QSFP-OTU4-AOC3M-PRO

MSA and TAA 112GBase-AOC QSFP28 to QSFP28 Active Optical Cable (850nm, MMF, 3m)

Features

- Compliant to standard SFF-8636 QSFP28 active optical modules
- Automatic power down while broken cable is detected to improve eye safety
- Compliant to 100GE/OTU4
- Low power consumption: less than 2.5W
- Reliable VCSEL and PIN photonic devices
- Supports up to 4x28 Gbps bi-directional operation
- Excellent high speed signal integrity
- I2C standard management interface
- RoHS Complaint and Lead-Free
- Operating case temperature: 0 to 70 Celsius

Applications:

- 100GBase Ethernet
- Proprietary high speed, high density data
- High performance computing, server and data storage

Product Description

This is a MSA Compliant 112GBase-AOC QSFP28 to QSFP28 active optical cable that operates over active fiber with a maximum reach of 3m. 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.

Proline's 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. 032924

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max.	Unit
Supply Voltage	Vcc	0		3.6	V
Relative Humidity	RH	5		85	%
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0	25	70	°C
Data Rate per Channel			4*25.78	4*27.95	Gbps

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc	3.135	3.3	3.465	V	
Supply Current	Icc			750	mA	
Power Dissipation	PD			2500	mW	
Clock Rate-I2C	f			400	kHz	1
Module Turn-on time				2000	ms	2

Notes:
1. For management interface.
2. Time from module power-on / insertion/ ResetL de-assert to module full functional.

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Reference Differential Input Impedance	Zd		100		Ω	1
Optical Return Loss Tolerance				12	dB	
Differential Data Input Swing	Vin_pp	180		1200	mV	
Differential Data Input Threshold			50		mV	2
Receiver						
Reference Differential Input Impedance	Zd		100		Ω	3
Differential Data Output Swing	Vout_pp	0		800	mV	
Pre-emphasis Pulse Amplitude		0			%	4
Percentage		10			%	
		20			%	
		40			%	
Pre-emphasis Pulse Duration			30		ps	
Signal Speed			4*25.78	4*27.95	Gbps	5
Differential Data Output Swing		300		850	mV	
Differential Data Output Swing When Squelched				50	mV	
Rise / Fall Time (20% to 80%)		24			ps	
Receiver Overload (Pavg)	POL	2.5			dBm	
Damage Threshold	POL	3.4			dBm	

Notes:
1. AC coupled inside AOC module.
2. Input swing to trigger TX-squelch.
3. AC coupled inside AOC module.
4. User selectable. Percentage is the ratio of pre-emphasis amplitude to output swing. Users could change by writing to page 3 address 237, default value is "10."
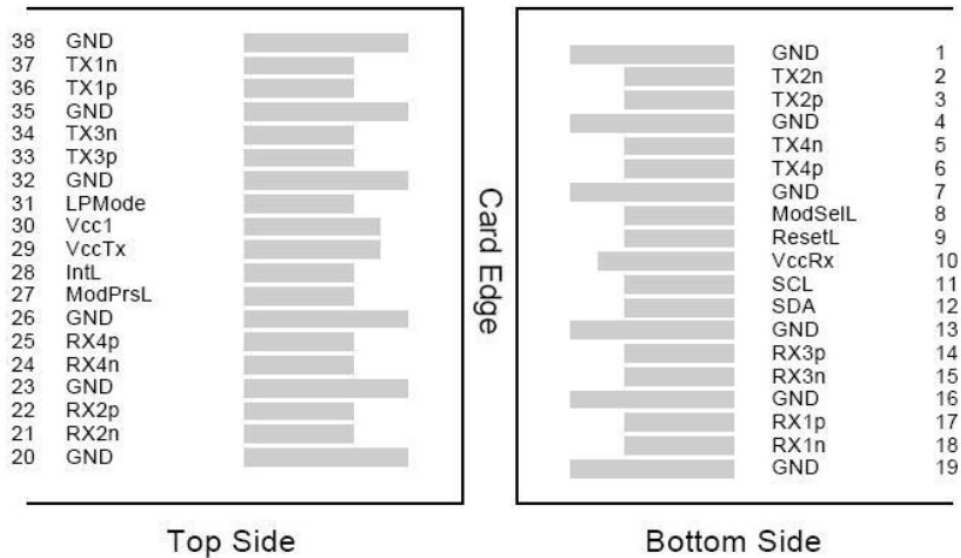5. BER is 5.0E-5.

