JNP-QSFP-AOCBO-30M-C

Juniper Networks® JNP-QSFP-AOCBO-30M Compatible TAA Compliant 40GBase-AOC QSFP+ to 4xSFP+ Active Optical Cable (850nm, MMF, 30m)

Features:

- Compliant to Standard SFF-8436 for QSFP+ and Standard SFF-8431 for SFP+
- High-Speed/High-Density: Supports up to 4x100Gbps Bi-Directional Operation
- Reliable VCSEL and PIN Photonic Devices
- I2C Standard Management Interface
- Excellent High-Speed Signal Integrity
- Operating Case Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free

Applications:

- 10G/40G Ethernet
- Proprietary High-Speed/High-Density Data
- High Performance Computing, Server and Data Storage

Product Description

This is a Juniper Networks® Compatible 40GBase-AOC QSFP+ to 4xSFP+ active optical cable that operates over active fiber with a maximum reach of 30m. 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."

TAA COMPLIANT

Rev. 030525

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	˚C	
Operating Temperature	Tc	0	25	70	˚C	
Relative Humidity	RH	5		85		
Maximum Supply Voltage	Vcc	0		3.6	V	

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Data Rate ter Channel				4*10.3	Gbps	
LowπSpeed Output: Transmitter Fault (Tx_Fault)/Loss of Signal (LOS)	VhH	2.0		Vcc	V	1
	VhL	0		0.8	V	1
LowπSpeed Input: Transmitter Disable (Tx_Disable), Mh5_D9C1, Mh5_D9C2	VlH	2.0		Vcc	V	2
	VlL	0		0.8	V	2
Clock Rate - I2C	f			400	kHz	3
Module Turn On Time				2000	ms	4

Notes:

1. For all control input pins: LPMode, Reset, and ModSeIL.
2. For all status output pins: ModPrsL and IntL.
3. For the management interface.
4. Time from module power on/insertion/ResetL de-assert to module fully 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	1
Differential Data Output Swing	VOUT,pp	0		800	mV	
Pre-Emphasis Pulse Amplitude Percentage		0			%	3
		10			%	
		20			%	
		40			%	
Pre-Emphasis Pulse Duration			30		ps	
Signal Speed			4*10.3		Gbps	
Differential Data Output Swing		150		850	mV	
Differential Data Output Swing When Squelched				50	mV	
Rise/Fall Time		24			ps	

Notes:

1. AC coupled inside the AOC module.
2. Input swing to trigger Tx_Squelch.
3. User-selectable. Percentage is the ratio of pre-emphasis amplitude to output swing.

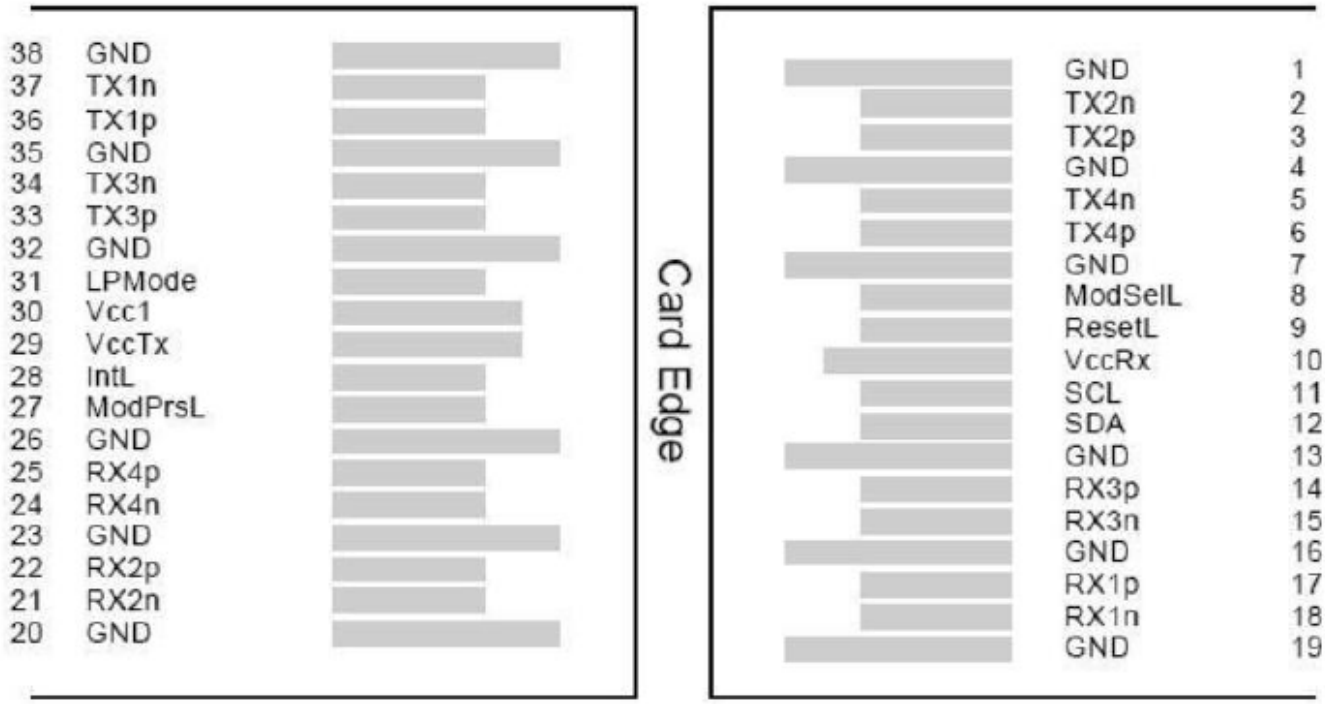
Pin Descriptions (QSFP+ End)

Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground).	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Input.	
4	GND	Transmitter Ground (Common with Receiver Ground).	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Input.	
7	GND	Transmitter Ground (Common with Receiver Ground).	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	+3.3V Receiver Power Supply.	
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	ModPrs1	Module Present.	
28	IntL	Interrupt.	2
29	VccTx	+3.3V Transmitter Power Supply.	
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 Input.	
35	GND	Transmitter Ground (Common with Receiver Ground).	1
36	Tx1+	Transmitter Non-Inverted Data Input.	
37	Tx1-	Transmitter Inverted Data Input.	
38	GND	Transmitter Ground (Common with Receiver Ground).	1

Notes:

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 the Host_Vcc.

Electrical Pin-Out Details (QSFP+ End)



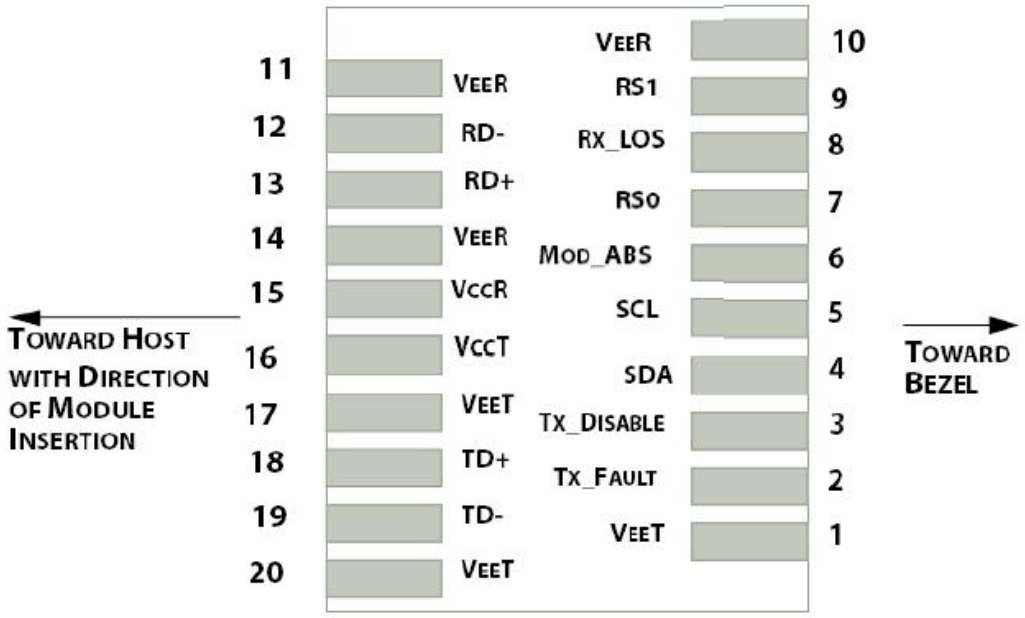
Pin Descriptions (SFP+ End)

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground.	1
2	Tx_Fault	Transmitter Fault. LVTTL-O. “High” indicates a fault condition.	2
3	Tx_Disable	Transmitter Disable. LVTTL-I. “High” or “open” disables the transmitter.	3
4	SDA	2-Wire Serial Interface Data. LVCMOS-I/O. MOD_DEF2.	4
5	SCL	2-Wire Serial Interface Clock. LVCMOS-I/O. MOD_DEF1.	4
6	MOD_ABS	Module Absent. Output. Connected to the VeeT or VeeR in the module.	5
7	RS0	Rate Select 0. Not used. Presents high input impedance.	
8	Rx_LOS	Receiver Loss of Signal. LVTTL-O.	2
9	RS1	Rate Select 1. Not used. Presents high input impedance.	
10	VeeR	Receiver Ground.	1
11	VeeR	Receiver Ground.	1
12	RD-	Inverse Received Data Out. CML-O.	
13	RD+	Receiver Data Out. CML-O.	
14	VeeR	Receiver Ground.	
15	VccR	+3.3V Receiver Power.	
16	VccT	+3.3V Transmitter Power.	
17	VeeT	Transmitter Ground.	1
18	TD+	Transmitter Data In. CML-I.	
19	TD-	Inverse Transmitter Data In. CML-I.	
20	VeeT	Transmitter Ground.	1

