

DM-383-XXX 4 Channels of 10Gbps QSFP+ by 4* SFP+ Passive Cable

- SFF-8432 MSA compliant
- SFF-8431 MSA Compliant
- SFF-8436 MSA Compliant
- Hot-pluggable SFP+ and QSFP+ footprint
- Supports Serial ID
- Lengths up to 7m
- Robust Die Cast Housings



Product Overview:

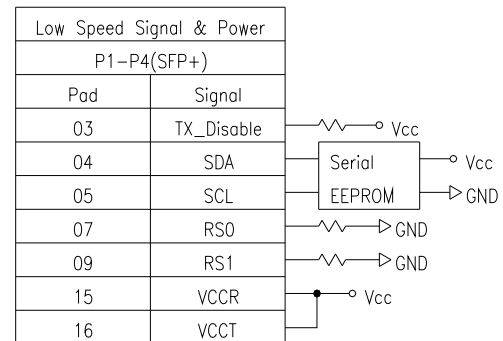
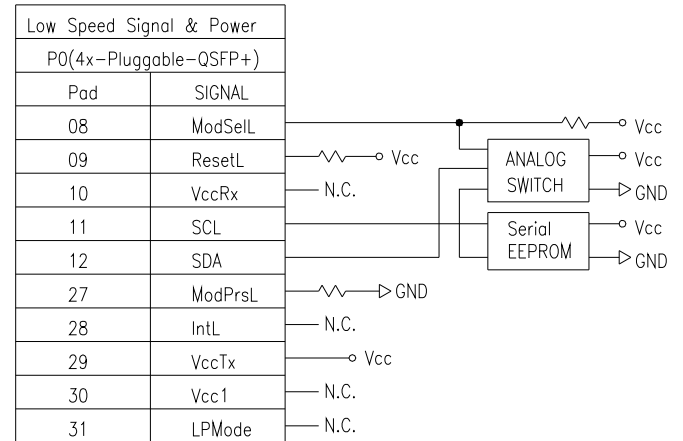
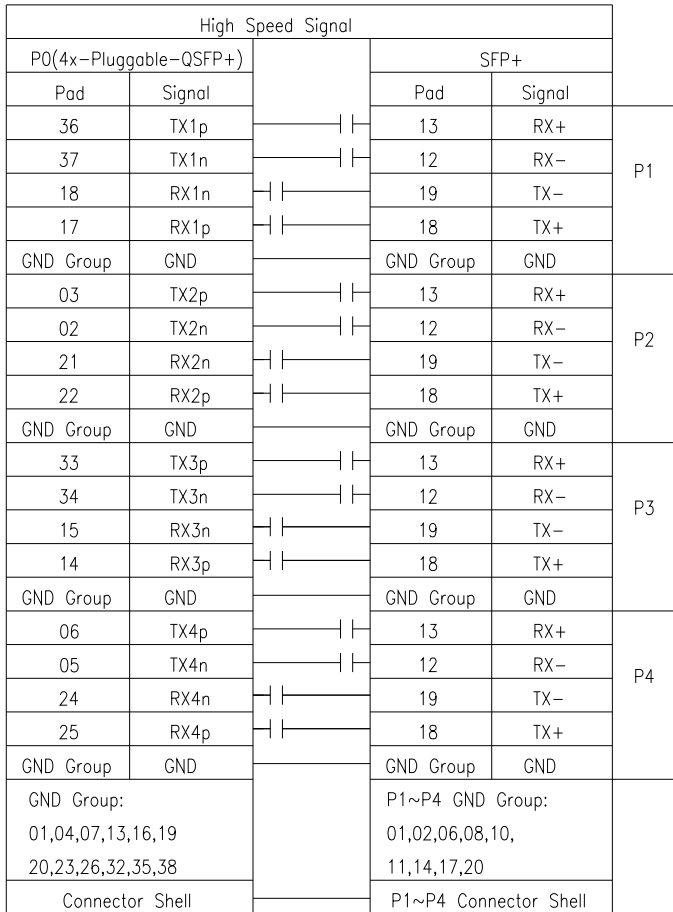
The DM-383-XXX QSFP+ to 4* SFP+ Direct Attach cable assembly is a high performance integrated duplex data link for bi-directional communication over copper cable for lengths up to 7m. It is compliant with the IPF MSA (SFF-8432) and QSFP+ 10 Gbs 4X MSA (SFF-8436) for mechanical form factors and SFP+ MSA (SFF-8431 Appendix E) for direct attach cables. It is data rate agnostic and supports speeds of up to 10Gbps. The DM-383-XXX provides a cost effective alternative to optical links.

