Port Mappings and Optical MDIs for Eight-Lane Form Factors

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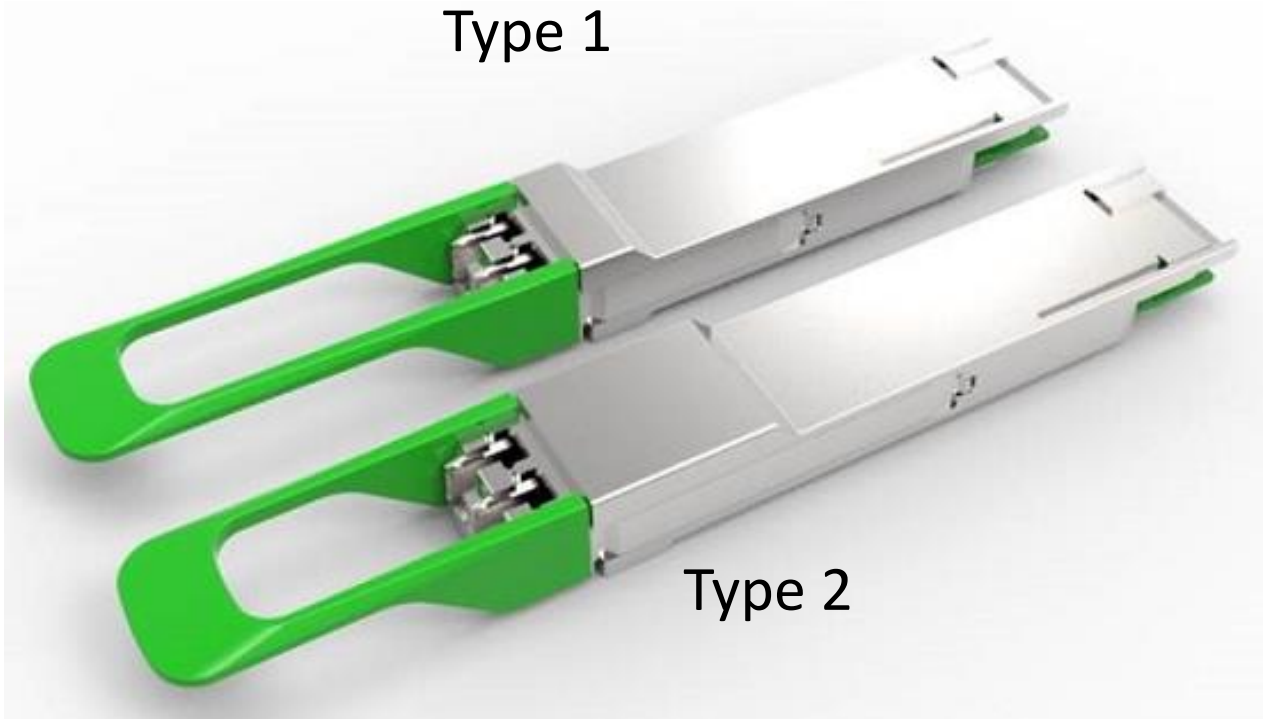
Form Factors

