PRODUCT SPECIFICATION

Part No.:	QDD-400G-AOCxM	
Description:	400G QSFP-DD AOC , MMF 850nm 1-100m	
Release Date	**Rev.**	**Revision Change Description**
2021/07/22	A0	New Release
2023/05/11	A1	Update the Mechanical drawing
2025/08/11	A2	1. Parameter Update 2. Part No. From QP to QD

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Features

- ✧ Supports 425Gb/s PAM4
- ✧ Digital Diagnostics Monitoring Interface
- ✧ Built-in 400G PAM4 CDR/DSP
- ✧ Available in lengths of 1 to 100 meters
- ✧ Hot-pluggable QSFP-DD form factor
- ✧ 8 channels 850nm VCSEL array
- ✧ 8 channels PIN photodetector array
- ✧ Commercial operating case temperature range: 0~ 70ºC
- ✧ RoHS-6 compliant
- ✧ Power dissipation< 10 W
- ✧ TDEC< 4.5dB

Application

- ✧ 400G Ethernet
- ✧ Data center
- ✧ InfiniBand HDR
- ✧ Fibre Channel

Standard

- ✧ IEEE 802.3cm 400GBASE-SR8
- ✧ QSFP-DD MSA
- ✧ SFF-8636

Specification:

Absolute Maximum Ratings				
Parameter	**Symbol**	**Min**	**Max**	**Unit**
Storage Ambient Temperature	T_{STG}	-40	85	℃
Operating Humidity	H_O	5	85	%
Power Supply Voltage	Vcc	-0.3	3.6	V
Signal Input Voltage		Vcc-0.3	Vcc +0.3	V

Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Operating Case Temperature	Tc	0		70	℃
Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Data Rate, each Lane（PAM4）			53.125		Gbps
Fiber Length 50/125μm core MMF		-	-	100	m

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Optical transmitter Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Launched Power (avg.) Per Lane	Pavg	-6		4	dBm	
Wavelength Range	λ0	840	850	860	nm	
Spectral Width(-20dB)	Δλ			0.6	nm	
Extinction Ratio	ER	3			dB	
Transmitter OFF Output Power	POff			-30	dBm	
Optical Modulation Amplitude(OMA outer)	OMA	-4.5		3	dBm	
Transmitter and dispersion eye closure(TDEC)	TDEC			4.5	dB	

Optical receiver Characteristics						
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Wavelength Range		840	850	860	nm	
Average Receiver Power Per Lane		-7.9		4	dBm	
Receiver Sensitivity Per Lane	Sen			-6.4	dBm	1
Optical Power Input Overload	P_{in-max}	4			dBm	
Receiver Reflectance	Rr			-12	dB	

Notes:

1. Suggested < 700mVpp input differential signal for better BER performance

Pin Definition

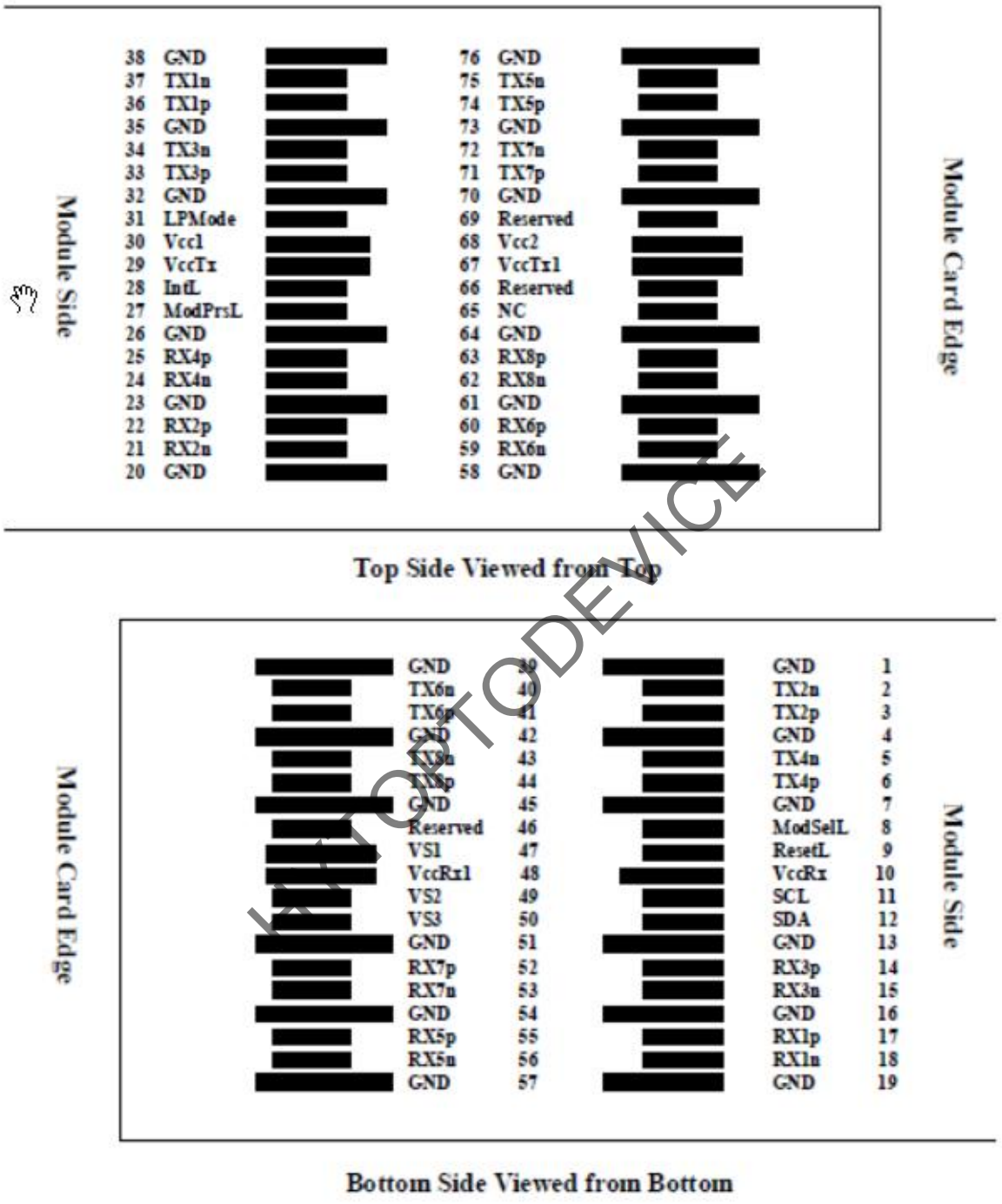


Figure1 QSFP-DD MSA-compliant 76-pin connector

Pin	Symbol	Name/Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	

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4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V Power Supply Receiver	2
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	Ground	1	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	2
30	Vcc1	+3.3V Power supply	2
31	InitMode	Initialization mode; In legacy QSFP applica- tions, the InitMode pad is called LPMODE	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1
39	GND	Ground	1
40	Tx6n	Transmitter Inverted Data Input	
41	Tx6p	Transmitter Non-Inverted Data Input	
42	GND	Ground	1
43	Tx8n	Transmitter Inverted Data Input	
44	Tx8p	Transmitter Non-Inverted Data Input	

