TSQ2Q-PCM-xxC
400G QSFP112 TO 2x200G QSFP112 Direct Attach Cable

Description

The 400G QSFP112 to 2x 200G QSFP112 Direct Attach Cable enables cost-effective connectivity for 400GbE to 2x 200GbE Ethernet, addressing the increasing bandwidth demands in data centers. This cable complies with industry standards including IEEE 802.3, SFF-8665, SFF-8636, and hot-pluggable QSFP112 MSA, ensuring compatibility and reliability.

Features

- Products Compliance with CMIS5.0,OSFP_MSA
- Ethernet-Compliance with IEEE802.3ck
- Support 112G (PAM4) electrical data rates/channel
- Support I2C two - line string interface, easy to control
- Support for hot plugging
- Low crosstalk/Low power
- ROHS Compliance

Applications

- 400G Ethernet
- Infiniband SDR, DDR, QDR,FDR,EDR，HDR，NDR
- SWITCH/Router
- Data storage and communication industry
- Data center, cloud server

Recommended Operation Condition

Parameters	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 LVTTL 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.
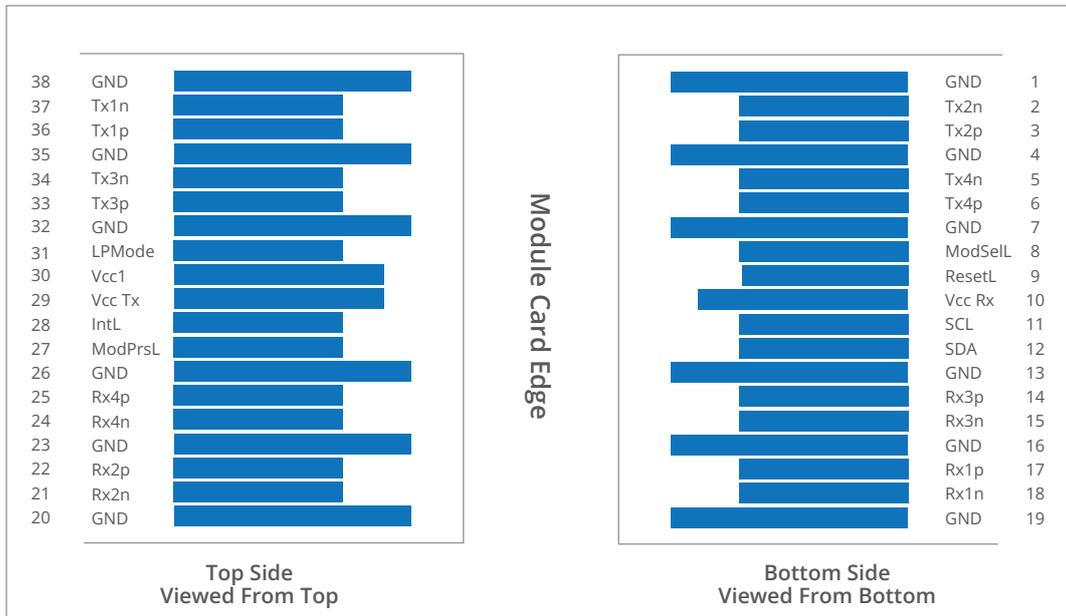
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High Speed Characteristics