- QSFP-DD
- COBO 8-Lane
- OSFP

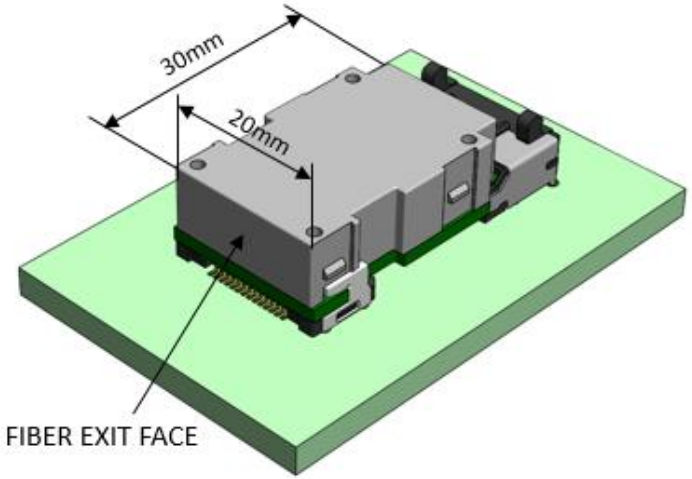
QSFP-DD Type 1 and Type 2 Modules



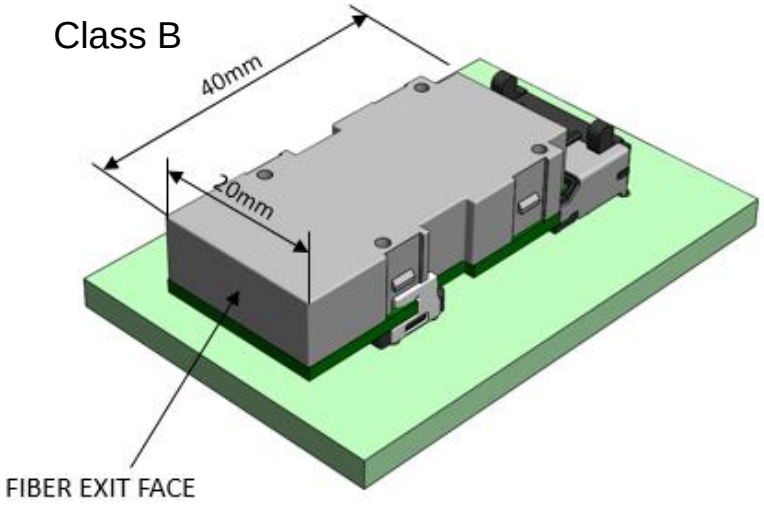
http://www.qsfp-dd.com/wp-content/uploads/2017/09/QSFP-DD-Hardware-rev3p0.pdf

COBO 8-Lane Class A, B, and C Modules

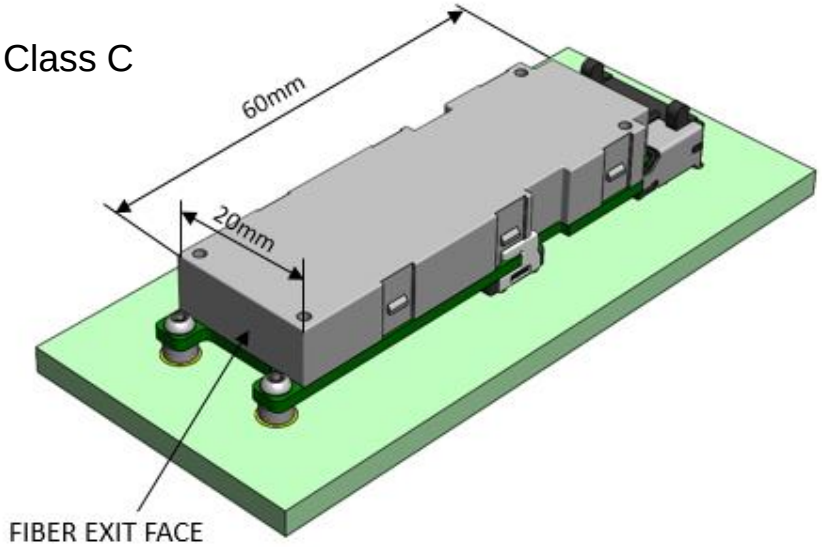
Class A



Class B



Class C



http://onboardoptics.org/specification-download/

OSFP

http://osfpmsa.org/assets/pdf/OSFP_Module_Specification_Rev1.12.pdf

Electrical Data Input to Optical Port Mappings

QSFP-DD

Table 10- Electrical data input to Optical Port Mapping

Electrical Data Input Reference	Optical Port Type (see Figure 33)			
	LC	CS or MPO-12	MPO-12	MPO-12 (two row) MPO-16
	1 TX fiber[1]	2 Tx fibers[1]	4 Tx fibers[1]	8 Tx fibers[1]
Tx1	TX-1	TX-1	TX-1	TX-1
Tx2				TX-2
Tx3			TX-2	TX-3
Tx4				TX-4
Tx5		TX-2	TX-3	TX-5
Tx6				TX-6
Tx7			TX-4	TX-7
Tx8				TX-8
Note 1: Tx-n, where n is the optical port number as defined in Figure 33				

1 x 400G (PAM-4) 1 x 200G (NRZ)	2 x 200G (PAM-4) 2 x 100G (NRZ)	4 x 100G (PAM-4) 4 x 50G (PAM-4)	8 x 50G (PAM-4) 8 x 25G (NRZ)