Ordering Information

Part Number	Length	AWG
DM-383-100	1 M	30
DM-383-300	3 M	30
DM-383-500	5 M	24
DM-383-700	7 M	24

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Wiring Diagram



*DC Blocking Caps on P0-P4 Rx Side.

Figure 1: Block Diagram

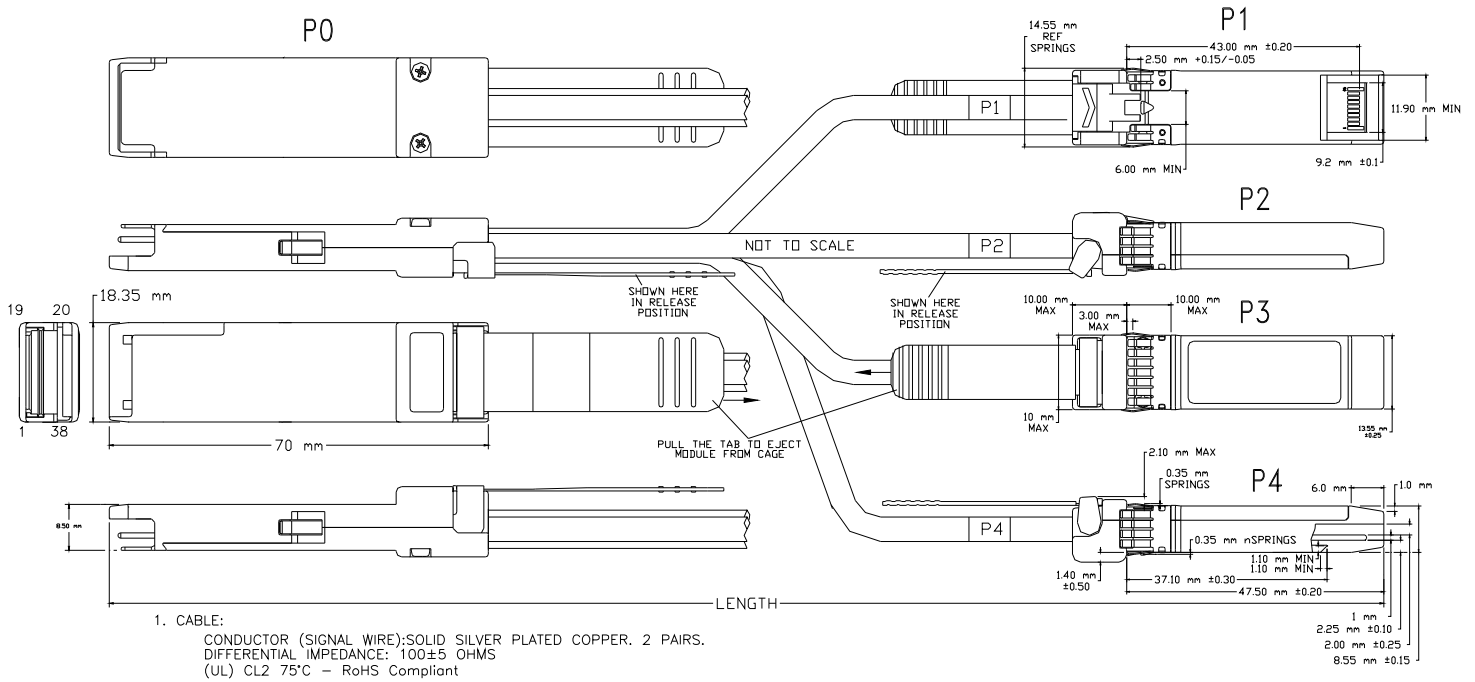


Figure 2: Mechanical Dimensions of Module

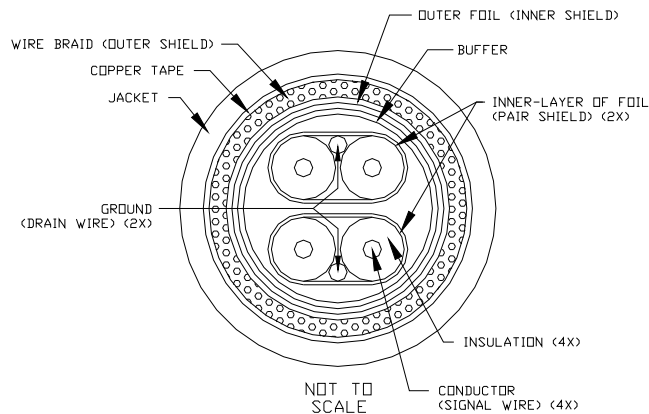


