QSFPDD4-400GB-AOC5MLP-J-C

Juniper Networks® Compatible TAA 400GBase-AOC QSFP-DD to QSFP-DD Low Power Active Optical Cable (850nm, MMF, 5m)

Features:

- QSFP-DD MSA HW Rev. 5.0 compliant
- CMIS 4.0 compliant
- 8x26.56GBaud optical links with integrated CDR
- OM3 multi-mode fiber
- CML compatible electrical I/O
- PAM4 & NRZ compatible
- OFNP jacket
- Operating Temperature 0 to 70 Celsius
- Hot pluggable
- RoHS compliant and lead-free

Applications:

- 400GBase Ethernet

Product Description

This is a Juniper Networks® Compatible 400GBase-AOC QSFP28 to QSFP28 active optical cable that operates over active fiber with a maximum reach of 5m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. We stand behind the quality of our products and proudly offer a limited lifetime warranty. This cable is TAA (Trade Agreements Act) compliant and is built to comply with MSA (Multi-Source Agreement) standards.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

Rev. 120924

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Ambient Temperature	Tstg	-40		85	˚C	
Operating Case Temperature	Tc	0	25	70	ºC	1
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Module Supply Voltage	Vcc	-0.5		3.6	V	
Single Module Supply Current	I_{IN}		2100		mA	
Relative Humidity – Storage	RH_{stg}	0		95	%	2
Relative Humidity – Operating	RH_{op}	0		85	%	2
Signaling Speed Per Channel	S		26.56		GBaud	

Notes:
1. Commercial temperature range.
2. RH is a non-condensing condition.
3. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the conditions of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.

Cable Specifications

Parameter	Value	Unit
Cable Diameter	3.0 ± 0.15	mm
Minimum Bend Radius	30	mm

Electrical Characteristics

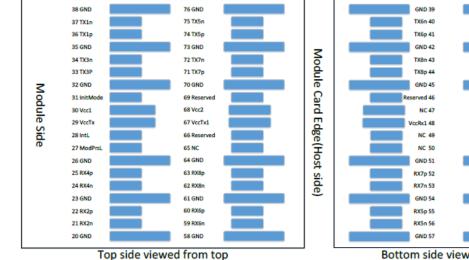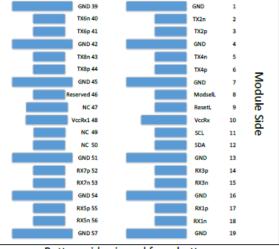| Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Tx_Data Differential Input Voltage	VIN	400		900	mV	
Tx_Data Differential Input Impedance	ZIN		100		Ω	
Receiver						
Rx_Data Differential Output Voltage	VOUT			900	mV	
Rx_Data Differential Output Impedance	ZOUT	90	100	110	Ω	
Link BER	BER			$2.4E^{-4}$		1

Notes:
1. Better than $2.4E^{-4}$ @26.56GBaud PRBS31.

Pin Descriptions

Pin	Symbol	Name/Description
1	GND	Module Ground.
2	Tx2-	Transmitter Inverted Data Input.
3	Tx2+	Transmitter Non-Inverted Data Input.
4	GND	Module Ground.
5	Tx4-	Transmitter Inverted Data Input.
6	Tx4+	Transmitter Non-Inverted Data Input.
7	GND	Module Ground.
8	ModSelL	Module Select.
9	ResetL	Module Reset.
10	VccRx	+3.3V Receiver DC Power Supply.
11	SCL	I²C Serial Clock.
12	SDA	I²C Serial Data.
13	GND	Module Ground.
14	Rx3+	Receiver Non-Inverted Differential Output.
15	Rx3-	Receiver Inverted Differential Output.
16	GND	Module Ground.
17	Rx1+	Receiver Non-Inverted Differential Output.
18	Rx1-	Receiver Inverted Differential Output.
19	GND	Module Ground.
20	GND	Module Ground.
21	Rx2-	Receiver Inverted Differential Output.
22	Rx2+	Receiver Non-Inverted Differential Output.
23	GND	Module Ground.
24	Rx4-	Receiver Inverted Differential Output.
25	Rx4+	Receiver Non-Inverted Differential Output.
26	GND	Module Ground.
27	ModPrsL	Module Present.
28	IntL	Interrupt.
29	VccTx	+3.3V Transmitter DC Power Supply.
30	Vcc1	+3.3V DC Power Supply.
31	Init Mode	Initialization Mode.
32	GND	Module Ground.
33	Tx3+	Transmitter Non-Inverted Data Input.
34	Tx3-	Transmitter Inverted Data Input.