COBO

TABLE 3-1 – ELECTRICAL DATA INPUT TO OPTICAL PORT MAPPING FOR 8-LANE OBOS (X8)

Electrical Date Input Reference	Optical Port Type (See Figure 3-9)			
	Dual-LC or CS	Dual-LC or CS or MPO-12	MPO-12	MPO-12 (Two Row) or MPO-16
	1 TX Fiber[1]	2 TX Fibers[1]	4 TX Fibers[1]	8 TX Fibers[1]
Tx1	TX-1	TX-1	TX-1	TX-1
Tx2				TX-2
Tx3			TX-2	TX-3
Tx4				TX-4
Tx5		TX-2	TX-3	TX-5
Tx6				TX-6
Tx7			TX-4	TX-7
Tx8				TX-8
Note 1: TX-n, where n is the optical port number as defined in the Figure 3-9.				

1 x 400G (PAM-4) 1 x 200G (NRZ)	2 x 200G (PAM-4) 2 x 100G (NRZ)	4 x 100G (PAM-4) 4 x 50G (NRZ)	8 x 50G (PAM-4) 8 x 25G (NRZ)

OSFP

Table 8-3: High-speed signal lane mapping

PMD Configuration	Transmit and Receive Lane Assignments							
	1	2	3	4	5	6	7	8
1x400G (PAM4)	Port 1							
2x200G (PAM4) 2x100G (NRZ)	Port 1				Port 2			
4x100G (PAM4) 4x50G (NRZ)	Port 1		Port 2		Port 3		Port 4	
8x50G (PAM4) 8x25G (NRZ)	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8