Figure 3: Cable Cross Section

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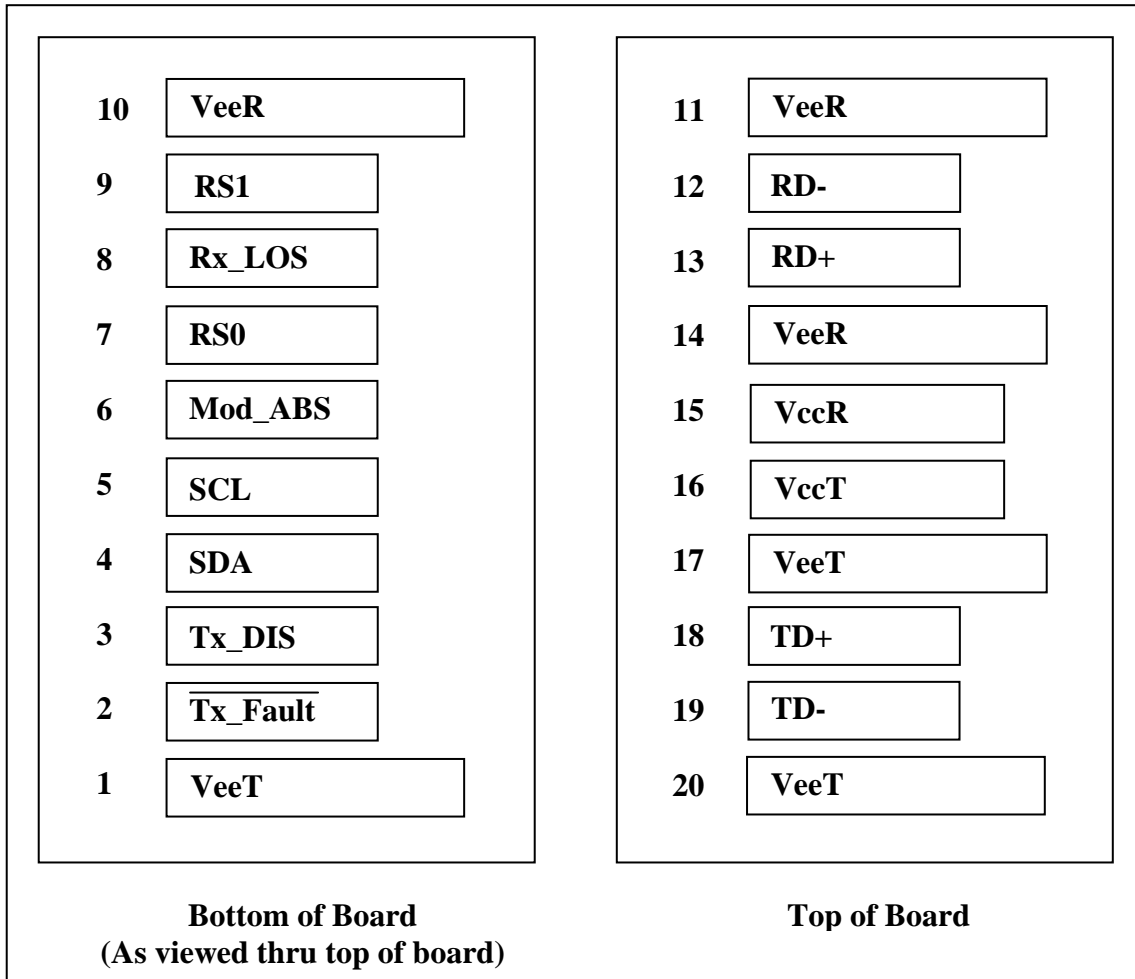
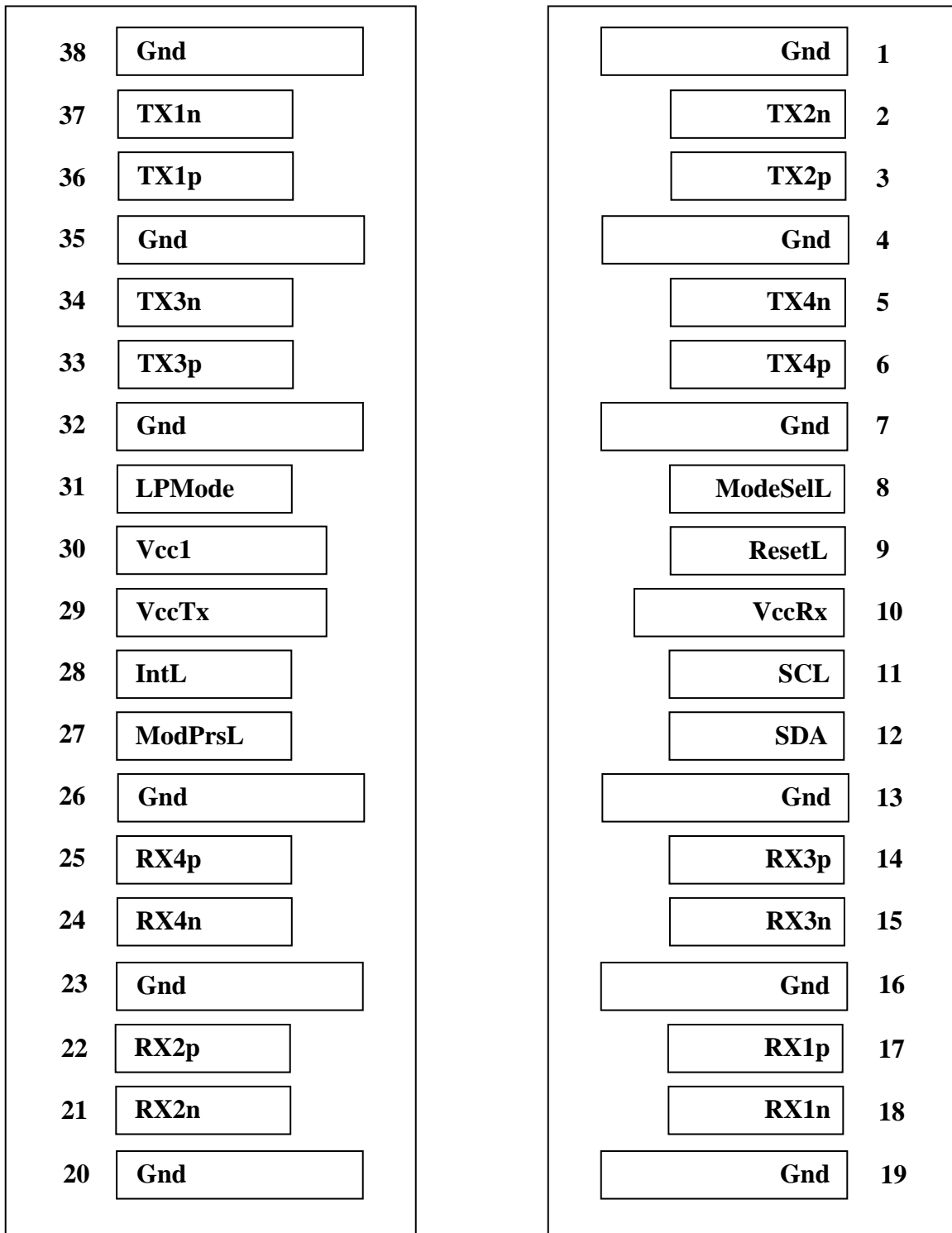