Pin Descriptions

Pin	Symbol	Description	Notes
1	GND	Transmitter Ground. Common with Receiver Ground.	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data output.	
4	GND	Transmitter Ground. Common with Receiver Ground.	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data output.	
7	GND	Transmitter Ground. Common with Receiver Ground.	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	3.3V Power Supply Receiver.	
11	SCL	2-Wire serial Interface Clock.	2
12	SDA	2-Wire serial Interface Data.	2
13	GND	Transmitter Ground. Common with Receiver Ground.	1
14	Rx3+	Receiver Non-Inverted Data Output.	
15	Rx3-	Receiver Inverted Data Output.	
16	GND	Transmitter Ground. Common with Receiver Ground.	1
17	Rx1+	Receiver Non-Inverted Data Output.	
18	Rx1-	Receiver Inverted Data Output.	
19	GND	Transmitter Ground. Common with Receiver Ground.	1
20	GND	Transmitter Ground. Common with Receiver Ground.	1
21	Rx2-	Receiver Inverted Data Output.	
22	Rx2+	Receiver Non-Inverted Data Output.	
23	GND	Transmitter Ground. Common with Receiver Ground.	1
24	Rx4-	Receiver Inverted Data Output.	1
25	Rx4+	Receiver Non-Inverted Data Output.	
26	GND	Transmitter Ground. Common with Receiver Ground.	1
27	ModPrsl	Module Present.	
28	IntL	Interrupt.	2
29	VccTx	3.3V power supply transmitter.	
30	Vcc1	3.3V power supply.	
31	LPMode	Low Power Mode.	2
32	GND	Transmitter Ground. Common with Receiver Ground.	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Output.	

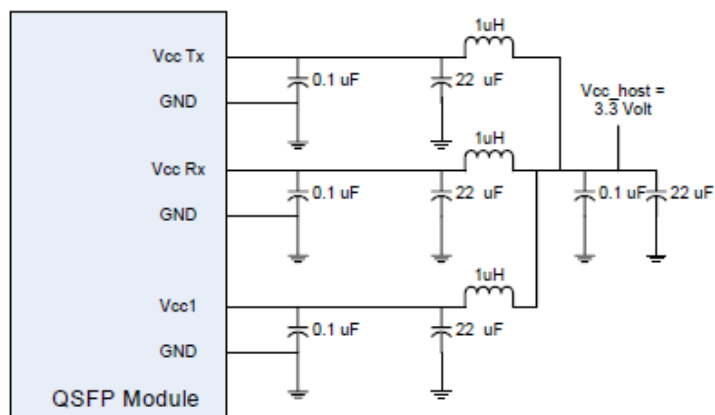| 35	GND	Transmitter Ground. Common with Receiver Ground.	1
36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Output.	
38	GND	Transmitter Ground. Common with Receiver Ground.	1

Note:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7kΩ to 10kΩ pull-up resistor to VccHost.

