400Gbps QSFP DD to 4x QSFP56 Passive High Speed Cable

Specification

Description

QSFP-DD (Double Density) Interconnect System and Cable Assemblies feature an eight-lane electrical interface that transmits up to 28Gbps NRZ or 56Gbps PAM-4, up to 200Gbps or 400Gbps aggregate.QSFP-DD offers the same footprint as QSFP interconnects, making them backward compatible.

The double density feature is an extended paddle card with two rows of high-speed context. QSFP-DD meets IEEE 802.3bj, InfiniBand EDR, and SAS 3.0 specifications, allowing these connectors and cable assemblies to function across a variety of next-generation technologies and applications. 200G QSFP56 passive cable assembly products, based on 4X50G or 4X56G structure, this product can well meet the next generation of 200G switches, servers, routers and other products application needs. The QSFP56 cable assembly is optimised to reduce crosstalk and insertion loss and has excellent signal integrity, fully compliant with the next generation 200G Ethernet and InfiniBand HDR standards.

Product Features

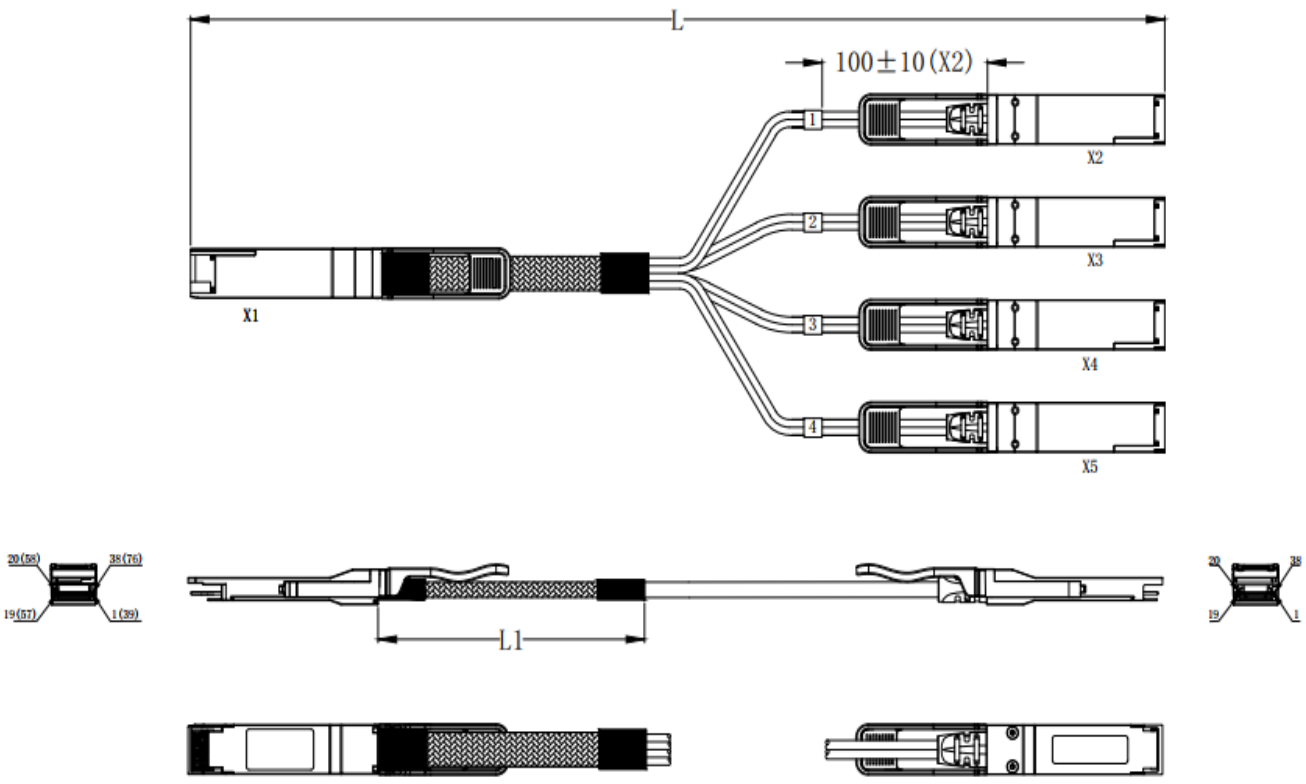
MEET SFF-8636&QSFP-DD MSA
MEET IEEE802.3bj&IEEE802.3 cd
Support I2C two - line string interface, easy to control