Single- and Multi-Port Optical MDIs

QSFP-DD

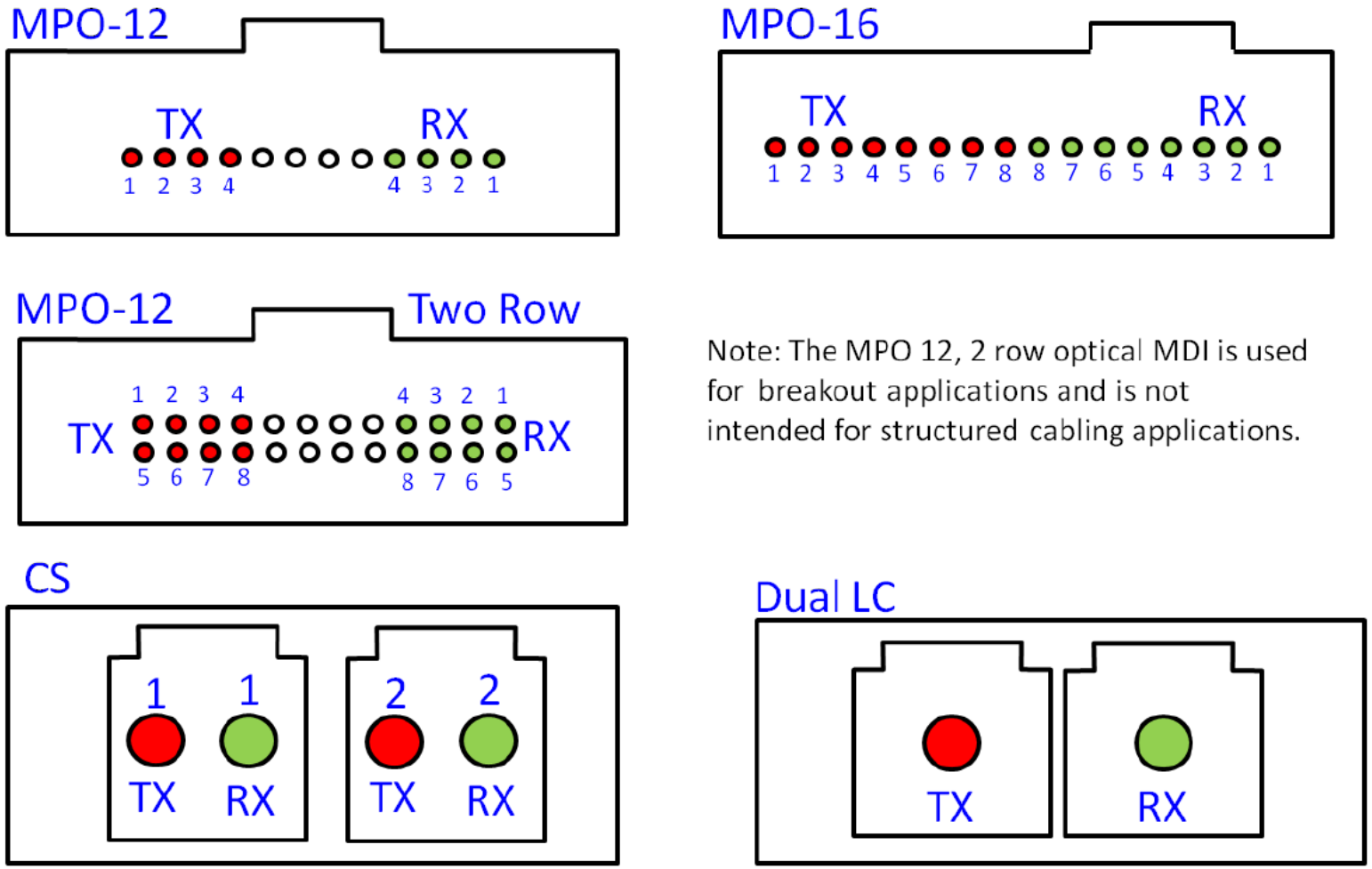


Figure 33: Optical Media Dependent