



MFS4R12CB-020-OPC

Mellanox® MFS4R12CB-020 Compatible TAA Compliant 40GBase-AOC QSFP+ Active Optical Cable (850nm, MMF, 20m)

Features

- Support up to 4x10 Gbps bi-directional operation
- SFF-8436 QSFP+ compliant
- Compliant to the IEEE802.3ba
- Automatic power down while broken cable is detected to improve eye safety
- Reliable VCSEL and PIN photonic devices
- I2C standard management interface
- Excellent high speed signal integrity
- Low power consumption
- Operating Case Temperature 0 to 70 Celsius
- RoHS Compliant and Lead-Free



Applications:

- 10G/40GBase Ethernet
- Proprietary high speed, high density data
- High performance computing, server and data storage

Product Description

This is a Mellanox® MFS4R12CB-020 compatible 40GBase-AOC QSFP+ to QSFP+ active optical cable that operates over multi-mode fiber with a maximum reach of 20.0m (65.6ft). At a wavelength of 850nm, it has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This active optical cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V _{CC}	-0.5		3.6	V
Storage Temperature	T _{stg}	-40		85	°C
Operating Case Temperature	T _c	0	25	70	°C
Relative Humidity	RH	5		85	%
Data Rate Per Channel			4*10.3		Gbps

Electrical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Supply Current	I _{CC}			400	mA	
Power Dissipation	P _{DISS}			1500	mW	
Clock Rate - I2C				400	KHz	1
Module Turn-on time				2000	ms	2

Notes:

1. For the management interface.
2. 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	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			%	4
		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 (20-80%)		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. Users could change by writing to page 3 address 237, default value is "10."

Pin Descriptions

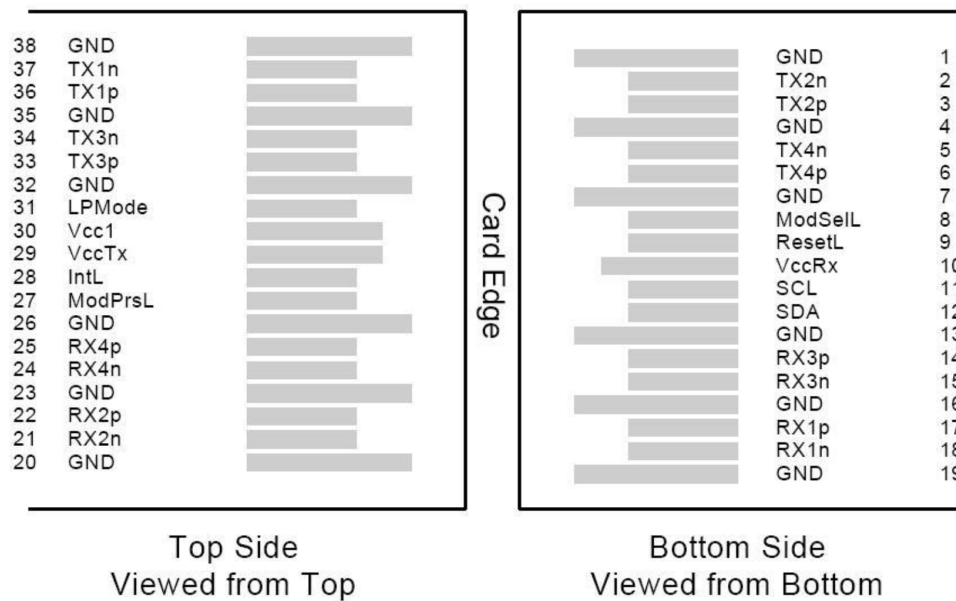
Pin	Logic	Symbol	Name/Description	Note
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	
7		GND	Module Ground.	1
8	LVTTL-I	ModSelL	Module Select.	2
9	LVTTL-I	ResetL	Module Reset.	2
10		VccRx	+3.3V Receiver Power Supply.	
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	2
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	2
13		GND	Module Ground.	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	
15	CML-O	Rx3-	Receiver Inverted Data Output.	
16		GND	Module Ground.	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	
18	CML-O	Rx1-	Receiver Inverted Data Output.	
19		GND	Module Ground.	1
20		GND	Module Ground.	1
21	CML-O	Rx2-	Receiver Inverted Data Output.	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	
23		GND	Module Ground.	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27	LVTTL-O	ModPrsL	Module Present. Internally pulled down to the GND.	
28	LVTTL-O	IntL	Interrupt output should be pulled up on the host board.	2
29		VccTx	+3.3V Transmitter Power Supply.	
30		Vcc1	+3.3V Power Supply.	
31	LVTTL-I	LPMode	Low-Power Mode.	2
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	
35		GND	Module Ground.	1

