

200G QSFP-DD-2X100G QSFP28 Direct Attach Cable

General Description

QSFP-DD_2XQSFP28 passive copper cable assembly feature eight differential copper pairs, providing four data transmission channels at speeds up to 28Gbps per channel, and meets 200G Ethernet and InfiniBand Enhanced Data Rate(EDR) requirements. Available in a broad rang of wire gages-from 28AWG through 30AWG-this 200G copper cable assembly features low insertion loss and low cross talk.

Features and Benefits

- Compatible with IEEE 802.3bj and IEEE 802.3cd
- Supports aggregate data rates of 200Gbps
- Optimized construction to minimize insertion loss and cross talk
- Pull-to-release slide latch design
- 28AWG through 30AWG cable
- Straight and break out assembly configurations available
- Customized cable braid termination limits EMI radiation
- Customizable EEPROM mapping for cable signature
- RoHS omplia

Product Applications

- Switches.servers and routers
- Data Center networks
- Storage area networks
- High performance computing
- Telecommunication and wireless infrastructure
- Medical diagnostics and networking
- Test and measurement equipment

Industry Standards

- 200G Ethernet(IEEE 802.3cd)
- InfiniBand EDR



High Speed Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Differential Impedance	TDR	90	100	110	Ω	
Insertion loss	SDD21	-16.06			dB	At 13.28 GHz
Differential Return Loss	SDD11			See 1	dB	At 0.05 to 4.1 GHz
Differential Netarri 2003	SDD22			See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode output return loss	SCC11 SCC22			-2	dB	At 0.2 to 19 GHz
Differential to common-mode return loss	SCD11 SCD22			See 3	dB	At 0.01 to 12.89 GHz
return 1055	SCDZZ			See 4		At 12.89 to 19 GHz
Differential to common Made				-10		At 0.01 to 12.89 GHz
Differential to common Mode Conversion Loss	SCD21-IL			See 5	dB	At 12.89 to 15.7 GHz
				-6.3		At 15.7 to 19 GHz

- Notes:

 1. Reflection Coefficient given by equation SDD11(dB) < -16.5 + 2 × SQRT(f), with f in GHz
- Reflection Coefficient given by equation SDD11(dB) < -10.66 + 14 x log10(f/5.5), with f in GHz
 Reflection Coefficient given by equation SCD11(dB) < -22 + (20/25.78)*f, with f in GHz
 Reflection Coefficient given by equation SCD11(dB) < -15 + (6/25.78)*f, with f in GHz

- 5. Reflection Coefficient given by equation SCD21(dB) < -27 + (29/22)*f, with f in GHz

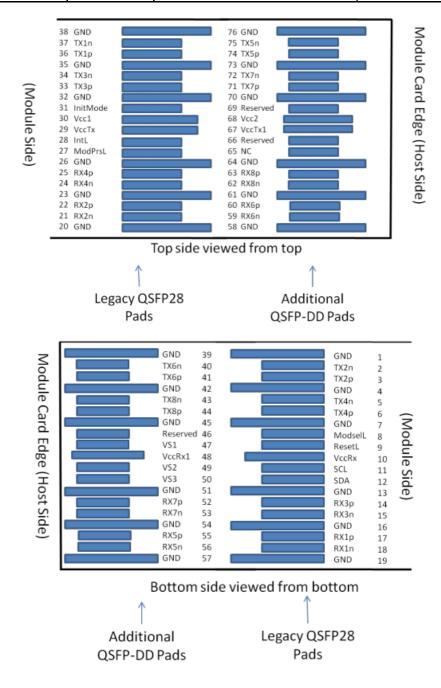
Pin Descriptions

QSFP-DD Pin Function Definition

Pin	Logic	Symbol	Description	
1		GND	Ground	
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power Supply Receiver	



11	LVCMOS- I/O	SCL	2-wire serial interface clock	
12	LVCMOS- I/O	SDA	2-wire serial interface data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	