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45	GND	Ground	1
46	Reserved	For Future Use	
47	VS1	Module Vendor Specific 1	
48	Vcc Rx1	+3.3V Power Supply Receiver	2
49	VS2	Module Vendor Specific 2	
50	VS3	Module Vendor Specific 3	
51	GND	Ground	1
52	Rx7p	Receiver Non-Inverted Data Output	
53	Rx7n	Receiver Inverted Data Output	
54	Ground	1	1
55	Rx5p	Receiver Non-Inverted Data Output	
56	Rx5n	Receiver Inverted Data Output	
57	GND	Ground	1
58	GND	Ground	1
59	Rx6n	Receiver Inverted Data Output	
60	Rx6p	Receiver Non-Inverted Data Output	
61	GND	Ground	1
62	Rx8n	Receiver Inverted Data Output	
63	Rx8p	Receiver Non-Inverted Data Output t	
64	GND	Ground	1
65	NC	For Future Use	
66	Reserved	Interrupt	
67	Vcc Tx1	+3.3V Power supply transmitter	2
68	Vcc2	+3.3V Power supply	2
69	Reserved	For Future Use	
70	GND	Ground	1
71	Tx7p	Transmitter Non-Inverted Data Input	
72	Tx7n	Transmitter Inverted Data Input	
73	GND	Ground	1
74	Tx5p	Transmitter Non-Inverted Data Input	
75	Tx5n	Transmitter Inverted Data Input	
76	GND	Ground	1

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Table 1: QSFP-DD Module PIN Definition

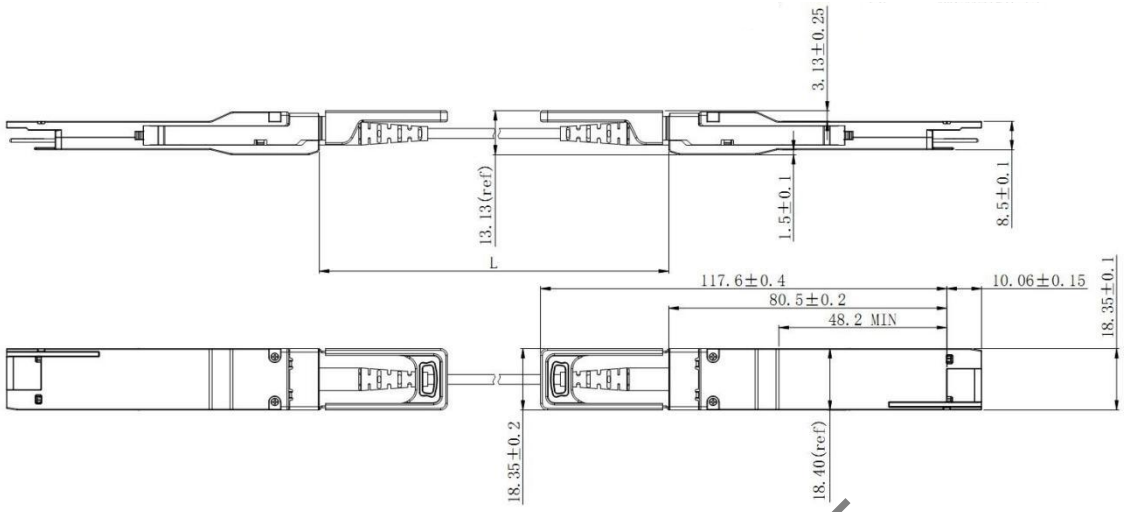
Notes：

1. QSFP-DD uses common ground (GND) for all signals and supply (power). All are common within the QSFP-DD module and all module voltages are referred to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

2. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 shall be applied concurrently. VccRx, VccRx1, Vcc1, Vcc2, VccTx andVccTx1 may be internally connected within the module in any combination. Each con- nector Vcc pin is rated for a maximum current of 1000 mA.

Package Outline

Dimensions are in millimeters. All dimensions are ±0.2mm unless otherwise specified. (Unit: mm)



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000Vfor other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

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Ordering Information

Part Number	Product Description
QDD-400G-AOCxM	400G QSFP-DD Active Optical Cable 1-100m

Notes:

Where "x" denotes cable length in meters. Examples are as follows:

x = 03 for 3m, x = 10 for 10m, x = 50 for 50m, x = 1A for 100m.