QDD-800G-DACxM

800G QSFP-DD to QSFP-DD DAC Passive Copper Cable (PCC), 0.5~2 meters

Features

- Supports aggregate data rates of 800Gbps(PAM4)
- Compatible with IEEE 802.3ck
- Optimized construction to minimize insertion loss and crosstalk
- Pull-to-release slide latch design
- 3.3V Power supply
- 26AWG to 30AWG cable available
- Operating temperature range: 0 to 70°C
- RoHS Compliant and Lead-Free

Applications

- 800G Switches, servers and routers
- Data Center networks
- Storage area networks
- High performance computing
- Telecommunication and wireless infrastructure
- Test and measurement equipment

Description

OPTCORE offers 800G QSFP-DD DAC cable with high quality and satisfaction. The 800G cable comprises sixteen pairs of differential copper cables and QSFP-DD connectors on both ends. That provides eight data transmission channels (8x100G PAM4) and achieves an 800G aggregation data rate. Additionally, it complies with QSFP-DD MSA and IEEE 802.3ck standards.

With these features, it is suitable for 800G Ethernet and InfiniBand Next Data Rate (NDR). This cable is perfect for establishing 800G short links in data centers, connecting servers and GPU compute systems to the top-of-rack (TOR) switches, and linking spine-to-super spine switches within racks. It aims to fulfill the extensive bandwidth needs for artificial intelligence (AI), high-performance computing (HPC), and machine learning (ML) connectivity.

The QDD-800G-DACxM fully complies with QSFP-DD Multi-Source Agreement (MSA) standards. It is developed specifically as a cost-effective and lower-power alternative to 800G QSFP-DD transceiver and 800G QSFP-DD active optical cable (AOC).

Ordering information

Part Number	Data Rate	Cable Length	Wire Gauge		
QDD-800G-DAC05M	800Gbps	0.5 m	/	/	AWG30
QDD-800G-DAC1M	800Gbps	1 m	/	/	AWG30
QDD-800G-DAC1B	800Gbps	1.5 m	/	/	AWG30
QDD-800G-DAC2M	800Gbps	2 m	/	/	AWG26

Notes:

1. Customized 800G QSFP-DD DAC cables are available in various lengths.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5	3.3	4.0	V	
Storage Temperature	T_S	-40	-	85	°C	
Operating Humidity	RH	5	-	95	%	

General Product Characteristics

QSFP-DD DAC Specifications	
Number of Lanes	Tx8 & Rx8
Channel Data Rate	106. 25Gbps
Operating Temperature	0 to + 70°C
Storage Temperature	-40 to + 85°C
Supply Voltage	3.3 V nominal
Electrical Interface	76pins edge connector
Management Interface	Serial, I^2C

High Speed Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Differential Impedance	TDR	90	100	110	Ω	
Insertion loss	SDD21	-19.75			dB	At 26.56 GHz
Differential Return Loss	SDD11 SDD22			See 1	dB	At 0.05 to 26.56GHz
				See 2	dB	At 26.56 to 40 GHz
Common-mode to common-mode output return loss	SCC11 SCC22			-1.8	dB	At 0.2 to 40GHz
Differential to common Mode Conversion Loss	SCD21-SDD21			-10	dB	At 0.05 to 12.89 GHz
				See3		At 12.89 to 40 GHz

Notes:
1. Reflection Coefficient given by equation SDD11(dB) <22-10(f/26.56), with f in GHz
2. Reflection Coefficient given by equation SDD11(dB) <15-3(f/26.5), with f in GHz
3. Reflection Coefficient given by equation SCD21-CDD21(dB) < 14-0.3108*f, with f in GHz