36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	

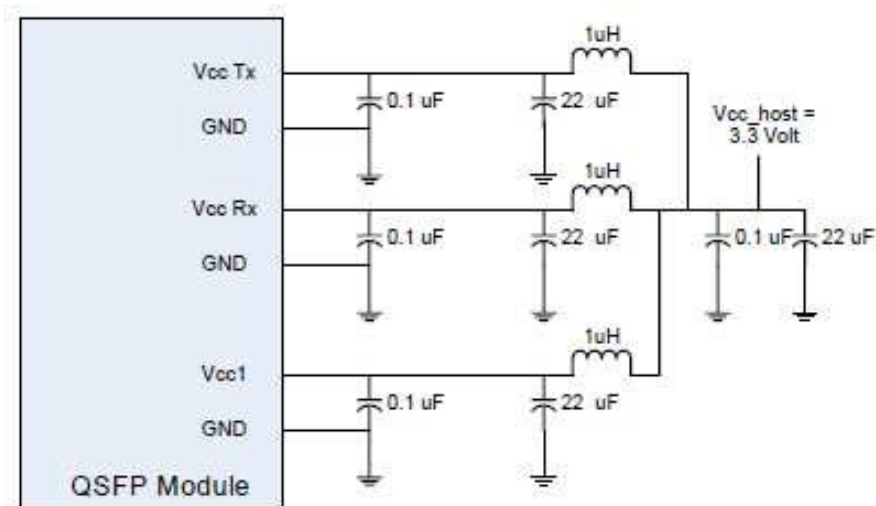
Notes:

1. GND is the symbol for signal and supply (power). Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1, and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP+. The connector pins are each rated for a maximum current of 500mA.

Pin Assignment and Pin Description

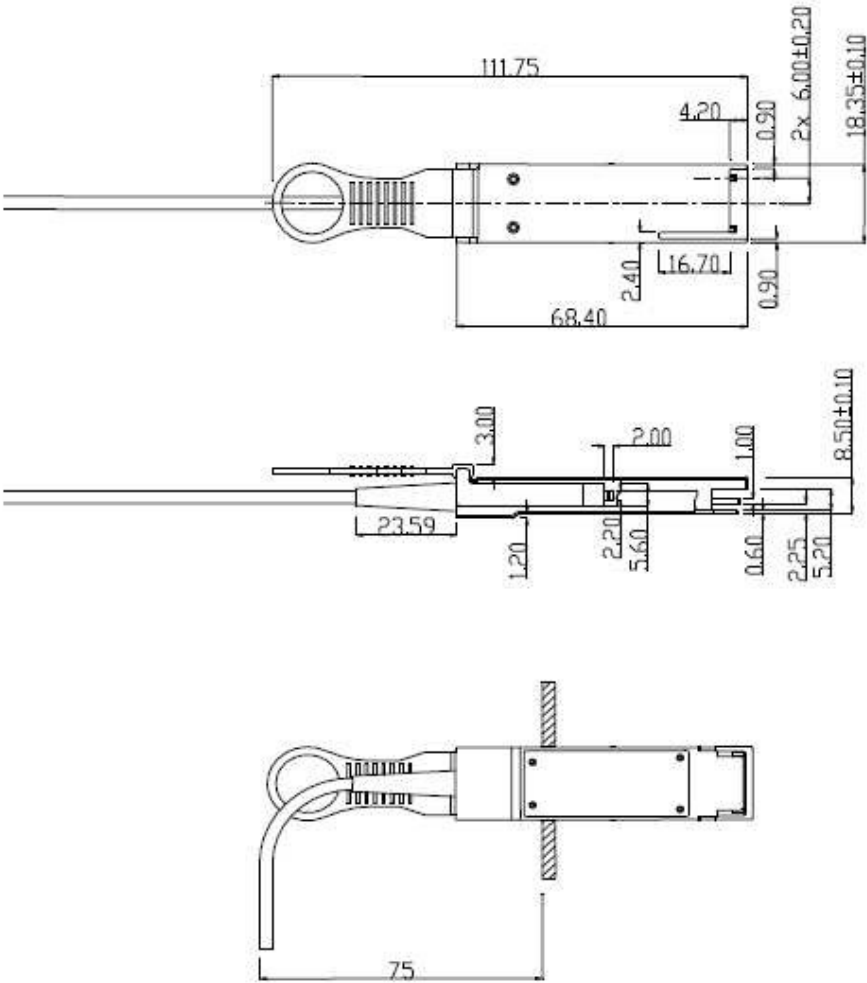


Recommended Application Interface Circuit



Mechanical Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
AOC Cable Length (L<5m)	L	L-0.06	L	L+0.06	M	
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			mm	
Cable Bending Radius		3			cm	
Insertion/Removal Cycles		50			Cycles	



Clearance 75mm Is Required.
Cable Type: Low Smoke Zero Halogen

OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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