Interface port assignments

COBO

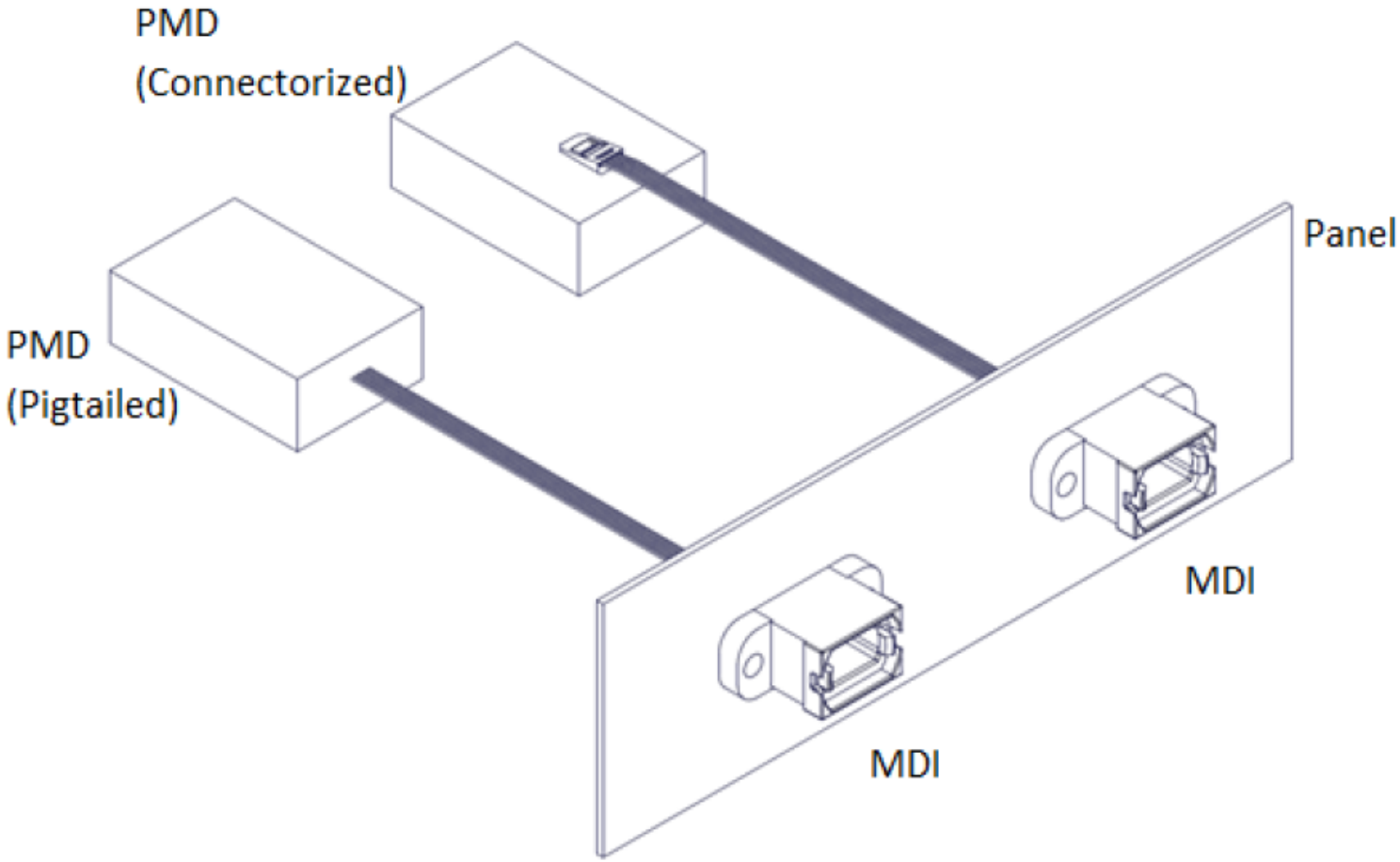
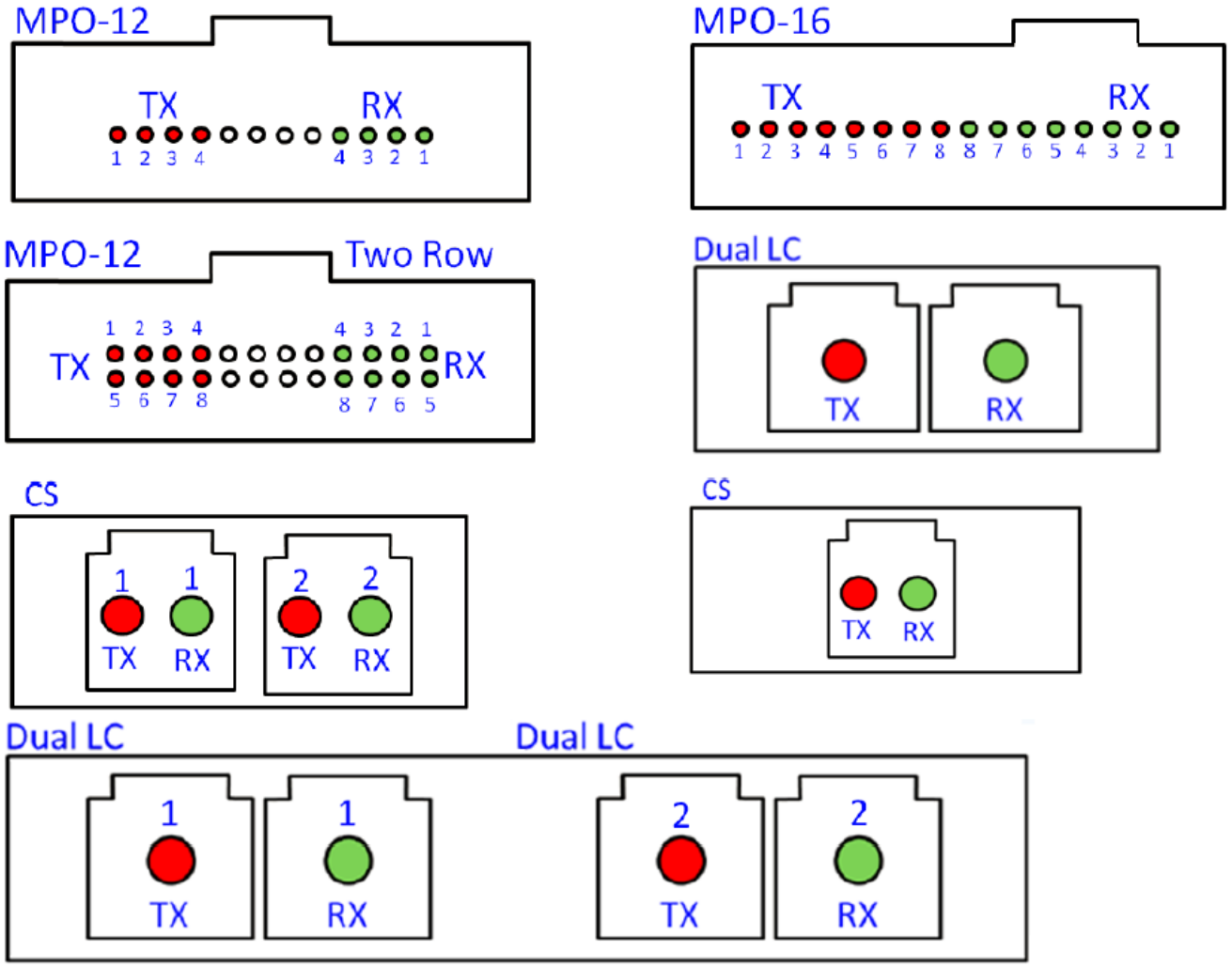


