

400G QSFP-DD to 4x100G QSFP56 Active Direct Attach Copper Breakout Cable

QDD-400G-4QACxxx



Application

- Data Centre
- Router, Server, Storage, Switch

Standards

- QSFP-DD MSA Rev. 5.0
- CMIS Rev 4.0
- IEEE 802.3cd

Features

- Compliant with QSFP-DD MSA Specification Rev 5.0
- Support 50G (PAM4) electrical data rates / channel
- I2C for EEPROM communication
- Enables 400Gb/s to 4X100Gb/s transmission
- Excellent SI performance
- Selectable: 26AWG, 28AWG, 30AWG
- Single +3.3V power supply
- Operation case temperature: 0 to 70°C
- RoHS compliant
- Case operating temperature:
Commercial: 0 °C ~ 70 °C
- Compliant with SFF-8472,
SFF-8679 and SFF-8636

Description

The cable assembly is designed to meet the high density requirements of standard, and the hot-pluggable transceiver integrates 8 transmitting and 8 receiving channels. QSFF-DD pluggable solutions enable 400G transmission. It is fully compliant with QSFP-DD MSA, SFF-8636 and SFF-8679 standards.QSFP-DD to 4xQSFP56 cable assemblies are high performance,high bandwidth and cost effective interconnect solutions which support 400G standards with different data rate applications.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Unit	Min	Typical	Max	Notes
Storage Temperature	℃	-45		80	
Power Supply not Damaged Voltage	V	-0.5		3.6	
Operating Relative Humidity	%			85	

II. Recommended Operating Conditions

Parameter	Unit	Min	Typical	Max	Notes
Operating Case Temperature	℃	0		70	
Power Supply Voltage	V	3.135	3.3	3.465	
Bit Rate	Gbps		400		

III. Characteristics

Item	Parameter	Reference
SDD21	8dB<X<17.16dB @13.28 GHz	IEEE 802.3cd, Clause 136.11.2
SDD11/22	-16.5+2*sqrt(f)dB Max @0.05GHz-4.1GHz -10.66+14*1og(f/5.5) dB Max@4.1GHz-19GHz	



Item	Parameter	Reference
SCD11/22	-22+(20/25.78) *f dB Max@0.01GHz~12.89GHz -15+(6/25.78) *f dB Max@12.89GHz~19GHz	IEEE802.3cd, Clause 136.11.4
SCD21-SDD21	-10dB Max @0.01GHz~12.89GHz -27+(29/22) *f dB Max @12.89GHz~15.7GHz -6.3dB Max. @15.7GHz~19GHz	IEEE802.3cd, Clause 136.11.5
SCC11/22	-2dB Max. @0.2GHz~19GHz	IEEE802.3cd, Clause 136.11.6
COM	3 dB Min	

IV. PIN Function Definitions of QSFP-DD

PinNo.	Symbol	Level/Logic	Description
1	GND		Module Ground
2	Tx2n	CML-I	Transmitter Inverted Data Input
3	Tx2p	CML-I	Transmitter Non-Inverted Data Input
4	GND		Module Ground
5	Tx4n	CML-I	Transmitter Inverted Data Input
6	Tx4p	CML-I	Transmitter Non-Inverted Data Input
7	GND		Module Ground
8	ModSelL	LVTTTL-I	Module Select
9	ResetL	LVTTTL-I	Module Reset
10	VccRx		+3.3V Power Supply for Receiver
11	SCL	LVTTTL-I	2-Wire Serial Interface Clock



12	SDA	LVTTTL-I/O	2-Wire Serial Interface Data Line
13	GND		Module Ground
14	Rx3p	CML-O	Receiver Non-Inverted Data Output
15	Rx3n	CML-O	Receiver Inverted Data Output
16	GND		Module Ground
17	Rx1p	CML-O	Receiver Non-Inverted Data Output
18	Rx1n	CML-O	Receiver Inverted Data Output
19	GND		Module Ground
20	GND		Module Ground
21	Rx2n	CML-O	Receiver Inverted Data Output
22	Rx2p	CML-O	Receiver Non-Inverted Data Output
23	GND		Module Ground
24	Rx4n	CML-O	Receiver Inverted Data Output
25	Rx4p	CML-O	Receiver Non-Inverted Data Output
26	GND		Module Ground
27	ModPrsL	LVTTTL-O	Module Present
28	IntL/RxLOSL	LVTTTL-O	Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636).
29	VccTx		+3.3V Power Supply for Transmitter
30	Vcc1		+3.3V Power Supply
31	LPMode/TxDis	LVTTTL-I	Low Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636).
32	GND		Module Ground