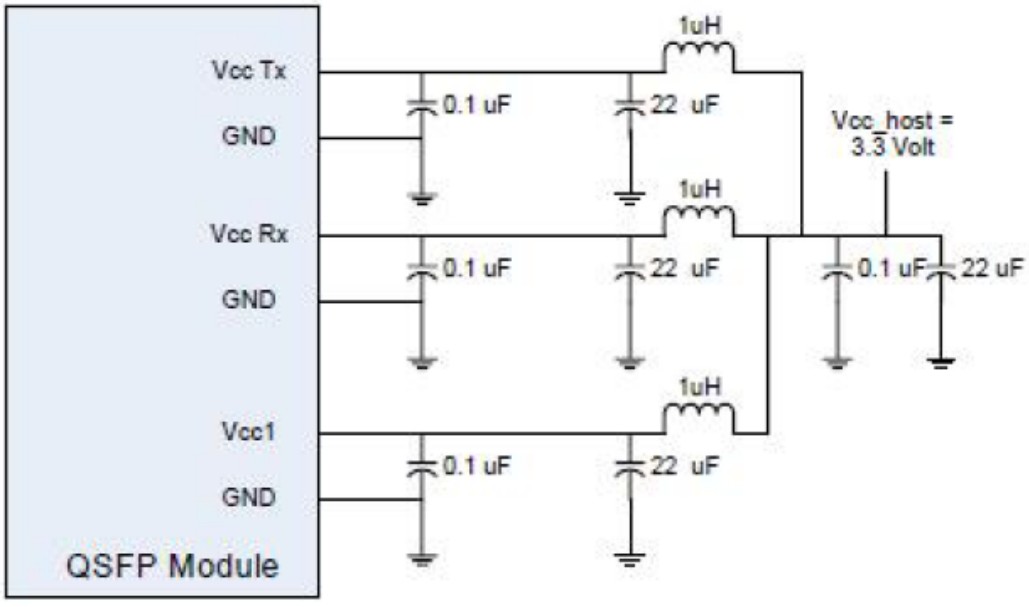
Notes:

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 the Host_Vcc.
3. This input is internally biased high with a 4.7kΩ to 10kΩ pull-up resistor to the VccT.
4. 2-wire serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host_Vcc.

Electrical Pin-Out Details (SFP+ End)



