200G QSFP DD To 2x100G QSFP28
Passive Direct Attach Copper Cable

Description

QSFP-DD (Double Density) Interconnect System and Cable Assemblies feature an eight-lane electrical interface that transmits up to 25G NRZ up to 200G 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.

100G QSFP28 passive cable assembly products, based on 4X25G structure, this product can well meet the next generation of 100G switches, servers, routers and other products application needs. The QSFP28 cable assembly is optimized to reduce crosstalk and insertion loss and has excellent signal integrity, fully compliant with the next generation 100G Ethernet and InfiniBand EDR standards.

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 25Gbps NRZ

Applications

- Servers
- Routers
- Switches - Cellular infrastructure; Multi-platform service systems

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	-----	X2. 23	GND
TX4-	X1. 5	---->	X2. 24	RX4-
TX4+	X1. 6	---->	X2. 25	RX4+
GND	X1. 7	-----	X2. 26	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	-----	X2. 32	GND
RX3+	X1. 14	<----	X2. 33	TX3+
RX3-	X1. 15	<----	X2. 34	TX3-
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	-----	X2. 4	GND
RX4-	X1. 24	<----	X2. 5	TX4-
RX4+	X1. 25	<----	X2. 6	TX4+
GND	X1. 26	-----	X2. 7	GND
MODPRSL	X1. 27		X2. 8	MODSELL
INTL	X1. 28		X2. 9	RESETL
VCCTX	X1. 29		X2. 10	VCCRX
VCC1	X1. 30		X2. 11	SCL
INITMODE	X1. 31		X2. 12	SDA
GND	X1. 32	-----	X2. 13	GND
TX3+	X1. 33	---->	X2. 14	RX3+
TX3-	X1. 34	---->	X2. 15	RX3-
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	-----	X3. 20	GND
TX6-	X1. 40	---->	X3. 21	RX2-
TX6+	X1. 41	---->	X3. 22	RX2+
GND	X1. 42	-----	X3. 23	GND
TX8-	X1. 43	---->	X3. 24	RX4-
TX8+	X1. 44	---->	X3. 25	RX4+
GND	X1. 45	-----	X3. 26	GND
RESERVED	X1. 46		X3. 27	MODPRSL
VS1	X1. 47		X3. 28	INTL
VCCRX1	X1. 48		X3. 29	VCCTX
VS2	X1. 49		X3. 30	VCC1
VS3	X1. 50		X3. 31	INITMODE
GND	X1. 51	-----	X3. 32	GND
RX7+	X1. 52	<----	X3. 33	TX3+
RX7-	X1. 53	<----	X3. 34	TX3-
GND	X1. 54	-----	X3. 35	GND
RX5+	X1. 55	<----	X3. 36	TX1+
RX5-	X1. 56	<----	X3. 37	TX1-
GND	X1. 57	-----	X3. 38	GND
GND	X1. 58	-----	X3. 1	GND
RX6-	X1. 59	<----	X3. 2	TX2-
RX6+	X1. 60	<----	X3. 3	TX2+
GND	X1. 61	-----	X3. 4	GND
RX8-	X1. 62	<----	X3. 5	TX4-
RX8+	X1. 63	<----	X3. 6	TX4+
GND	X1. 64	-----	X3. 7	GND
NC	X1. 65		X3. 8	MODSELL
RESERVED	X1. 66		X3. 9	RESETL
VCCTX1	X1. 67		X3. 10	VCCRX
VCC2	X1. 68		X3. 11	SCL
RESERVED	X1. 69		X3. 12	SDA
GND	X1. 70	-----	X3. 13	GND
TX7+	X1. 71	---->	X3. 14	RX3+
TX7-	X1. 72	---->	X3. 15	RX3-
GND	X1. 73	-----	X3. 16	GND
TX5+	X1. 74	---->	X3. 17	RX1+
TX5-	X1. 75	---->	X3. 18	RX1-
GND	X1. 76	-----	X3. 19	GND

Electrical Performance/Signal Integrity

Item		Requirement	Test Condition
Differential Impedance	Cable Impedance	105+5/-10Ω	Rise time of 25ps (20 % - 80 %).
	Paddle Card Impedance	100±10Ω	
	Cable Termination Impedance	100±15Ω	
Differential (Input/Output) Return Loss S_{DD11}/S_{DD22}		Return_loss(f)≥ *{16.5-2√f 0.05≤f<4.1}* *{10.66-14log10(f/5.5) 4.1≤f≤19}* Where f is the frequency in GHz Return loss(f) is the return loss at frequency f	10MHz≤f≤19GHz