FIGURE 3-1 – IEEE PMD & MDI DEFINED LOCATIONS FOR PIGTAILED AND CONNECTORIZED OBOS

COBO


MPO-12
TX
RX
1 2 3 4
4 3 2 1
MPO-16
TX
RX
1 2 3 4 5 6 7 8 8 7 6 5 4 3 2 1
MPO-12
Two Row
1 2 3 4
4 3 2 1
TX
RX
5 6 7 8
8 7 6 5
Dual LC
TX
RX
CS
1
1
2
2
TX
RX
TX
RX
CS
TX
RX
Dual LC
Dual LC
1
1
2
2
TX
RX
TX
RX

OSFP MDI

7.7.1 Duplex LC Optical Interface

Figure 51 shows channel orientation of the optical connector when a duplex LC connector as in IEC 61754-20 is used in an OSFP module. The view is from the front of a typical OSFP module, but actual OSFP module design of the heat sink or height of the optical connector may be different than shown.

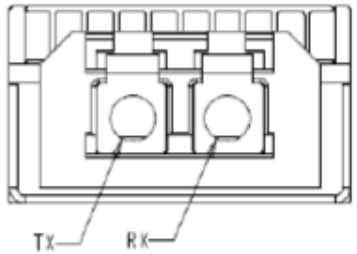


Figure 51. Optical receptacle and channel orientation for duplex LC connector

7.7.3 Dual CS Optical Interface

Figure 53 shows channel orientation of the optical connector when a dual CS connector is used in an OSFP module. Receptacle 1 (Tx1, Rx1) and receptacle 2 (Tx2, Rx2) are connected with two separate independent duplex fiber cables.

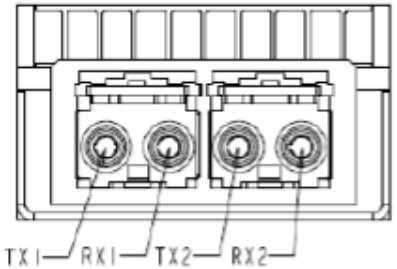
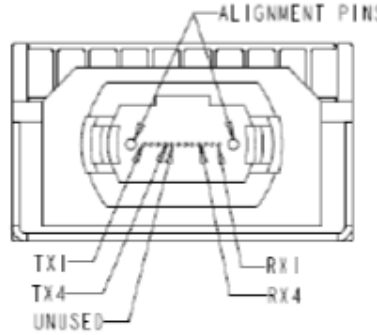


Figure 53. Optical receptacle and channel orientation for dual CS connector

7.7.2 MPO 12 Optical Interface

Figure 52 shows channel orientation of the optical connector when a male MPO 12 connector as in the IEC 61754-7-1 is used in an OSFP module.