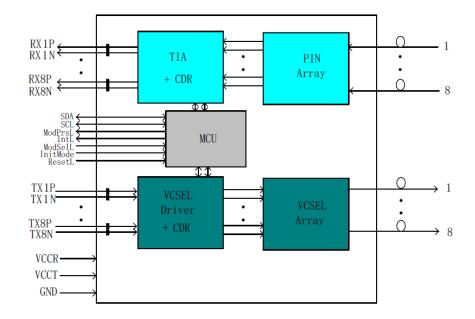| 35	GND	Module Ground.
36	Tx1+	Transmitter Non-Inverted Data Input.
37	Tx1-	Transmitter Inverted Data Input.
38	GND	Module Ground.
39	GND	Module Ground.
40	Tx6-	Transmitter Inverted Data Input.
41	Tx6+	Transmitter Non-Inverted Data Input.
42	GND	Module Ground.
43	Tx8-	Transmitter Inverted Data Input.
44	Tx8+	Transmitter Non-Inverted Data Input.
45	GND	Module Ground.
46	Reserved.	Not Connected.
47	NC	Not Connected.
48	VccRx1	+3.3V DC Power Supply.
49	NC	Not Connected.
50	NC	Not Connected.
51	GND	Module Ground.
52	Rx7+	Receiver Non-Inverted Differential Output.
53	Rx7-	Receiver Inverted Differential Output.
54	GND	Module Ground.
55	Rx5+	Receiver Non-Inverted Differential Output.
56	Rx5-	Receiver Inverted Differential Output.
57	GND	Module Ground.
58	GND	Module Ground.
59	Rx6-	Receiver Inverted Differential Output.
60	Rx6+	Receiver Non-Inverted Differential Output.
61	GND	Module Ground.
62	Rx8-	Receiver Inverted Differential Output.
63	Rx8+	Receiver Non-Inverted Differential Output.
64	GND	Module Ground.
65	NC	Not Connected.
66	Reserved.	Not Connected.
67	VccTx1	+3.3V DC Power Supply.
68	Vcc2	+3.3V DC Power Supply.
69	Reserved	Not Connected.
70	GND	Module Ground.

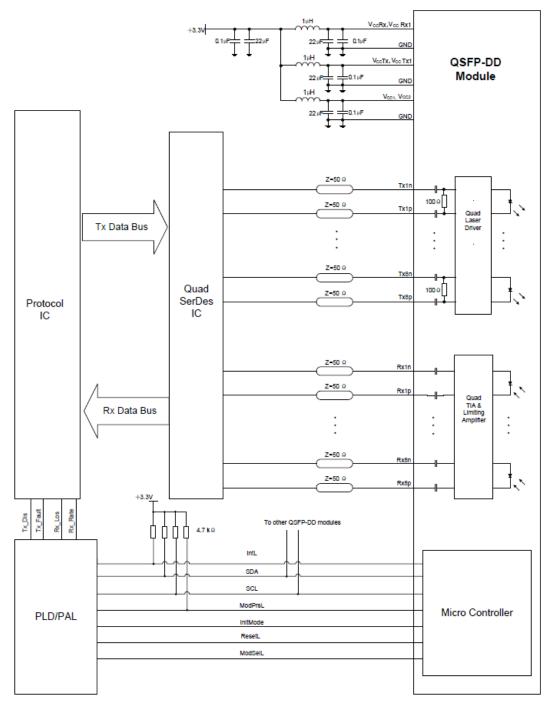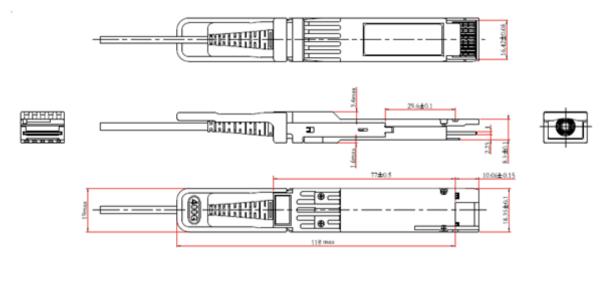| 71	Tx7+	Transmitter Non-Inverted Data Input.
72	Tx7-	Transmitter Inverted Data Input.
73	GND	Module Ground.
74	Tx5+	Transmitter Non-Inverted Data Input.
75	Tx5-	Transmitter Inverted Data Input.
76	GND	Module Ground.

Electrical Pin-Out Details

Module Side		Module Card Edge (Host side)		Module Side
38 GND	76 GND	GND 39	GND 1	
37 TX1n	75 TX5n	TX6n 40	TX2n 2	
36 TX1p	74 TX5p	TX6p 41	TX2p 3	
35 GND	73 GND	GND 42	GND 4	
34 TX3n	72 TX7n	TX8n 43	TX4n 5	
33 TX3P	71 TX7p	TX8p 44	TX4p 6	
32 GND	70 GND	GND 45	GND 7	
31 InitMode	69 Reserved	Reserved 46	ModselL 8	
30 Vcc1	68 Vcc2	NC 47	ResetL 9	
29 VccTx	67 VccTx1	VccRx1 48	VccRx 10	
28 IntL	66 Reserved	NC 49	SCL 11	
27 ModPrsL	65 NC	NC 50	SDA 12	
26 GND	64 GND	GND 51	GND 13	
25 RX4p	63 RX8p	RX7p 52	RX3p 14	
24 RX4n	62 RX8n	RX7n 53	RX3n 15	
23 GND	61 GND	GND 54	GND 16	
22 RX2p	60 RX6p	RX5p 55	RX1p 17	
21 RX2n	59 RX6n	RX5n 56	RX1n 18	
20 GND	58 GND	GND 57	GND 19	

Top side viewed from top   Bottom side viewed from bottom

Block Diagram

Electrical Interface

Mechanical Specifications

Notes:

1. Tolerance +/-0.1mm.
2. Others according with QSFP-DD MSA or customer specifications.
3. Light Port according with fiber connector specifications.
4. For cable lengths greater than 5m, the cable length tolerance is +4%/-0%.

About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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