), per Lane	SRS			-1.9	dBm	
Damage Threshold	P_{DT}	5.0			dBm	
Receiver Reflectance	R_{RX}			-26	dB	

PIN Definition

Top Side (viewed from top)

Pin	Signal
60	GND
59	TX1p
58	TX1n
57	GND
56	TX3p
55	TX3n
54	GND
53	TX5p
52	TX5n
51	GND
50	TX7p
49	TX7n
48	GND
47	SDA
46	VCC
45	VCC
44	INT/RSTn
43	GND
42	RX8n
41	RX8p
40	GND
39	RX6n
38	RX6p
37	GND
36	RX4n
35	RX4p
34	GND
33	RX2n
32	RX2p
31	GND

Module Card Edge

Bottom Side (viewed from bottom)

Signal	Pin
GND	1
TX2p	2
TX2n	3
GND	4
TX4p	5
TX4n	6
GND	7
TX6p	8
TX6n	9
GND	10
TX8p	11
TX8n	12
GND	13
SCL	14
VCC	15
VCC	16
LPWn/PRSn	17
GND	18
RX7n	19
RX7p	20
GND	21
RX5n	22
RX5p	23
GND	24
RX3n	25
RX3p	26
GND	27
RX1n	28
RX1p	29
GND	30

V1.0

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Pin	Logic	Symbol	Description	Direction	Plug Sequence	Notes
1	GND	Ground			1	
2	TX2p	Transmitter Data	CML-I	Input	3	
3	TX2n	Transmitter Data	CML-I	Input	3	
4	GND	Ground			1	
5	TX4p	Transmitter Data	CML-I	Input	3	
6	TX4n	Transmitter Data	CML-I	Input	3	
7	GND	Ground			1	
8	TX6p	Transmitter Data	CML-I	Input	3	
9	TX6n	Transmitter Data	CML-I	Input	3	
10	GND	Ground			1	
11	TX8p	Transmitter Data	CML-I	Input	3	
12	TX8n	Transmitter Data	CML-I	Input	3	
13	GND	Ground			1	
14	SCL	2-wire Serial interface clock	LVCMOS- I/O	Bi-directional	3	Open-Drain with pull up resistor on Host
15	VCC	+3.3V Power		Power	2	
16	VCC	+3.3V Power		Power	2	
17	LPWn/PRSn	Low-Power Mode / Module	Multi-Level	Bi-directional	3	See pin description for required circuit
18	GND	Ground			1	
19	RX7n	Receiver Data	CML-O	Output	3	
20	RX7p	Receiver Data	CML-O	Output	3	
21	GND	Ground			1	
22	RX5n	Receiver Data	CML-O	Output	3	
23	RX5p	Receiver Data	CML-O	Output	3	
24	GND	Ground			1	
25	RX3n	Receiver Data	CML-O	Output	3	
26	RX3p	Receiver Data	CML-O	Output	3	
27	GND	Ground			1	
28	RX1n	Receiver Data	CML-O	Output	3	
29	RX1p	Receiver Data	CML-O	Output	3	
30	GND	Ground			1	
31	GND	Ground			1	
32	RX2p	Receiver Data	CML-O	Output	3	
33	RX2n	Receiver Data	CML-O	Output	3	
34	GND	Ground			1	
35	RX4p	Receiver Data	CML-O	Output	3	
36	RX4n	Receiver Data	CML-O	Output	3	
37	GND	Ground			1	
38	RX6p	Receiver Data	CML-O	Output	3	
39	RX6n	Receiver Data	CML-O	Output	3	
40	GND	Ground			1	
41	RX8p	Receiver Data	CML-O	Output	3	