Figure 4: SFP+ Transceiver Electrical Pad Layout



Top Side – Viewed from Top

Bottom Side – Viewed from Bottom

Figure 5: QSFP+ Transceiver Electrical Pad Layout

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Pin	Logic	Symbol	Power Sequence	Name/Description	Note
1		VeeT	1st	Module Transmitter Ground	2
2	LVTTL-O	Tx_Fault	3rd	Module Transmitter Fault	3
3	LVTTL-I	Tx_Dis	3rd	Transmitter Disable; Turns off transmitter laser output	4
4	LVTTL-I/O	SDA	3rd	2-wire Serial Interface Data Line	5
5	LVTTL-I/O	SCL	3rd	2-wire Serial Interface Clock	5
6		MOD_ABS	3rd	Module Absent, connected to VeeT or VeeR in the module	
7	LVTTL-I	RS0	3rd	Rate Select 0	7
8	LVTTL-O	Rx_LOS	3rd	Receiver Loss of Signal Indication	3
9	LVTTL-I	RS1	3rd	Rate Select 1	7
10		VeeR	1st	Module Receiver Ground	2
11		VeeR	1st	Module Receiver Ground	2
12	CML-O	RD-	3rd	Receiver Inverted Data Output	
13	CML-O	RD+	3rd	Receiver Non-Inverted Data Output	
14		VeeR	1st	Module Receiver Ground	2
15		VccR	2nd	Module Receiver 3.3 V Supply	
16		VccT	2nd	Module Transmitter 3.3 V Supply	
17		VeeT	1st	Module Transmitter Ground	2
18	CML-I	TD+	3rd	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	3rd	Transmitter Inverted Data Input	
20		VeeT	1st	Module Transmitter Ground	2

1. Labeling as inputs (I) and outputs (O) are from the perspective of the module
2. The module signal ground contacts, VeeR and VeeT, shall be isolated from the module case.
3. This contact is an open collector/drain output contact and shall be pulled up on the host.
4. TX_Disable is an input contact with a 4.7-10 kΩ pullup to VccT inside the module.
5. Serial Clock and Data line to access Serial ID specified in Table 2.
6. Pulled Low to VeeT with 33K resistor in the module.

Table 1: SFP+ Module Electrical Pin Definition

Pin	Logic	Symbol	Name/Description	Plug Sequence	Note
1		GND	Module Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Module Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Module Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		VccRx	3.3V Power Supply Receiver	2	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	3	
12	LVCMOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Module Ground	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Module Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Module Ground	1	1
20		GND	Module Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Module Ground	1	1
24	CML-O	Rx2n	Receiver Inverted Data Output	3	
25	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
26		GND	Module Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	3.3V Power Supply Transmitter	2	2
30		VccI	3.3V Power Supply	2	2
31	LVTTL-I	LPMODE	Low Power Mode	3	
32		GND	Module Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Module Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Module Ground	1	1

Note 1: GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note 2: Vcc Rx, VccI and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Vcc Rx, VccI and Vcc Tx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500 mA.

Table 2: QSFP+ Module Electrical Pin Definition



SFP+ Side Serial Identification

The module identification is located in the EEPROM, which is accessed over the 2-wire serial management interface. The address of the EEPROM is 0xA0 (101000X). The following table shows the SFP+ EEPROM memory map and the actual data.

