

200G QSFP56 to 2x100G DSFP Breakout Direct Attach Cable

Features

- Compatible with IEEE 802.3cd
- Supports aggregate data rates of 200Gbps(PAM4)
- Optimized construction to minimize insertion loss and cross talk
- Backward compatible with existing QSFP+ connectors and cages
- Pull-to-release slide latch design
- 26AWG through 30AWG cable
- Straight and break out assembly configurations available
- Customized cable braid termination limits EMI radiation
- Customizable EEPROM mapping for cable signature
- ROHS Compliant

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

Compliance

- 100G Ethernet(IEEE 802.3cdj)
- SFF-8665 QSFP+ 28G 4xPluggable Transceiver Solution(QSFP56)
- DSFP Pluggable Transceiver Solution

Description

QSFP56 passive copper cable assembly feature eight differential copper pairs, providing four data transmission channels at speeds up to 56Gbps(PAM4) per channel, and meets 200G Ethernet requirements. Available in a broad range of wire gauges—from 26AWG through 30AWG—this 200G copper cable assembly features low insertion loss and low cross talk.

DSFP Direct Attach Cables Latching mechanism compatible with SFP+. Various choices of wire gauge are available from 30 to 26 AWG with various choices of cable length (up to 3m).

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
	SDD22			See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode output return loss	SCC11			-2	dB	At 0.2 to 19 GHz
	SCC22					
Differential to common-mode return loss	SCD11			See 3	dB	At 0.01 to 12.89 GHz
	SCD22			See 4		At 12.89 to 19 GHz
Differential to common Mode Conversion Loss	SCD21-IL			-10	dB	At 0.01 to 12.89 GHz
				See 5		At 12.89 to 15.7 GHz
				-6.3		At 15.7 to 19 GHz

Notes:

- [1] Reflection Coefficient given by equation $SDD11(dB) < -16.5 + 2 \times \sqrt{f}$, with f in GHz
- [2] Reflection Coefficient given by equation $SDD11(dB) < -10.66 + 14 \times \log_{10}(f/5.5)$, with f in GHz
- [3] Reflection Coefficient given by equation $SCD11(dB) < -22 + (20/25.78)*f$, with f in GHz
- [4] 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

DSFP Pin Function Definition

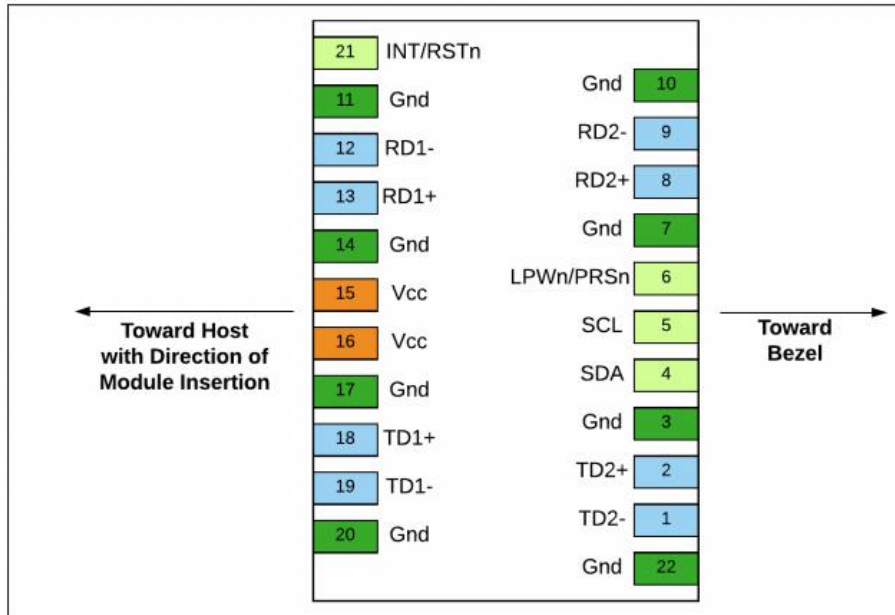
The DSFP connector is a 0.8 mm pitch 22 contacts improved connector compatible to SFP+ 20 contacts connector.