33	Tx3p	CML-I	Transmitter Non-Inverted Data Input
34	Tx3n	CML-I	Transmitter Inverted Data Input
35	GND		Module Ground
36	Tx1p	CML-I	Transmitter Non-Inverted Data Input
37	Tx1n	CML-I	Transmitter Inverted Data Input
38	GND		Module Ground
39	GND		Module Ground
40	Tx6n	CML-I	Transmitter Inverted Data Input
41	Tx6p	CML-I	Transmitter Non-Inverted Data Input
42	GND		Module Ground
43	Tx8n	CML-I	Transmitter Inverted Data Input
44	Tx8p	CML-I	Transmitter Non-Inverted Data Input
45	GND		Module Ground
46	Reserved		For future use
47	VSI		Module Vendor Specific 1
48	VccRx1		3.3V Power Supply
49	VS2		Module Vendor Specific 2
50	VS3		Module Vendor Specific 3
51	GND		Module Ground
52	Rx7p	CML-O	Receiver Non-Inverted Data Output
53	Rx7n	CML-O	Receiver Inverted Data Output



54	GND		Module Ground
55	Rx5p	CML-O	Receiver Non-Inverted Data Output
56	Rx5n	CML-O	Receiver Inverted Data Output
57	GND		Module Ground
58	GND		Module Ground
59	Rx6n	CML-O	Receiver Inverted Data Output
60	Rx6p	CML-O	Receiver Non-Inverted Data Output
61	GND		Module Ground
62	Rx8n	CML-O	Receiver Inverted Data Output
63	Rx8p	CML-O	Receiver Non-Inverted Data Output
64	GND		Module Ground
65	NC		No Connect
66	Reserved		For future use
67	VccTx1		3.3V Power Supply
68	Vcc2		3.3V Power Supply
69	Reserved		For future use
70	GND		Module Ground
71	Tx7p	CML-I	Transmitter Non-Inverted Data Input
72	Tx7n	CML-I	Transmitter Inverted Data Input
73	GND		Module Ground
74	Tx5p	CML-I	Transmitter Non-Inverted Data Input
75	Tx5n	CML-I	Transmitter Inverted Data Input