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
BASE ID FIELDS					
0	1	Identifier	Type of transceiver	03	SFP+ TRANSCEIVER
1	1	Ext. Identifier	Extended identifier of type of serial transceiver	04	WITH SERIAL ID
2	1	Connector	Code for connector type	21	COPPER PIGTAIL
3-10	8	Transceiver	Code for electronic or optical compatibility	00,00,00,00,00,04,00,00	SFP+ Passive Cable
11	1	Encoding	Code for serial encoding algorithm	00	UNSPECIFIED
12	1	BR, Nominal	Nominal signaling rate, units of 100Mbps/sec	64	10Gb Bit Rate
13	1	Rate Identifier	Type of rate select functionality	00	UNSPECIFIED
14	1	Length (SMF, km)	Link length supported for single mode fiber, units of km	00	NA
15	1	Length (SMF)	Link length supported for single mode fiber, units of 100m	00	NA
16	1	Length (50µm)	Link length supported for 50µm OM2 fiber, units of 10m	00	NA
17	1	Length (62.5µm)	Link length supported for 62.5µm OM1 fiber, units of 10m	00	NA
18	1	Length (cable)	Link length supported for copper or direct attach cable, units of m	VARIABLES	0xXX METER
19	1	Length (OM3)	Link length supported for 50µm OM3 fiber, units of 10m	00	RESERVED
20-35	16	Vendor name	SFP+ vendor name (ASCII)	4D,65,74,68,6F,64,65,20,45,6C,65,63,2E,20,20,20	Methode Elec (ASCII)
36	1	Transceiver	Code for electronic or optical compatibility	00	UNALLOCATED
37-39	3	Vendor OUI	SFP+ transceiver vendor IEEE company ID	00,17,05	Methode OUI
40-55	16	Vendor PN	Part number provided by SFP+ transceiver vendor (ASCII)	44,4D,2D,33,38,33,2D,XX,XX,XX,XX,20,20,20,20,20	DM-383-XXX (ASCII)
56-59	4	Vendor rev	Revision level for part number provided by vendor (ASCII)	2D,20,20,20	Rev -
60-61	2	Wavelength	Laser wavelength (Passive/Active Cable Specification Compliance)	00,00	RESERVED
62	1	Unallocated		00	RESERVED
63	1	CC_BASE	Check code for Base ID Fields (addresses 0 to 62)	VARIABLES	
EXTENDED ID FIELDS					
64-65	2	Options	Indicates which optional SFP+ signals are implemented	00,00	
66	1	BR, max	Upper bit rate margin, units of %	00	
67	1	BR, min	Lower bit rate margin, units of %	00	
68-83	16	Vendor SN	Serial number provided by vendor (ASCII)	VARIABLES	(ASCII)
84-91	8	Date code	Vendor's manufacturing date code	VARIABLES	YY-MM-DD-LOT#
92	1	Diagnostic Monitoring Type	Indicates which type of diagnostic monitoring is implemented (if any)	00	None included
93	1	Enhanced Options	Indicates which optional enhanced features are implemented (if any)	00	None included
94	1	SFF-8472 Compliance	Indicates which revision of SFF-8472 the transceiver complies with	00	None included
95	1	CC_EXT	Check code for the Extended ID Fields (addr. 64 to 94)	VARIABLES	
VENDOR SPECIFIC ID FIELDS					
96-127	32	Vendor Specific	Vendor Specific EEPROM	All FF's	
128-255	128	Reserved	Reserved for SFF-8079	All FF's	

Table 3: SFP+ MSA Serial ID Data

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QSFP+ Side Memory Map

Lower Memory Map The lower 128 bytes of the 2-wire serial bus address space is located in the EEPROM, which is accessed over the 2-wire serial management interface. The address of the EEPROM is 0xA0 (1010000X). The following table shows the QSFP+ lower memory map and the actual data.