Support for hot plugging
Low crosstalk
Eight-lane electrical interface transmits up to 28Gbps NRZ or 56Gbps PAM-4)

Applications :

Telecommunications equipment
Servers
Routers
Switches
Central office
Cellular infrastructure
Multi-platform service systems
Data networking equipment
Servers
Storage

Outline drawing:



M.P/N	C.P/N	L(mm)	L1	AWG
CDD4XQxxCSxx-xx	TBD	500±15	100±10	30
CDD4XQxxCSxx-xx	TBD	1000±25	200±10	30
CDD4XQxxCSxx-xx	TBD	1500±30		30
CDD4XQxxCSxx-xx	TBD	2000±35	200±10	28
CDD4XQxxCSxx-xx	TBD	2500±35		28
CDD4XQxxCSxx-xx	TBD	3000±45		28

Wiring Diagram:

START			END	
GND	X1. 1	-----	X2. 20	GND
TX2-	X1. 2	---->	X2. 21	RX2-
TX2+	X1. 3	---->	X2. 22	RX2+
GND	X1. 4	-----	X3. 20	GND
TX4-	X1. 5	---->	X3. 21	RX2-
TX4+	X1. 6	---->	X3. 22	RX2+
GND	X1. 7	-----	X3. 23	GND
MODSELL	X1. 8		X2. 27	MODPRSL
RESETL	X1. 9		X2. 28	INTL
VCCRX	X1. 10		X2. 29	VCCTX
SCL	X1. 11		X2. 30	VCC1
SDA	X1. 12		X2. 31	INITMODE
GND	X1. 13	-----	X3. 35	GND
RX3+	X1. 14	<----	X3. 36	TX1+
RX3-	X1. 15	<----	X3. 37	TX1-
GND	X1. 16	-----	X2. 35	GND
RX1+	X1. 17	<----	X2. 36	TX1+
RX1-	X1. 18	<----	X2. 37	TX1-
GND	X1. 19	-----	X2. 38	GND
GND	X1. 20	-----	X2. 1	GND
RX2-	X1. 21	<----	X2. 2	TX2-
RX2+	X1. 22	<----	X2. 3	TX2+
GND	X1. 23	-----	X3. 1	GND
RX4-	X1. 24	<----	X3. 2	TX2-
RX4+	X1. 25	<----	X3. 3	TX2+
GND	X1. 26	-----	X3. 4	GND
MODPRSL	X1. 27		X3. 8	MODSELL
INTL	X1. 28		X3. 9	RESETL
VCCTX	X1. 29		X3. 10	VCCRX
VCC1	X1. 30		X3. 11	SCL
INITMODE	X1. 31		X3. 12	SDA
GND	X1. 32	-----	X3. 16	GND
TX3+	X1. 33	---->	X3. 17	RX1+
TX3-	X1. 34	---->	X3. 18	RX1-
GND	X1. 35	-----	X2. 16	GND
TX1+	X1. 36	---->	X2. 17	RX1+
TX1-	X1. 37	---->	X2. 18	RX1-
GND	X1. 38	-----	X2. 19	GND