V1.0

LO1600-DR8M2C-L
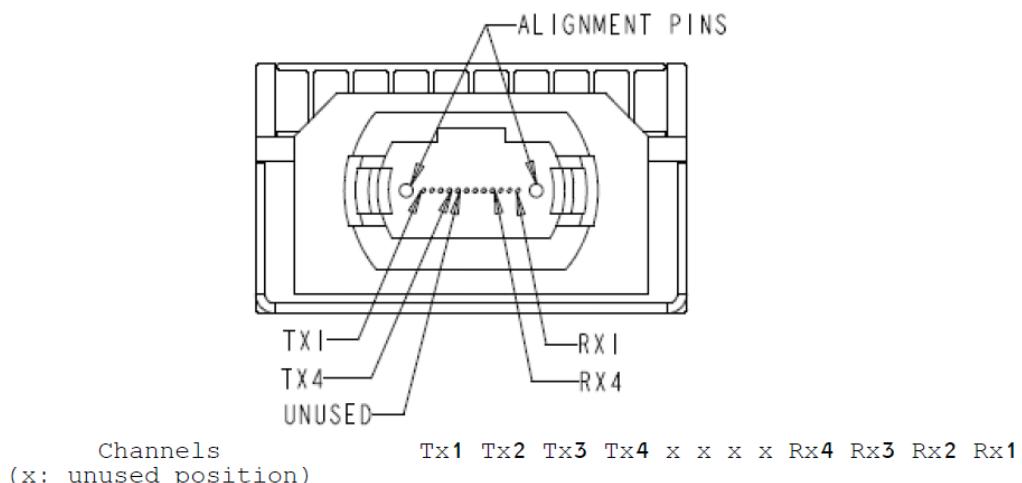
| 42	RX8n	Receiver Data	CML-O	Output	3	
43	GND	Ground			1	
44	INT/RSTn	Module Interrupt / Module Reset	Multi-Level	Bi-directional	3	See pin description for required circuit
45	VCC	+3.3V Power		Power	2	
46	VCC	+3.3V Power		Power	2	
47	SDA	2-wire Serial interface data	LVCMOS- I/O	Bi-directional	3	Open-Drain with pull up resistor on Host
48	GND	Ground			1	
49	TX7n	Transmitter Data	CML-I	Input	3	
50	TX7p	Transmitter Data	CML-I	Input	3	
51	GND	Ground			1	
52	TX5n	Transmitter Data	CML-I	Input	3	
53	TX5p	Transmitter Data	CML-I	Input	3	
54	GND	Ground			1	
55	TX3n	Transmitter Data	CML-I	Input	3	
56	TX3p	Transmitter Data	CML-I	Input	3	
57	GND	Ground			1	
58	TX1n	Transmitter Data	CML-I	Input	3	
59	TX1p	Transmitter Data	CML-I	Input	3	
60	GND	Ground			1	

Notes:
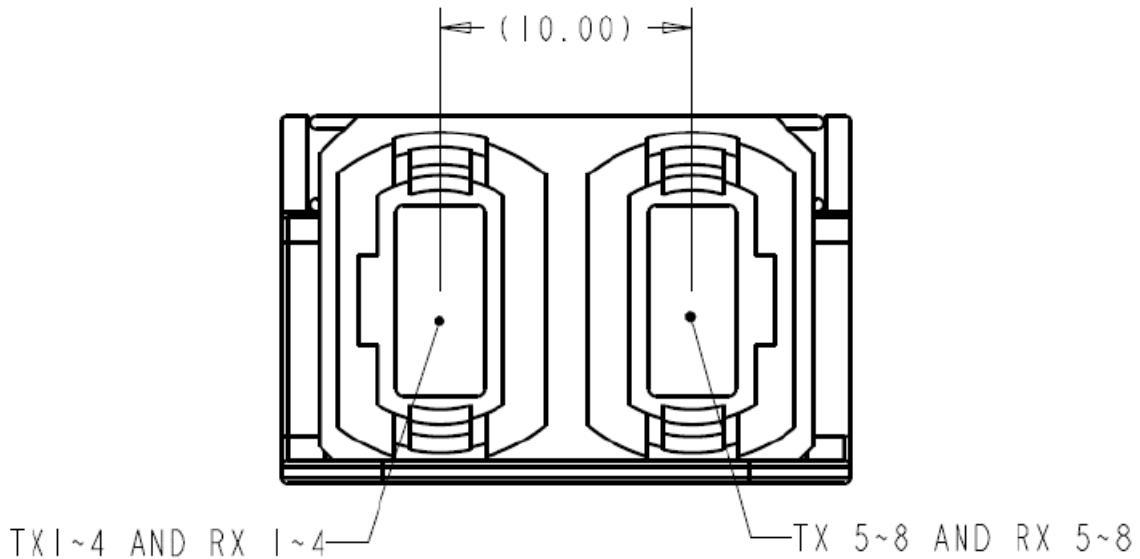
1. Plug Sequence specifies the mating sequence of the host connector and module. The contact sequence is 1,2,3.