Pin Number	Logic	Symbol	Name/Description	Notes
1	CML-I	TD2-	Transmitter Inverted Data Input Lane 2	
2	CML-I	TD2+	Transmitter Non-Inverted Data Input Lane 2	
3		Gnd	Module Ground	5
4	LVTTTL-I/O	SDA	2-wire Serial Interface Data Line	3

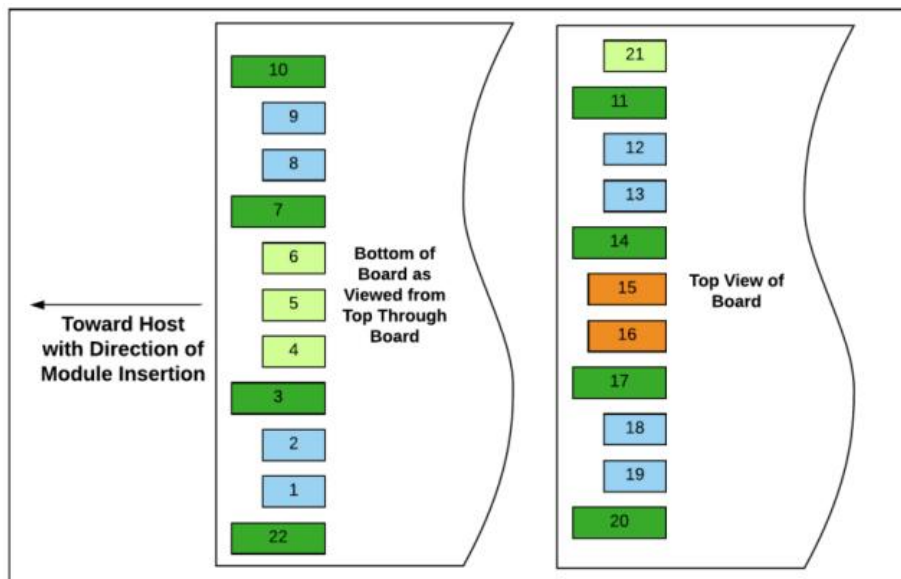
5	LVTTTL-I/O	SCL	2-wire Serial Interface Clock	3
6	Multilevel-I/O	LPWn/PRSn	Low Power Mode/ Module Present (Mod_Abs)	
7		Gnd	Module Ground	5
8	CML-O	RD2+	Receiver Non-Inverted Data Output Lane 2	
9	CML-O	RD2-	Receiver Inverted Data Output Lane 2	
10		Gnd	Module Ground	5
11		Gnd	Module Ground	5
12	CML-O	RD1-	Receiver Inverted Data Output Lane 1	4
13	CML-O	RD1+	Receiver Non-Inverted Data Output Lane 1	4
14		Gnd	Module Ground	5
15		Vcc	Module 3.3 V Supply	
16		Vcc	Module 3.3 V Supply	
17		Gnd	Module Ground	5
18	CML-I	TD1+	Transmitter Non-Inverted Data Input Lane 1	4
19	CML-I	TD1-	Transmitter Inverted Data Input Lane 1	4
20		Gnd	Module Ground	5
21	Multilevel-I/O	INT/RSTn	Dual Function Module Interrupt and Reset Pin	
22		Gnd	Module Ground	5

Notes:

- [1] Labeling as inputs (I) and outputs (O) are from the perspective of the module.
- [2] The case makes electrical contact to the cage before any of the board edge contacts are made.
- [3] See 4.4 the 2-wire specifications.
- [4] Backward compatible with SFF-8431 SFI interface.
- [5] The module ground contacts Gnd recommended to be isolated from the module case by offering flexibility in the host EMI control strategy.