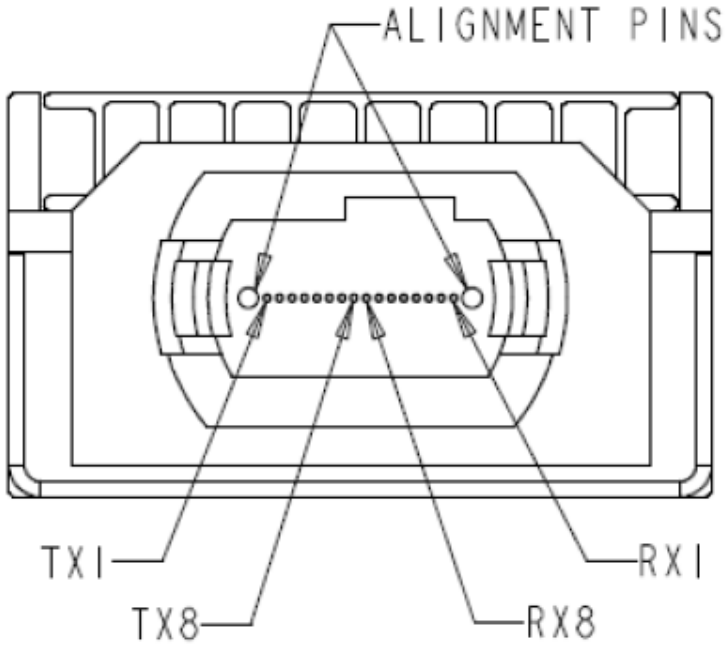
Channels (x: unused position) Tx1 Tx2 Tx3 Tx4 x x x x Rx4 Rx3 Rx2 Rx1

Figure 52. Optical receptacle and channel orientation for MPO 12 connector

OSFP MDI - Proposed Revision (Draft 1.91)

9.7.3 MPO 16 Optical Interface

Figure 9-9 shows channel orientation of the optical connector when a male MPO 16 connector as in the TIA-604-18 is used in an OSFP module.



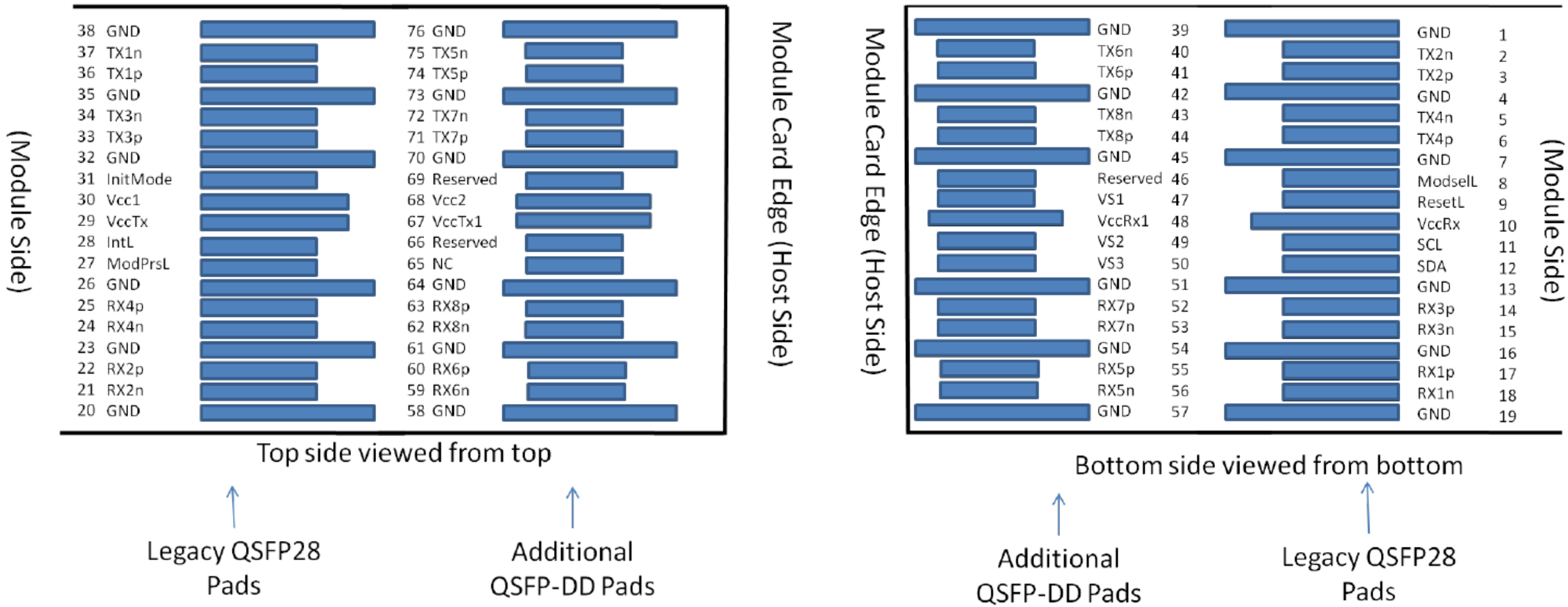
Channels Tx1 Tx2 Tx3 Tx4 Tx5 Tx6 Tx7 Tx8 Rx8 Rx7 Rx6 Rx5 Rx4 Rx3 Rx2 Rx1