2. LPWn/PRSn is a Multi-level signal for low power control from host to module and module presence indication from module to host. It designed according to OSFP Module Specification Section 13.5.3

3. INT/RSTn is a Multi-level signal for interrupt request from module to host and reset control from host to module. It designed according to OSFP Module Specification Section 13.5.2

Optical Interface Lanes and Assignment

Channel orientation of the optical connector when dual MPO-12 connectors are used show as bellow:


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Channels              Tx1 Tx2 Tx3 Tx4 x x x x Rx4 Rx3 Rx2 Rx1
(x: unused position)
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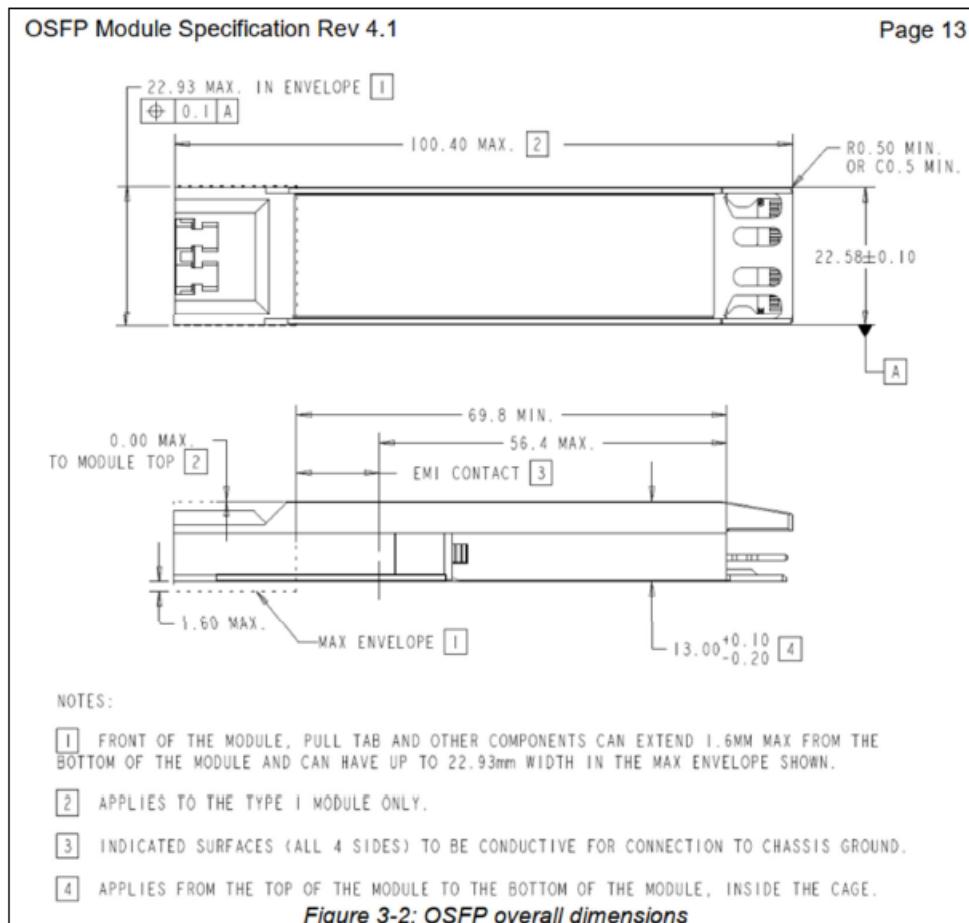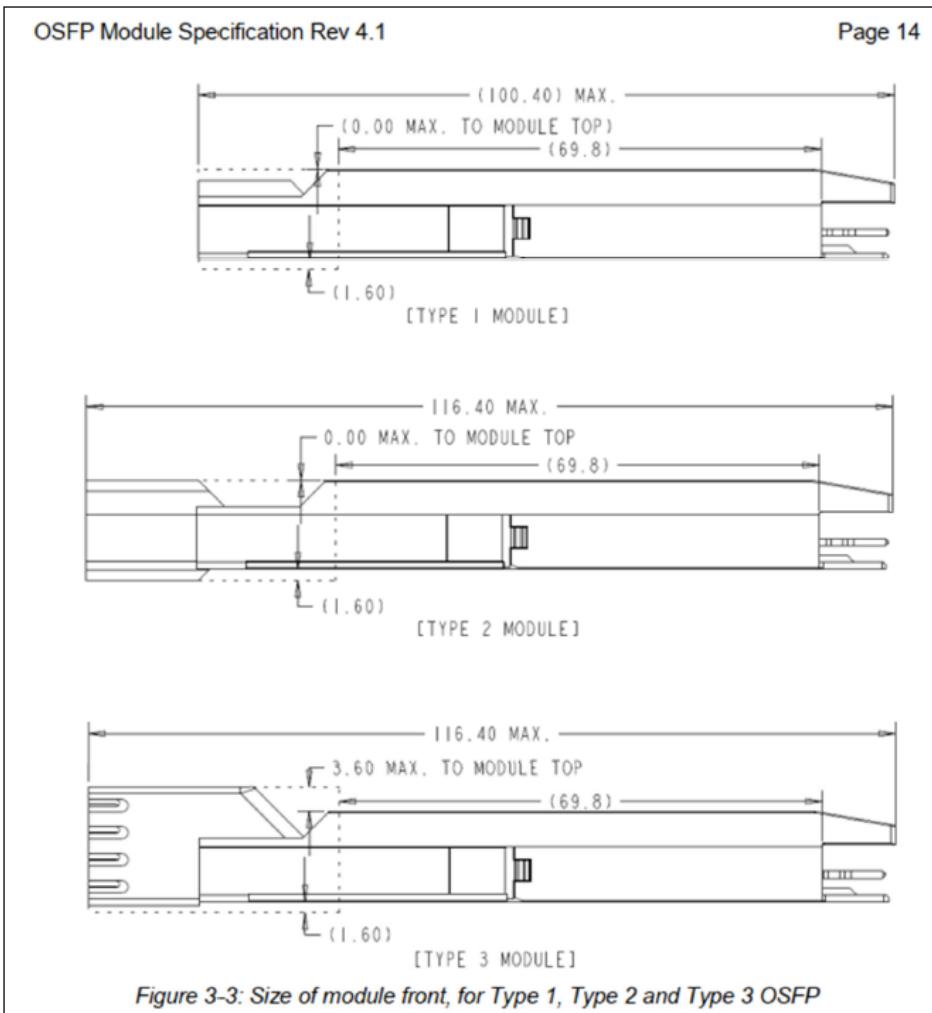
Mechanical Dimensions

LO1600-DR8M2C-L transceiver modules mechanical dimensions. (Unit: mm) Compatible with the OSFP Specification for pluggable form factor Type 2 modules.

Figure 3-2: OSFP overall dimensions

LO1600-DR8M2C-L

Figure 3-3: Size of module front, for Type 1, Type 2 and Type 3 OSFP

⚠CAUTION:

Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.