DSFP Host PCB pad assignment top view

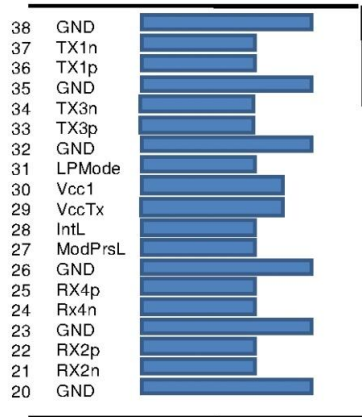


DSFP module contact assignment

QSFP28 Pin Function Definition

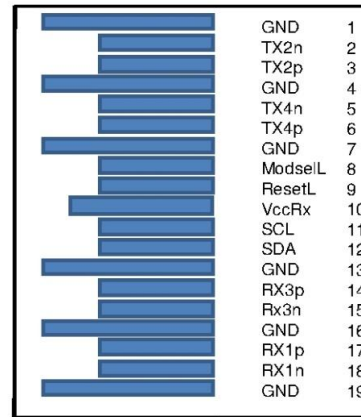
Table3-QSFP28 Pin Function Definitions			
Pin	Logic	Symbol	Description
1	CML-I	GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Ground
8	LVTTTL-I	ModSelL	Module Select
9	LVTTTL-I	ResetL	Module Reset
10		Vcc Rx	+3.3V Power Supply Receiver
11	LVC MOS-I/O	SCL	2-wire serial interface clock
12	LVC MOS-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
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	LVTTTL-O	ModPrsL	Module Present
28	LVTTTL-O	IntL	Interrupt
29		Vcc Tx	+3.3V Power supply transmitter
30		Vcc1	+3.3V Power supply
31	LVTTTL-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



Top Side
Viewed From Top

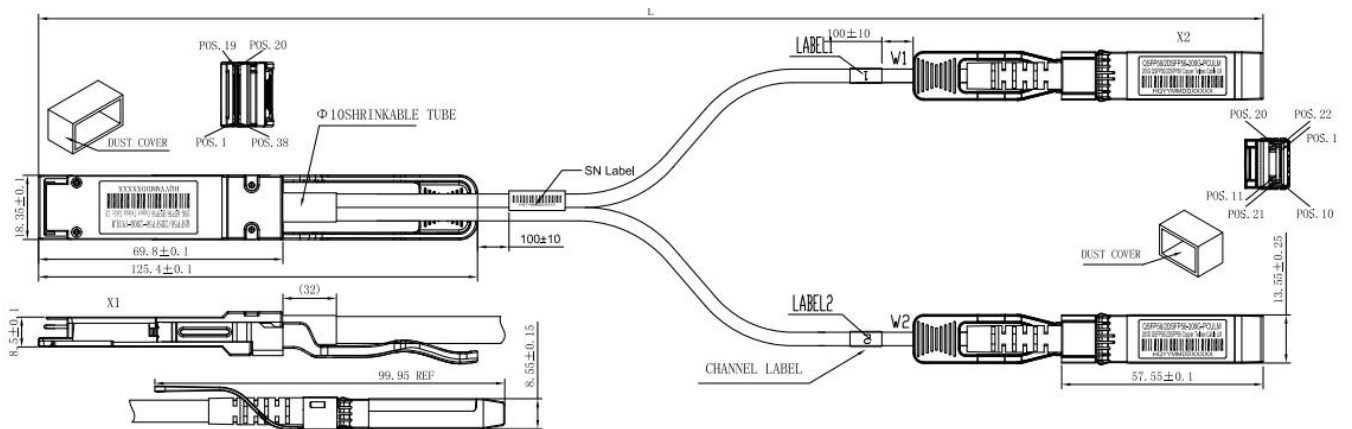
Module Card Edge



Bottom Side
Viewed From Bottom

Mechanical Specifications

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



Length (m)	Cable AWG
1	30
2	28
3	26

Regulatory Compliance

Table4-Regulatory Compliance		
Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1(>2000 Volts)
Electromagnetic Interference(EMI)	FCC Class B	Compliant with Standards
	CENELEC EN55022 Class B	
	CISPR22 ITE Class B	
RF Immunity(RFI)	IEC61000-4-3	Typically Show no Measurable Effect from a 10V/m Field Swept from 80 to 1000MHz
RoHS Compliance	RoHS Directive 2011/65/EU and it's Amendment Directives (EU) 2015/863	RoHS (EU) 2015/863 compliant
REACH Compliance	REACH Regulation (EC) No 1907/2006	REACH (EC) No 1907/2006 compliant

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