Figure 9-9. Optical receptacle and channel orientation for MPO 16 connector

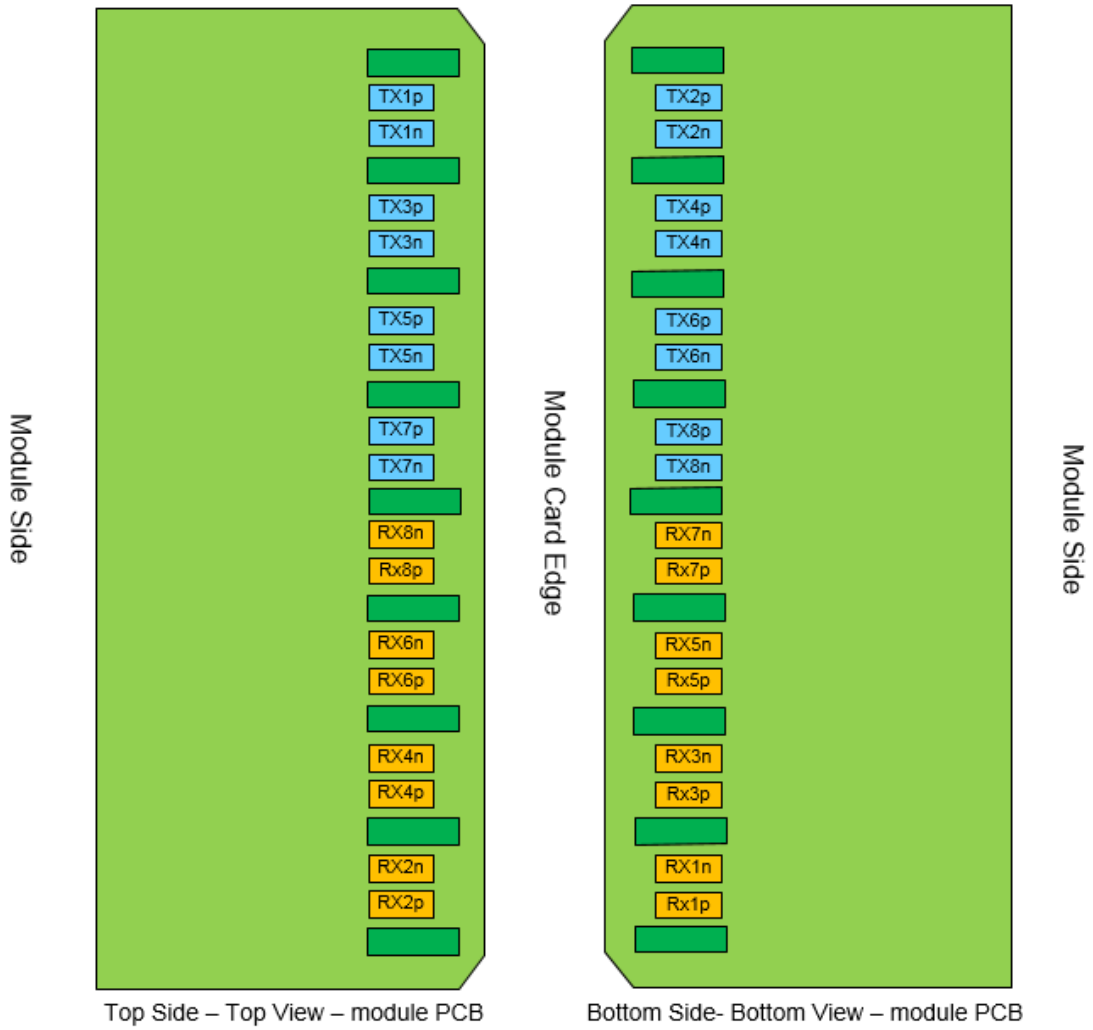
Backup

- Module pinouts
  - QSFP-DD
  - COBO 8-Lane
  - OSFP

QSFP-DD Module Pinout



COBO 8-Lane Module Pinout



OSFP Module Pinout