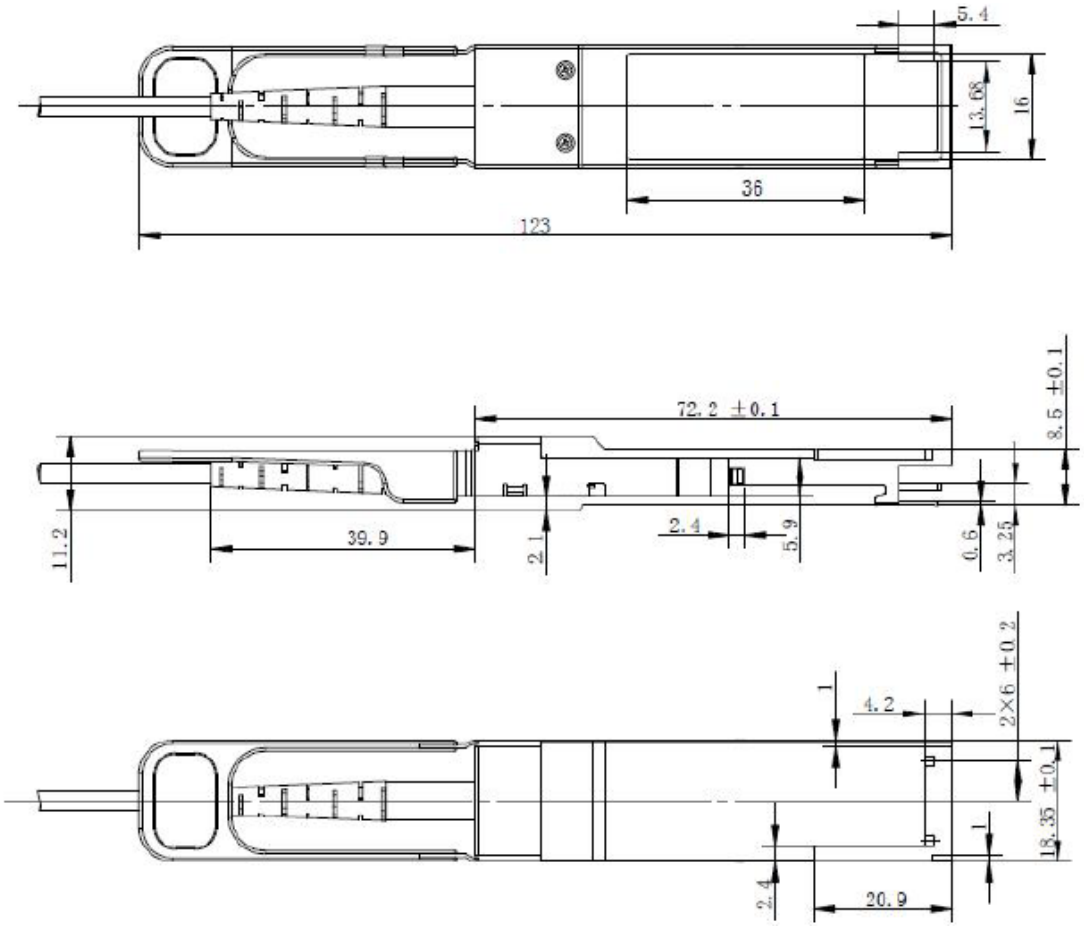
Application Interface Circuit



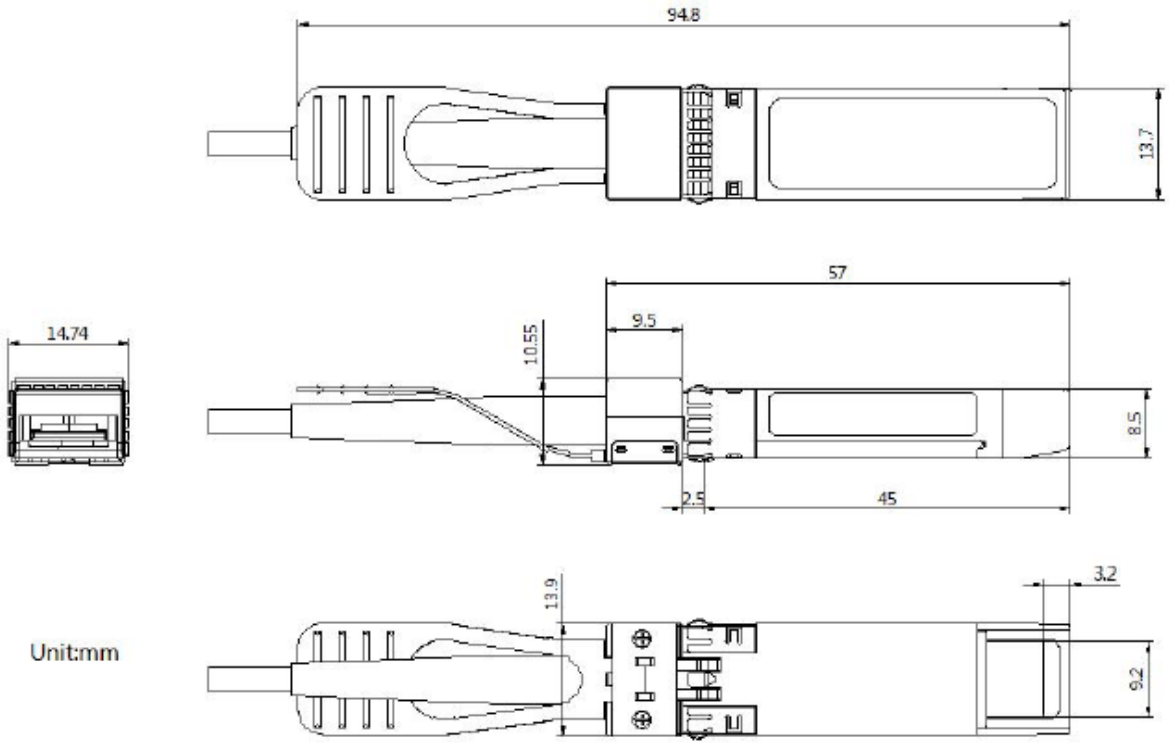
Active Optical Cable Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit
AOC Cable Length (L1 ≤ 5m)	L1	L – 0.06	L	L + 0.06	M
AOC Cable Length (L1 > 5m)	L1	L*95%	L	L*105%	M
AOC Cable Length of Branch (L2 ≤ 3m)	L2	L – 0.06	L	L + 0.06	M
Module Retention		90		170	N
Module Insertion		0		18	N
Module Extraction		0		25	N
Cable Pull Strength - Apply Load at 0˚		25			N
Cable Pull Strength - Apply Load at 90˚		20			N
Cable Bending Radius		30			mm
Insertion/Removal Cycles		50			cycles

Mechanical Specifications



QSFP+ End



SFP+ End

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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