START			END	
GND	X1. 39	-----	X4. 20	GND
TX6-	X1. 40	---->	X4. 21	RX2-
TX6+	X1. 41	---->	X4. 22	RX2+
GND	X1. 42	-----	X5. 20	GND
TX8-	X1. 43	---->	X5. 21	RX2-
TX8+	X1. 44	---->	X5. 22	RX2+
GND	X1. 45	-----	X5. 23	GND
RESERVED	X1. 46		X4. 27	MODPRSL
VS1	X1. 47		X4. 28	INTL
VCCRX1	X1. 48		X4. 29	VCCTX
VS2	X1. 49		X4. 30	VCC1
VS3	X1. 50		X4. 31	INITMODE
GND	X1. 51	-----	X5. 35	GND
RX7+	X1. 52	<----	X5. 36	TX1+
RX7-	X1. 53	<----	X5. 37	TX1-
GND	X1. 54	-----	X4. 35	GND
RX5+	X1. 55	<----	X4. 36	TX1+
RX5-	X1. 56	<----	X4. 37	TX1-
GND	X1. 57	-----	X4. 38	GND
GND	X1. 58	-----	X4. 1	GND
RX6-	X1. 59	<----	X4. 2	TX2-
RX6+	X1. 60	<----	X4. 3	TX2+
GND	X1. 61	-----	X5. 1	GND
RX8-	X1. 62	<----	X5. 2	TX2-
RX8+	X1. 63	<----	X5. 3	TX2+
GND	X1. 64	-----	X5. 4	GND
NC	X1. 65		X5. 8	MODSELL
RESERVED	X1. 66		X5. 9	RESETL
VCCTX1	X1. 67		X5. 10	VCCRX
VCC2	X1. 68		X5. 11	SCL
RESERVED	X1. 69		X5. 12	SDA
GND	X1. 70	-----	X5. 16	GND
TX7+	X1. 71	---->	X5. 17	RX1+
TX7-	X1. 72	---->	X5. 18	RX1-
GND	X1. 73	-----	X4. 16	GND
TX5+	X1. 74	---->	X4. 17	RX1+
TX5-	X1. 75	---->	X4. 18	RX1-
GND	X1. 76	-----	X4. 19	GND

Electrical Performance:

Signal Integrity

<table>
<tr><th colspan="2">ITEM</th><th>REQUIREMENT</th><th>TEST CONDITION</th></tr>
<tr><td rowspan="3">Differential Impedance</td><td>Cable Impedance</td><td>105+5/-10Ω</td><td rowspan="3">Rise time of 25ps
(20 % - 80 %).</td></tr>
<tr><td>Paddle Card Impedance</td><td>100±10Ω</td></tr>
<tr><td>Cable Termination Impedance</td><td>100±15Ω</td></tr>
<tr><td colspan="2">[Differential (Input/Output)Return loss S_{DD11}/S_{DD22}]</td><td>Return_loss(f)≥ $\begin{cases} 16.5-2\sqrt{f} & 0.05 \leqslant f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1 \leqslant f \leqslant 19 \end{cases}$
Where
f is the frequency in GHz
Return loss(f) is the return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">[Differential to common-mode (Input/Output)Return loss S_{CD11}/S_{CD22}]</td><td>Return_loss(f)≥ $\begin{cases} 22-(20/25.78)f & 0.01 \leqslant f < 12.89 \\ 15-(6/25.78)f & 12.89 \leqslant f \leqslant 19 \end{cases}$
Where
f is the frequency in GHz
Return_loss(f) is the Differential to common-mode return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">Common-mode to Common-mode (Input/Output)Return loss S_{CC11}/S_{CC22}]</td><td>Return_loss(f)≥2dB 0.2≤f≤19
Where
f is the frequency in GHz
Return_loss(f) is the common-mode to common-mode return loss at frequency f</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td colspan="2">Differential Insertion Loss (S_{DD21} Max.)</td><td>(Differential InsertionLoss Max. For TPa to TPb Excluding Test fixture)
<table>
<tr><th>F
AWG</th><th>1.25GHz</th><th>2.5GHz</th><th>5.0GHz</th><th>7.0GHz</th><th>10Ghz</th><th>12.89Ghz</th></tr>
<tr><td>30(1m)Max.</td><td>4.5dB</td><td>5.4dB</td><td>6.3dB</td><td>7.5dB</td><td>8.5dB</td><td>10.5dB</td></tr>
<tr><td>30/28(3m)Max.</td><td>7.5dB</td><td>9.5dB</td><td>12.2dB</td><td>14.8dB</td><td>18.0dB</td><td>21.5dB</td></tr>
<tr><td>26(3</td><td>5.7dB</td><td>7.2dB</td><td>9.9 dB</td><td>11.9d</td><td>14.1d</td><td>16.5</td></tr>
</table></td><td>10MHz≤f ≤19GHz</td></tr>
</table>