Electrical Pin-Out Details

```
38  GND                                    GND    1
37  TX1n                                   TX2n   2
36  TX1p                                   TX2p   3
35  GND                                    GND    4
34  TX3n                                   TX4n   5
33  TX3p                                   TX4p   6
32  GND                                    GND    7
31  LPMode          Card Edge              ModSelL 8
30  Vcc1                                   ResetL  9
29  VccTx                                  VccRx   10
28  IntL                                   SCL    11
27  ModPrsL                                SDA    12
26  GND                                    GND    13
25  RX4p                                   RX3p   14
24  RX4n                                   RX3n   15
23  GND                                    GND    16
22  RX2p                                   RX1p   17
21  RX2n                                   RX1n   18
20  GND                                    GND    19

       Top Side                        Bottom Side
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Recommended Application Interface Circuit

Mechanical Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Notes
AOC cable length (L <=5m)	L	L-0.06	L	L+0.06	M	
AOC cable length (L > 5m)	L	L-(L*1.1%)	L	L+(L*1.1%)	M	
Module Retention		90		170	N	
Module Insertion		0		18	N	
Module Extraction		0		25	N	
Cable Pull Strength – Apply Load at 0°		44			N	
Cable Pull Strength – Apply Load at 90°		33			N	
Clearance Out of IO Bezel		75			nm	
Cable Bending Radius		3			cm	
Insertion / Removal Cycles		50			Cycles	
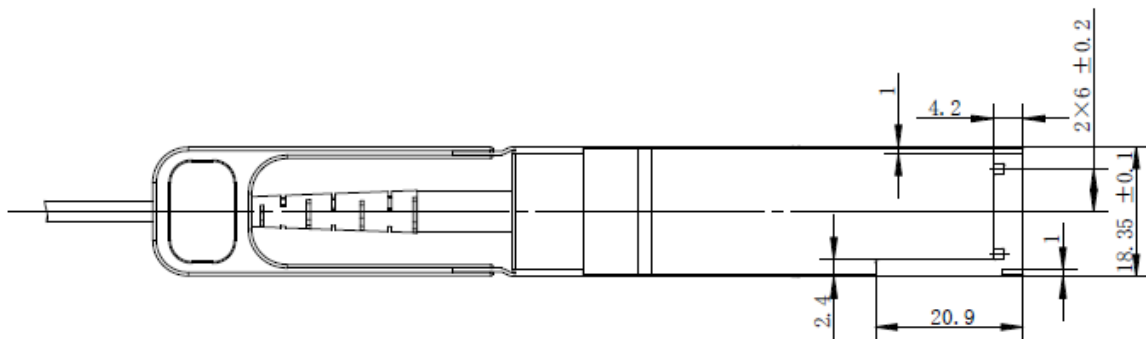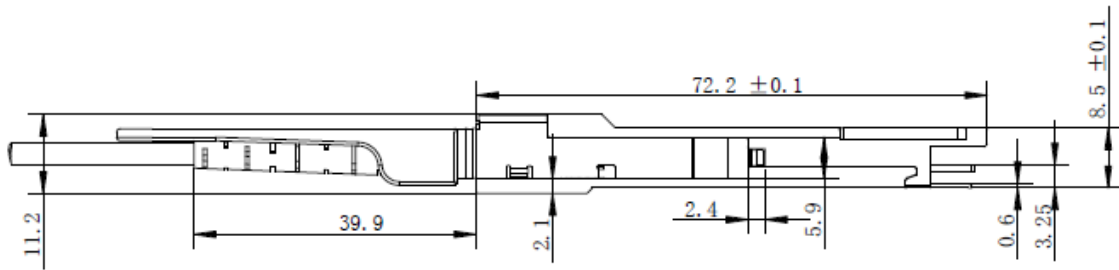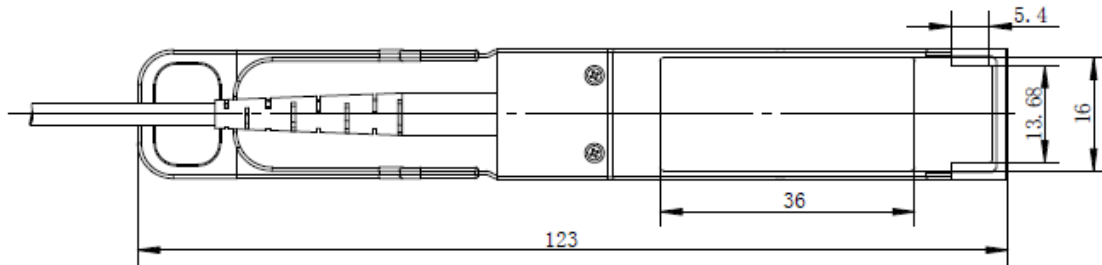
About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.

Tel: 855.933.3223
Email: sales@prolineoptions.com
Email: techsupport@prolineoptions.com
Web: https://www.prolineoptions.com