<table>
<tr><td>Differential to common-mode (Input/Output)
Return Loss S_{CD11}/S_{CD22}</td><td>Return_loss(f)≥ {22-(20/25.78) f 0.01≤f<12.89}
{15-(6/25.78) f 12.89≤f≤19}
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>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>Differential Insertion Loss (S_{DD21} Max.)</td><td>Differential Insertion Loss 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(3m) Max.</td><td>5.7dB</td><td>7.2dB</td><td>9.9 dB</td><td>11.9dB</td><td>14.1dB</td><td>16.5dB</td></tr>
<tr><td>26/25(5m) Max.</td><td>7.8dB</td><td>10.0dB</td><td>13.5dB</td><td>16.0dB</td><td>19.0dB</td><td>22.0dB</td></tr>
</table></td><td>10MHz≤f≤19GHz</td></tr>
<tr><td>Differential to common-mode Conversion Loss-Differential Insertion Loss (S_{CD21}-S_{DD21})</td><td>{10 0.01≤f<12.89 }
Conversion_loss(f) – IL(f)≥ {27-(29/22) f 12.89≤f < 15.7}
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</td><td>10MHz≤f ≤19GHz</td></tr>
<tr><td>MDNEXT (multiple disturbers near-end crosstalk)</td><td>≥26dB @12.89GHz</td><td>10MHz≤f ≤19GHz</td></tr>
</table>

Other Electrical Performance

Item	Requirement	Test Condition
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: AC300V 1minute

Dielectric Withstanding Voltage	NO disruptive discharge.	EIA-364-20: Apply a voltage of 300VDC for 1minute between adjacent terminals And between adjacent terminals and ground.

Environmental Performance

Item	Requirement	Test Condition
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 500hours then return to ambient
Cable Cold Bend	4H, No evidence of physical damage	Condition: -20℃±2℃, mandrel diameter is 6 times the cable diameter.

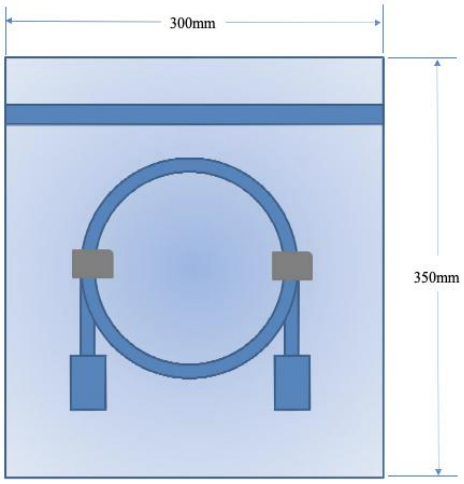
Mechanical and Physical Characteristics

Item	Requirement	Test Condition
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.

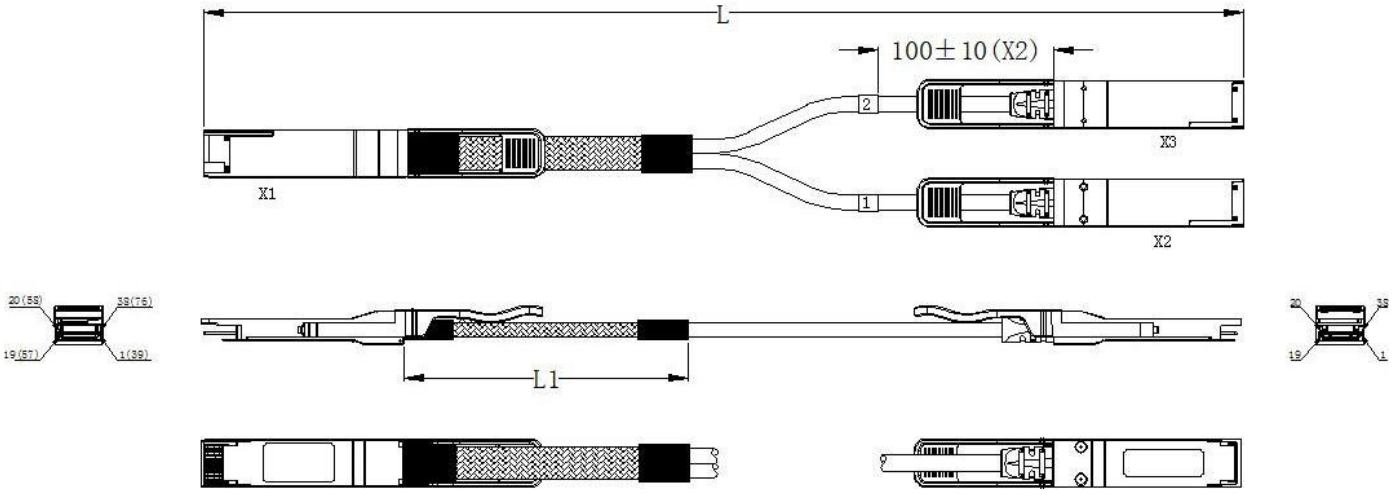
Cable Plug Insertion	40N Max. (QSFP56)	Per SFF8661 Rev 2.1
Cable plug Extraction	30N Max. (QSFP56)	Place axial load on de-latch to de-latch plug. Per SFF8661 Rev 2.1
Durability	50 cycles, No evidence of physical damage	EIA-364-09, perform plug &unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for module (CONNECTOR TO PCB)

Mechanical and Physical Characteristics

Both ends of the connector use protective sleeve protection, each into a separate anti-static bag.
<=2m: 200mm*300mm; >2m: 300mm*400mm



Outline Drawing



https://www.lanaotek.com