	m)Max.				B	B	dB	
	26/25(5m)Max.	7.8dB	10.0dB	13.5dB	16.0dB	19.0dB	22.0dB	
Differential to common-mode Conversion Loss-Differential Insertion Loss(S_{CD21}-S_{DD21})	Conversion _loss(f) – IL(f)≥ $\begin{cases} 10 & 0.01 \leqslant f < \\ 12.89 & \\ 27-(29/22)f & 12.89 \leqslant f < \end{cases}$ Where f is the frequency in GHz Conversion_loss(f) is the cable assembly differential to common-mode conversion loss IL(f) is the cable assembly insertion loss							10MHz≤f ≤19GHz
MDNEXT(multiple disturber near-end crosstalk)	≥26dB @12.89GHz							10MHz≤f ≤19GHz

Other Electrical Performance

ITEM	REQUIREMENT	TEST CONDITON
Low Level Contact Resistance	70milliohms Max. From initial.	EIA-364-23:Apply a maximum voltage of 20mV And a current of 100 mA.
Insulation Resistance	10Mohm(Min.)	EIA364-21:AC 300V 1minute
Dielectric Withstanding Voltage	NO disruptive discharge.	EIA-364-20:Apply a voltage of 300 VDC for 1minute between adjacent terminals And between adjacent terminals and ground.

Environment Performance

ITEM	REQUIREMENT	TEST CONDITON
Operating Temp. Range	-20°C to +75°C	Cable operating temperature range.
Storage Temp. Range (in packed condition)	-40°C to +80°C	Cable storage temperature range in packed condition.
Thermal Cycling Non-Powered	No evidence of physical damage	EIA-364-32D, Method A, -25 to 90C, 100 cycles, 15 min. dwells
Salt Spraying	48 hours salt spraying after shell corrosive area less than 5％.	EIA-364-26
Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing. (For connector only)	EIA-364-35 Class II,14 days.
Temp. Life	No evidence of physical damage	EIA-364-17C w/ RH, Damp heat 90℃ at 85% RH for 500 hours then return to ambient
Cable Cold Bend	4H,No evidence of physical damage	Condition: -20℃±2℃, mandrel diameter is 6 times the cable diameter.

Mechanical and Physical Characteristics

ITEM	REQUIREMENT	TEST CONDITON
Vibration	Pass electrical tests per 3.1 after stressing.	Clamp & vibrate per EIA-364-28E, TC-VII, test condition letter – D, 15 minutes in X, Y & Z axis.
Cable Flex	No evidence of physical damage	Flex cable 180° for 20 cycles (±90° from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90º in each direction from vertical. Per EIA-364-41C
Cable Plug Retention in Cage	90N Min. No evidence of physical damage	Force to be applied axially with no damage to cage. Per SFF 8661 Rev 2.1 Pull on cable jacket approximately 1 ft behind cable plug. No functional damage to cable plug below 90N. Per SFF-8432 Rev 5.0
Cable Retention in Plug	90N Min. No evidence of physical damage	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B
Mechanical Shock	Pass electrical tests Per 3.1 after stressing.	Clamp and shock per EIA-364-27B, TC-G,3 times in 6 directions, 100g, 6ms.

Cable Plug Insertion	40N Max.(QSFP56) 90N Max.(QSFP DD)	Per SFF8661 Rev 2.1 Per QSFP-DD Hardware Rev 5.0
Cable plug Extraction	30N Max. (QSFP56) 50N Max.(QSFP DD)	Place axial load on de-latch to de-latch plug.Per SFF8661 Rev 2.1 Measure without the aid of any cage kick-out springs. Place axial load on de-latch to de-latch plug. Per SFF-8432 Rev 5.0
Durability	50 cycles,No evidence of physical damage	EIA-364-09, perform plug &unplug cycles:Plug and receptacle mate rate: 250times/hour. 50times for QSFP28/SFP28 module (CONNECTOR TO PCB)