19		GND	Ground
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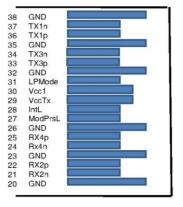
21	20		GND	Ground
23		CML-O	Rx2n	Receiver Inverted Data Output
CML-0	22	CML-O	Rx2p	Receiver Non-Inverted Data Output
25	23			
25	24	CML-O	Rx4n	Receiver Inverted Data Output
27	25	CML-O	Rx4p	
28	26		GND	Ground
Vcc Tx	27	LVTTL-O	ModPrsL	Module Present
30	28	LVTTL-O	IntL	Interrupt
31	29		Vcc Tx	+3.3V Power supply transmitter
32			Vcc1	+3.3V Power supply
33 CML-I Tx3p Transmitter Non-Inverted Data Input 34 CML-I Tx3n Transmitter Inverted Data Input 35 GND Ground 36 CML-I Tx1p Transmitter Non-Inverted Data Input 37 CML-I Tx1n Transmitter Inverted Data Input 38 GND Ground 39 GND Ground 40 CML-I Tx6n Transmitter Inverted Data Input 41 CML-I Tx6p Transmitter Inverted Data Input 42 GND Ground 43 CML-I Tx8n Transmitter Inverted Data Input 44 CML-I Tx8p Transmitter Inverted Data Input 45 GND Ground 46 Reserved 47 VS1 48 VccRx1 +3.3V Power supply 49 VS2 50 VS3 51 GND Ground 52 CML-O Rx7p Receiver Non-Inverted Data Output 53 CML-O Rx5n Receiver Inverted Data Output 55 CML-O Rx5n Receiver Inverted Data Output 56 CML-O Rx5n Receiver Inverted Data Output 57 GND Ground 58 GND Ground 59 CML-O Rx6p Receiver Inverted Data Output 61 GND Ground 62 CML-O Rx6p Receiver Inverted Data Output 63 CML-O Rx6n Receiver Inverted Data Output 64 GND Ground 65 CML-O Rx6p Receiver Inverted Data Output 66 CML-O Rx6n Receiver Inverted Data Output 67 GND Ground 68 Receiver Inverted Data Output 69 CML-O Rx6p Receiver Inverted Data Output 60 CML-O Rx8n Receiver Inverted Data Output 61 GND Ground 62 CML-O Rx8n Receiver Inverted Data Output 63 CML-O Rx8n Receiver Inverted Data Output 64 GND Ground 65 CML-O Rx8n Receiver Inverted Data Output 66 CML-O Rx8n Receiver Inverted Data Output 67 GND Ground 68 CML-O Rx8n Receiver Inverted Data Output 69 CML-O Rx8n Receiver Inverted Data Output 60 CML-O Rx8n Receiver Inverted Data Output 61 GND Ground 62 CML-O Rx8n Receiver Inverted Data Output 63 CML-O Rx8n Receiver Inverted Data Output 64 GND Ground 65 CML-O Rx8n Receiver Inverted Data Output 65 CML-O Rx8n Receiver Inverted Data Output 66 CML-O Rx8n Receiver Inverted Data Output 67 CML-O Rx8n Receiver Inverted Data Output 68 CML-O Rx8n Receiver Inverted Data Output 69 CML-O Rx8n Receiver Inverted Data Output 60 CML-O Rx8n Receiver Inverted Data Output		LVTTL-I	LPMode	Low Power Mode
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48				
49 VS2 50 VS3 51 GND Ground 52 CML-O Rx7p Receiver Non-Inverted Data Output 53 CML-O Rx7n Receiver Inverted Data Output 54 GND Ground 55 CML-O Rx5p Receiver Non-Inverted Data Output 56 CML-O Rx5n Receiver Inverted Data Output 57 GND Ground 59 CML-O Rx6n Receiver Inverted Data Output 60 CML-O Rx6p Receiver Non-Inverted Data Output 61 GND Ground 62 CML-O Rx8p Receiver Inverted Data Output 63 CML-O Rx8p Receiver Non-Inverted Data Output 64 GND Ground 65 NC 66 Reserved 67 VccTx1 +3.3V Power supply				
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66 Reserved 67 VccTx1 +3.3V Power supply				- Cround
67 VccTx1 +3.3V Power supply				
			_	+3.3V Power supply
, J. ,	68		VCC2	+3.3V Power supply



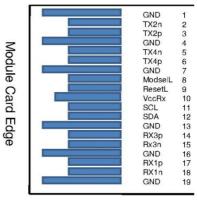
69		Reserved	
70		GND	Ground
71	CML-I	Tx7p	Transmitter Non-Inverted Data Input
72	CML-I	Tx7n	Transmitter Inverted Data Input
73		GND	Ground
74	CML-I	Tx5p	Transmitter Non-Inverted Data Input
75	CML-I	Tx5n	Transmitter Inverted Data Input
76		GND	Ground

QSFP28 Pin Function Definition

Pin	Logic	Symbol	Description
1		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Ground
8	LVTTL-I	ModSelL	Module Select
9	LVTTL-I	ResetL	Module Reset
10		Vcc Rx	+3.3V Power Supply Receiver
11	LVCMOS- I/O	SCL	2-wire serial interface clock
12	LVCMOS- I/O	SDA	2-wire serial interface data
13		GND	Ground
14	CML-O	Rx3p	Receiver Non-Inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output
16		GND	Ground
17	CML-O	Rx1p	Receiver Non-Inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output



Top Side Viewed From Top



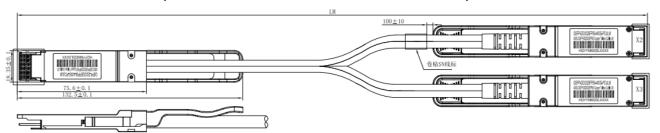
Bottom Side Viewed From Bottom



19		GND	Ground	
20		GND	Ground	
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply transmitter	
30		Vcc1	+3.3V Power supply	
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	

Mechanical Specifications

The connector is compatible with the QSFP-DD and SFF-8436 specification.



Length (m)	Cable AWG
1.5	30
2.5	28



Regulatory Compliance

Feature	Test Method	Performance	
Electrostatic Discharge			
(ESD) to the Electrical	MIL-STD-883C Method 3015.7	Class 1(>2000 Volts)	
Pins			
Electromagnetic	FCC Class B	Compliant with	
Electromagnetic	CENELEC EN55022 Class B	Compliant with Standards	
Interference(EMI)	CISPR22 ITE Class B	Stanuarus	
		Typically Show no	
DE Immunity/DEI)	IEC61000-4-3	Measurable Effect from a	
RF Immunity(RFI)	1EC61000-4-3	10V/m Field Swept from	
		80 to 1000MHz	
RoHS Compliance	RoHS Directive 2011/6/5/EU	PoUS 6/6 compliant	
Kons Compliance	and it's Amendment Directives	RoHS 6/6 compliant	