76	GND		Module Ground
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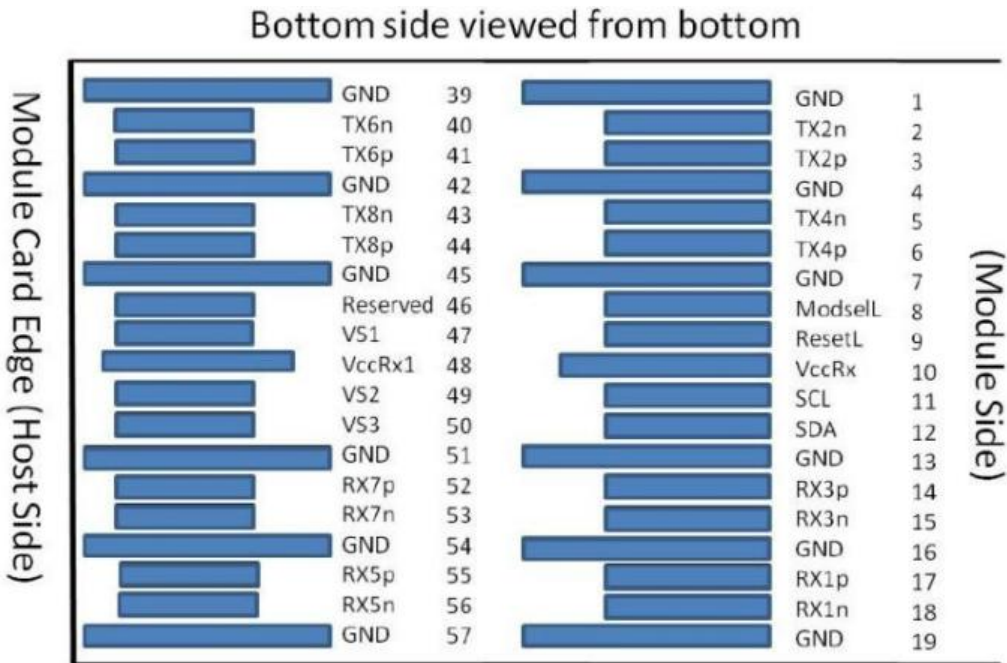
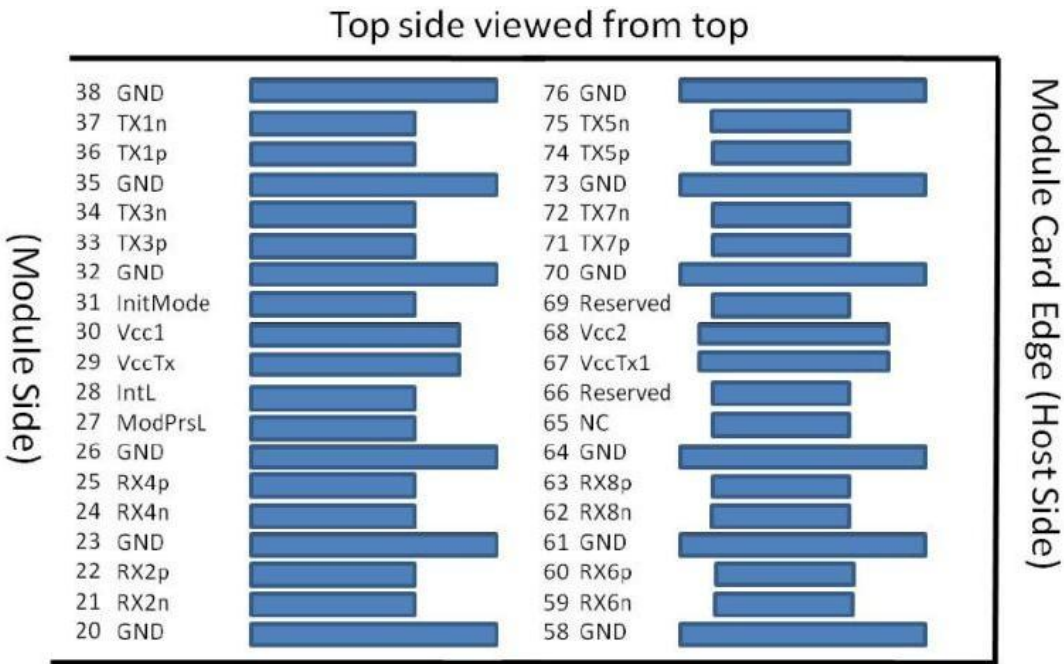
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37	Tx1n	CML-I	Transmitter Inverted Data Input
38	GND		Module Ground

VI. Electrical Pad Layout of QSFP-DD



IX. EEPROM Information

2-Wire Serial Address 1010000x	
Lower Page 00h	
0 Identifier	
1- 2	Status
3- 21	Interrupt Flags
22- 33	Free Side Device Monitors
34- 81	Channel Monitors
82- 85	Reserved
86- 98	Control
99	Reserved
100-104	Hardware Interrupt Pin Masks
105-106	Vendor Specific
107	Reserved
108-110	Free Side Device Properties
111-112	Assigned for use by PCI Express
113	Free Side Device Properties
114-118	Reserved
119-122	Password Change Entry Area (Optional)
123-126	Password Entry Area (Optional)
127	Page Select Byte

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X. Ordering Information

Part Number	Data Rate	Length	Wire Gauge	Connector Type	Temp. Range	Cable Jacket
QDD-400G-4QAC03	400G	3m	30 AWG	Active Copper	0-70°C	PVC
QDD-400G-4QAC04	400G	4m	28 AWG	Active Copper	0-70°C	PVC
QDD-400G-4QAC05	400G	5m	28 AWG	Active Copper	0-70°C	PVC
QDD-400G-4QAC06	400G	6m	26 AWG	Active Copper	0-70°C	PVC
QDD-400G-4QAC07	400G	7m	26 AWG	Active Copper	0-70°C	PVC