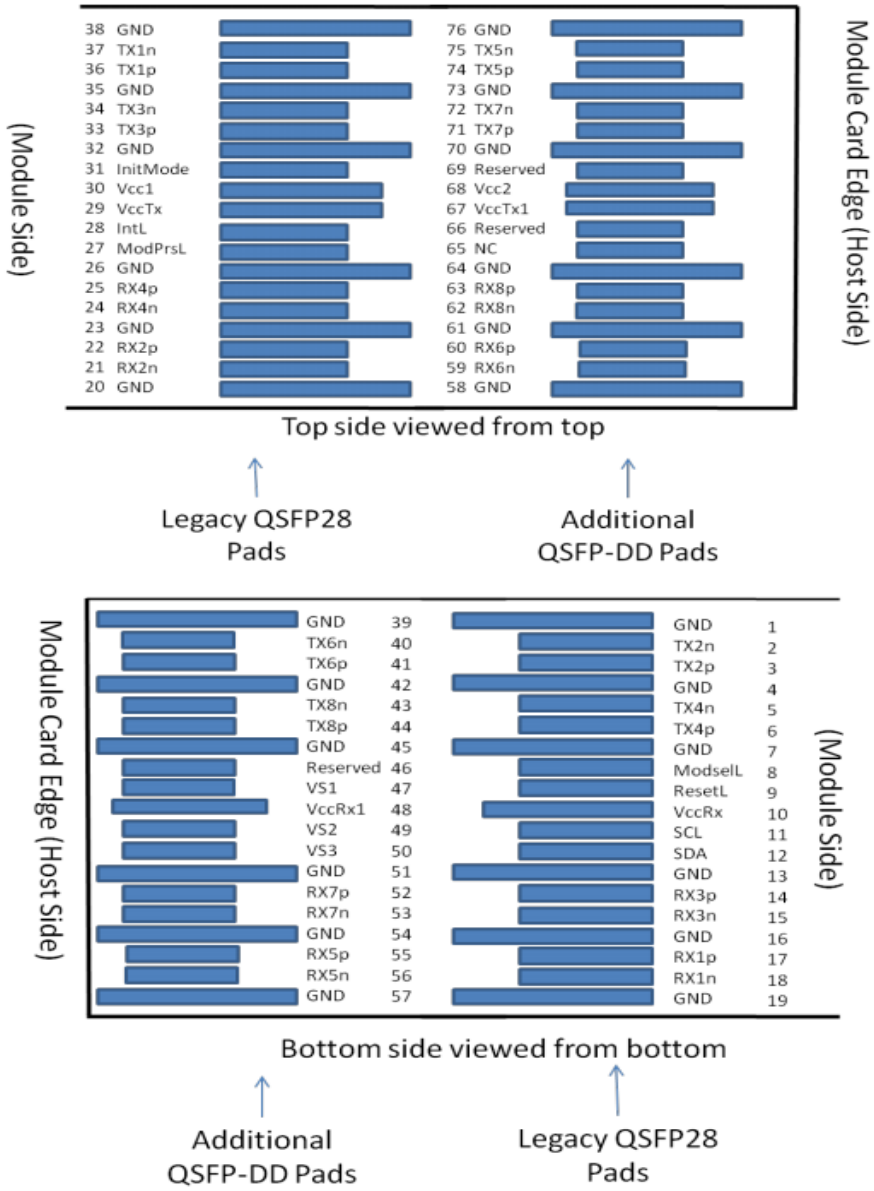
Cable Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Cable Diameter	DIA		12.5		mm	AWG 26
			10		mm	AWG 30
Bend Radius		5x Cable Diameter			mm	
Cable Jacket Type		PVC (OFNR)				
Cable Impedance	Z	90	100	110	Ω	

Pin Definitions

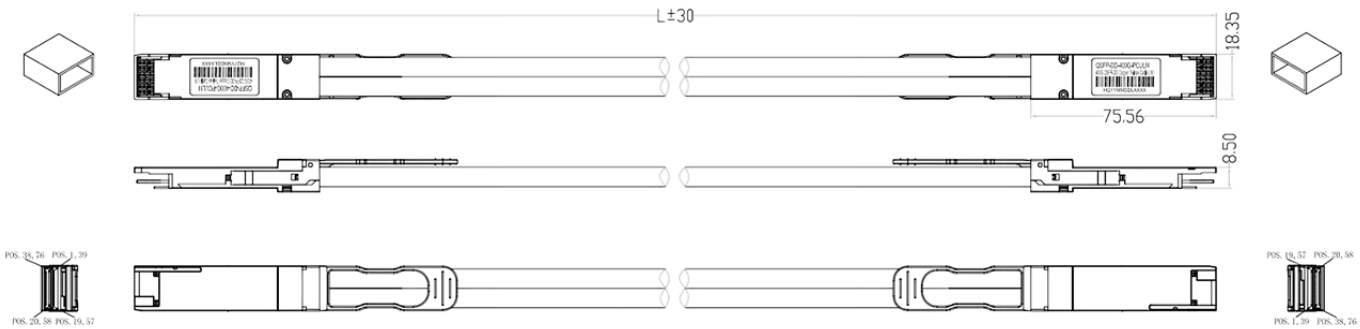
Pin	Logic	Symbol	Description
1		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Ground
8	LVTTL-I	ModSelL	Module Select
9	LVTTL-I	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
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
39		GND	Ground
40	CML-I	Tx6n	Transmitter Inverted Data Input
41	CML-I	Tx6p	Transmitter Non-Inverted Data Input

42		GND	Ground
43	CML-I	Tx8n	Transmitter Inverted Data Input
44	CML-I	Tx8p	Transmitter Non-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	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
58		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	Rx8n	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
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



Mechanical Dimensions

The connector is compatible with the QSFP-DD specification.



Warnings

Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard

manufacturing processes by preventing contamination from air borne particles.It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

Appendix A. Document Revision

Version No	Date	Description
DS/V1.0/EN	2024-10-10	Preliminary datasheet