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
BASE ID FIELDS					
0	1	Identifier	Type of serial transceiver	0C	QSFP+ TRANSCEIVER
1	1	Status	Reserved	00	
2	1	Status	Status Indicators	06	Page 0 Upper Memory Only, IntL Output = 1
3-126	124		Measurements and Diagnostics	All 00	
127	1		Page Select	00	

Serial ID Memory Map The module identification is located in the upper 128 bytes of the 2-wire serial bus address space of the EEPROM, which is accessed over the 2-wire serial management interface. The address of the EEPROM is 0xA0 (1010000X). The following table shows the QSFP+ Serial Identification memory map and the actual data.

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
BASE ID FIELDS					
128	1	Identifier	Type of serial transceiver	0C	QSFP+ TRANSCEIVER
129	1	Ext. Identifier	Extended identifier of type of serial transceiver	00	Power Level 1, No CLEI Code present in Page 02h
130	1	Connector	Code for connector type	21	COPPER PIGTAIL
131-138	8	Transceiver	Code for electronic compatibility or optical compatibility	08,00,00,00,00,00,00,00	40GBase-CR
139	1	Encoding	Code for serial encoding algorithm	00	UNSPECIFIED
140	1	BR, Nom	Nominal bit rate, units of 100Mbps/sec	64	10Gb Bit Rate
141	1	Ext Rate Sel	Tags for Extended Rate Select Compliance	00	NA
142	1	Length (SMF)-km	Link length supported for SMF fiber in km	00	NA
143	1	Length (E-50µm)	Link length supported EBW 50/125 µm fiber, units of 2 m	00	NA
144	1	Length (50µm)	Link length supported for 50/125 µm fiber, units of 1 m	00	NA
145	1	Length (62.5 µm)	Link length supported for 62.5/125 µm fiber, units of 1 m	00	NA
146	1	Length (Copper)	Link length supported for copper, units of 1 m	01	DM-383-50
				01	DM-383-100
				02	DM-383-200
				03	DM-383-300
				05	DM-383-500
07	DM-383-700				
147	1	Device Tech	Device technology	A0	Copper Cable Unequalized
148-163	16	Vendor name	Vendor name (ASCII)	4D,65,74,68,6F,64,65,20,45,6C,65,63,2E,20,20,20	Methode Elec. (ASCII)
164	1	Ext Transceiver Codes	Extended Transceiver Codes	05	QDR Speed
165-167	3	Vendor OUI	Vendor IEEE company ID	00,17,05	Methode OUI
168-183	16	Vendor PN	Part number provided by Vendor (ASCII)	44,4D,2D,33,38,33,2D,XX,XX,XX,XX,20,20,20,20,20	DM-383-XXX (ASCII)
184-185	2	Vendor rev	Revision level for part number provided by vendor (ASCII)	2D,20	Rev -

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186-187	2	Copper Cable Attenuation	Copper Cable Attenuation in dB (at 2.5Ghz in address 186 and 5.0Ghz in address 187)	VARIABLES	
188-189	2	Wavelength Tolerance	Guaranteed range of laser wavelength	00,00	NA
190	1	Max Case Temp	Maximum Case Temperature in Degrees C.	55	85 Degrees C.
191	1	CC_BASE	Check code for Base ID Fields (addresses 120-190)	VARIABLES	

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
EXTENDED ID FIELDS					
192-193	2	Reserved	Reserved	00,00	
194	1		Squelch Options	00	
195	1		Options	00	
196-211	16	Vendor SN	Serial number provided by vendor (ASCII)	VARIABLES	YYWWXXX(ASCII)
212-219	8	Date code	Vendor's manufacturing date code	VARIABLES	YY-MM-DD-LOT#
220	1	Diagnostic Monitoring Type	Indicates which type of diagnostic monitoring is implemented (if any) in the transceiver	00	None Implemented
221	1	Enhanced Options	Indicates which optional enhanced features are implemented by the transceiver	00	None Implemented
222	1	Reserved	Reserved	00	
223	1	CC_EXT	Check code for the Extended ID Fields (addresses 192 to 222)	VARIABLES	
224-255	32	Vendor Specific	Vendor Specific EEPROM	All FF's	

Table 4: QSFP+ MSA Serial ID Data