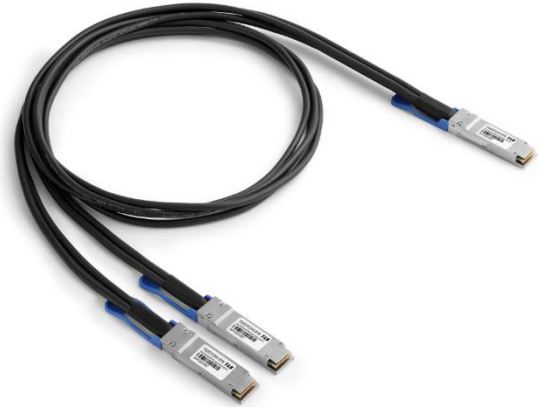


200G QSFP56 to 2×100G QSFP56 Direct Attach Cable TSQSS-PC2HG-xxM

Features and Benefits

- Compatible with IEEE 802.3bj and IEEE 802.3cd
- Supports aggregate data rates of 200Gbps (PAM4)
- 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 Compatible



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
- 200G Ethernet (IEEE 802.3cd)
- InfiniBand

General 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 and InfiniBand requirements. Available in a broad range of wire gages-from 26AWG through 30AWG-this 200G copper cable assembly features low insertion loss and low cross talk.

QSFP56 uses PAM4 signals for transmission, which doubles the rate. However, there are more stringent

requirements for cable insertion loss. For detailed requirements, please see High Speed Characteristics. Designed for applications in the data center, networking and telecommunications markets that require a high speed, reliable cable assembly, this next generation product shares the same mating interface with QSFP+ form factor, making it backward compatible with existing QSFP ports.

Recommended Operation Condition

Parameter	Symbol	Min	Max	Unit
Operating Case Temperature	Topc	0	70	degC
Storage Temperature	Tst	-40	85	degC
Relative Humidity (non-condensation)	RS	35	60	%
Supply Voltage	VCC3	3.135	3.465	V
Voltage on LVTTTL Input	Vilvttl	-0.3	VCC3 +0.2	V
Power Supply Current	ICC3	-	15	mA
Total Power Consumption	Pd	-	0.05	W

Notes:

Stress or conditions exceed the above range may cause permanent damage to the device.

This is a stress rating only and functional operation of the device at these or any other conditions above those listed in the operational sections of this specification is not applied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Pin Descriptions

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	LVTTTL-I	ModSelL	Module Select
9	LVTTTL-I	ResetL	Module Reset
10	-	Vcc Rx	+3.3V Power Supply Receiver
11	LVC MOS-	SCL	2-wire serial interface clock
	I/O		
12	LVC MOS-	SDA	2-wire serial interface data

	I/O		
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	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

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

Information and specifications are subject to change without notice.
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	SDD22	-	-	See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode	SCC11	-	-	-2	dB	At 0.2 to 19 GHz
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 $SCD11(dB) < -22 + (20/25.78) \times f$, with f in GHz
4. Reflection Coefficient given by equation $SCD11(dB) < -15 + (6/25.78) \times f$, with f in GHz
5. Reflection Coefficient given by equation $SCD21(dB) < -27 + (29/22) \times f$, with f in GHz

Pin Descriptions

38	GND
37	TX1n
36	TX1p
35	GND
34	TX3n
33	TX3p
32	GND
31	LPMODE
30	Vcc1
29	VccTx
28	IntL
27	ModPrsL
26	GND
25	RX4p
24	RX4n
23	GND
22	RX2p
21	RX2n
20	GND

Top Side
Viewed From Top

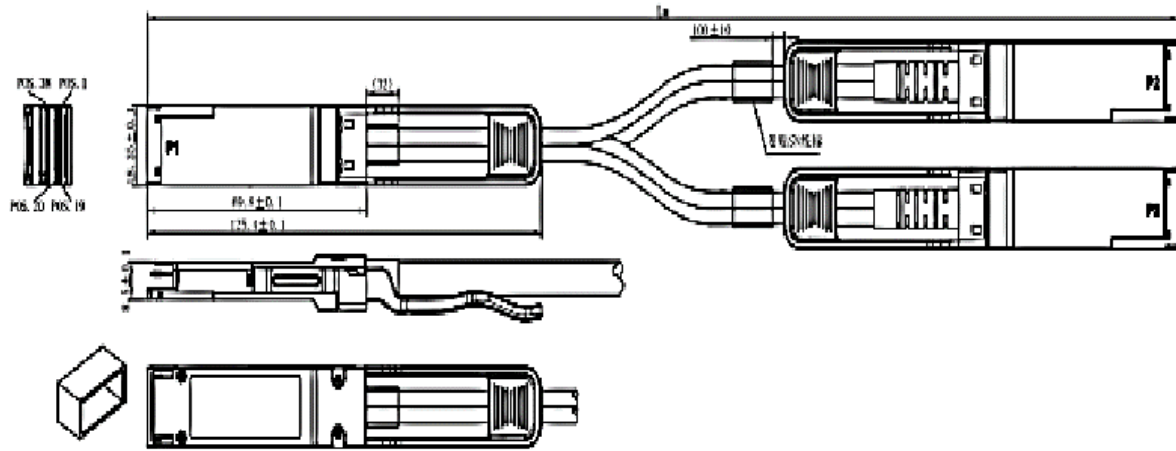
Module Card Edge

	GND	1
	TX2n	2
	TX2p	3
	GND	4
	TX4n	5
	TX4p	6
	GND	7
	Modsell	8
	ResetL	9
	VccRx	10
	SCL	11
	SDA	12
	GND	13
	RX3p	14
	RX3n	15
	GND	16
	RX1p	17
	RX1n	18
	GND	19

Bottom Side
Viewed From Bottom

Mechanical Specifications

The connector is compatible with the SFF-8436 specification.



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

Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the	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
RoHS Compliance	RoHS Directive 2011/65/EU and it's	RoHS 6/6 compliant