Item		Requirement	Test Condition
Differential Impedance	Cable Impedance	$100\pm5\Omega$	Rise time of 25ps (20 % - 80 %)
	Paddle Card Impedance	$100\pm10\Omega$	
	Cable Termination Impedance	$100\pm10\Omega$	
Differential (Input/Output)Return loss S_{DD11}/S_{DD22}		$Return\_loss(f)\geq \begin{cases} 16.5-2\sqrt{f} & 0.05\leq f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1\leq f\leq40 \end{cases}$ Where f is the frequency in GHz Return loss(f) is the return loss at frequency f	$10MHz\leq f\leq40GHz$
Differential to common-mode (Input/Output)Return loss S_{CD11}/S_{CD22}		$Return\_loss(f)\geq \begin{cases} 22-10(f/26.56) & 0.05\leq f < 26.56 \\ 15-3(f/26.56) & 26.56\leq f\leq40 \end{cases}$ Where f is the frequency in GHz Return_loss(f) is the Differential to common-mode return loss at frequency f	$50MHz\leq f\leq40GHz$
Common-mode to Common-mode (Input/Output)Return loss S_{CC11}/S_{CC22}		$Return\_loss(f)\geq1.8dB \quad 0.05\leq f\leq40$ Where f is the frequency in GHz Return_loss(f) is the Differential to common-mode return loss at frequency f	$50MHz\leq f\leq40GHz$
Differential Insertion Loss (S_{DD21} Max.)		(Differential InsertionLoss Max. For TPa to TPb Excluding Test fixture) $Insertion\_loss(f)\geq-19.75dB \quad 0.05\leq f\leq26.56$ Where f is the frequency in GHz Insertion Loss (f) Differential Insertion Loss at frequency f	$50MHz\leq f\leq40GHz$
Insertion Loss Deviation		$-0.176*f - 0.7 \leq ILD \leq 0.176* f + 0.7$	$50MHz\leq f\leq26.56GHz$
Differential to common-mode Conversion Loss-Differential Insertion Loss($S_{CD21}-S_{DD21}$)		$Conversion\_loss(f) – IL(f)\geq \begin{cases} 10 & 0.05\leq f < 12.89 \\ 14-0.3108f & 12.89\leq f < 40 \end{cases}$ 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	$50MHz\leq f \leq40GHz$
MDNEXT(multiple disturber near-end crosstalk)		$\geq35dB$ @26.5GHz	$10MHz\leq f \leq26.5GHz$
Intra Skew		10ps/m,	$10MHz\leq f \leq26.5GHz$

Pin Descriptions

Pin	Logic	Symbol	Name/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	Transmitter Inverted DATA in. AC Coupled
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

Pin Descriptions

38	GND		
37	Tx1n		
36	Tx1p		
35	GND		
34	Tx3n		
33	Tx3p		
32	GND		
31	LPMode		
30	Vcc1		
29	Vcc Tx		
28	IntL		
27	ModPrsL		
26	GND		
25	Rx4p		
24	Rx4n		
23	GND		
22	Rx2p		
21	Rx2n		
20	GND		

Module Card Edge

GND	1
Tx2n	2
Tx2p	3
GND	4
Tx4n	5
Tx4p	6
GND	7
ModSelL	8
ResetL	9
Vcc Rx	10
SCL	11
SDA	12
GND	13
Rx3p	14
Rx3n	15
GND	16
Rx1p	17
Rx1n	18
GND	19

Top Side
Viewed From Top

Bottom Side
Viewed From Bottom

Mechanical Specifications@ Flat Top
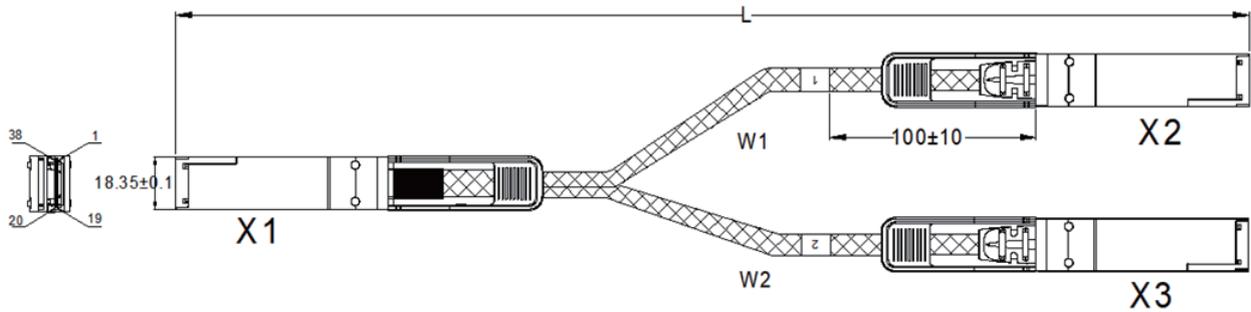
Ordering Information

400G OSFP112 Copper Cable Assemblies, Passive.

P/N	Length	Data Rate	AWG	Length Tolerance
TSQ2Q-PCM-01C	1 m	400G	28/30	+3.5/-3.5 cm
TSQ2Q-PCM-02C	2 m	400G	26/28	+3.5/-3.5 cm