MFS1S50-H003V-AO

Mellanox® MFS1S50-H003V Compatible TAA 200G-AOC QSFP56 to 2xQSFP56 Infiniband HDR Active Optical Cable (850nm, MMF, 3m, LSZH)

Features

- Low Latency DSP-Free Electronics-Based CDR
- PAM4 Modulation
- Multi-Data Rate Up to 56.15Gbps Per Lane
- Low Power Consumption: 3.6W on 200G End With All CDRs Enabled
- Operating Case Temperature: 0 to 70 Celsius
- Single 3.3V Power Supply
- LSZH, Aqua Cable
- Hot Pluggable
- RoHS Compliant and Lead-Free

Applications

- IBTA InfiniBand HDR
- IEEE 802.3cd 200GBASE SR4

Product Description

This is a Mellanox® MFS1S50-H003V Compatible 200GBase-AOC QSFP56 to 2xQSFP56 Infiniband HDR LSZH 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.

AddOn'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. 062424

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VIN	0		4.0	V
Input Swing	VIN-MAX			1500	mVp-p
Storage Temperature (Ambient)	Tstg	-40		85	°C
Relative Humidity	RH	5		85	%

Recommended Operating Specifications

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature		Tc	0		70	°C	
Power Supply Voltage		Vcc	3.15	3.30	3.47	V	
Power Supply Current	200G End	Icc		1100	1250	mA	1
	100G End	Icc		750		mA	1
Power Consumption	200G End	P		3.6	4.0	W	1
	100G End	P		2.3	2.5	W	1

Notes:
1. Per end, all channel CDRs are enabled.

Electrical Characteristics

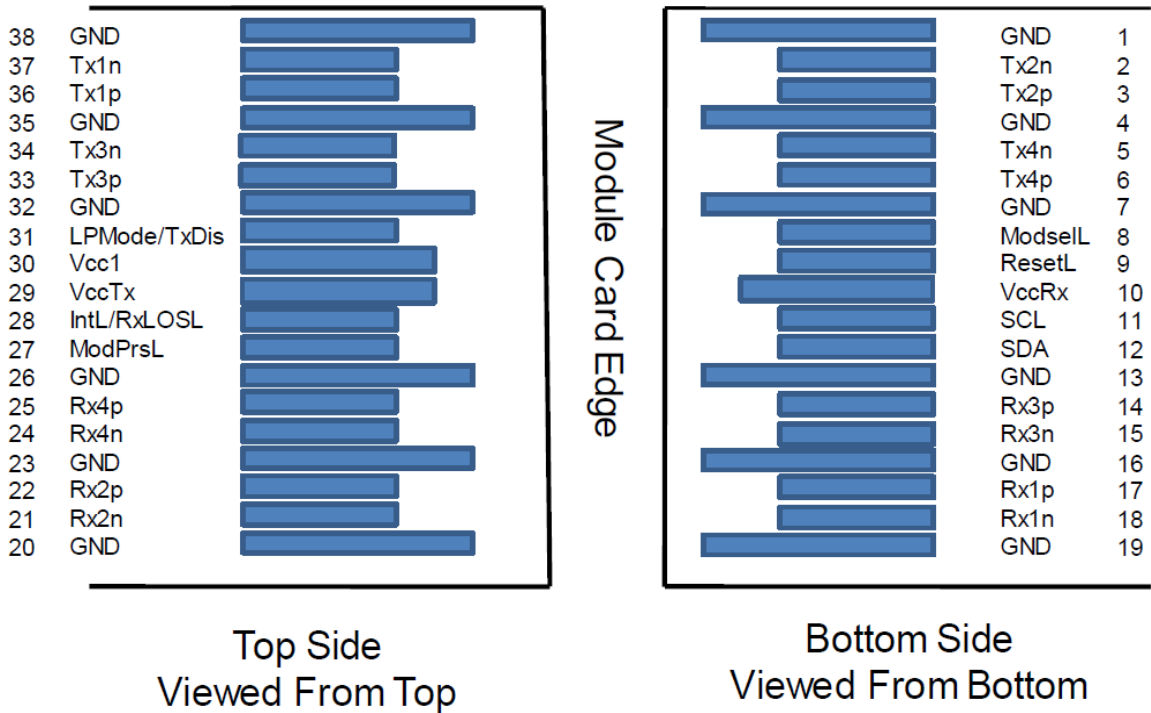| Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate (Per Channel)	DR		26.5625		GBd	1
Transmitter						
Input Differential Impedance	RIN		100		Ω	
Differential Data Input Swing	VIN,pp	300		900	mV	
Receiver						
Output Differential Impedance	ROUT		100		Ω	
Differential Data Output Swing	VOUT,pp	300	700	900	mV	
Bit Error Ratio @26.5625GBd				2.4×10^{-4}		2

Notes:
1. Dual data rate of 25.78125 and 28.07618 Gbaud are available upon request.
2. Pre-FEC Bit Error Ratio with a PRBS $2^{31} - 1$ test pattern over a normal operating temperature range.

Active Optical Cable Specifications

Parameter	Value	Unit	Notes
Cable Diameter	LSZH: Ø3.0±0.15	mm	
Minimum Bend Radius	30	mm	Without Tension
Length Tolerance	+300/–0	mm	
Cable Jacket	LSZH, Aqua		

Electrical Pin-Out Details

	Top Side		Module Card Edge		Bottom Side	
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/TxDis				ModselL	8
30	Vcc1				ResetL	9
29	VccTx				VccRx	10
28	IntL/RxLOSL				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
Viewed From Top

Module Card Edge

Bottom Side
Viewed From Bottom

Pin Descriptions

Pin	Logic	Symbol	Name/Description	Notes
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.	
9	LVTTL-I	ResetL	Module Reset.	
10		VccRx	+3.3V Receiver Power Supply.	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock.	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	
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.	
28	LVTTL-O	IntL	Interrupt.	
29		VccTx	+3.3V Transmitter Power Supply.	2
30		Vcc1	+3.3V Power Supply.	2
31	LVTTL-I	LPMode	Low-Power Mode.	
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Input.	

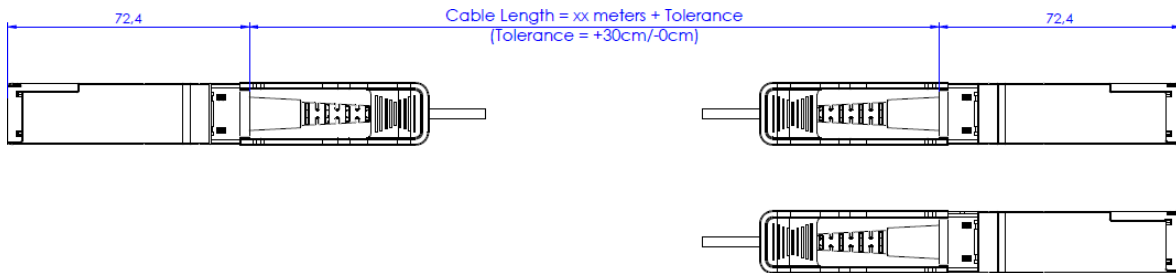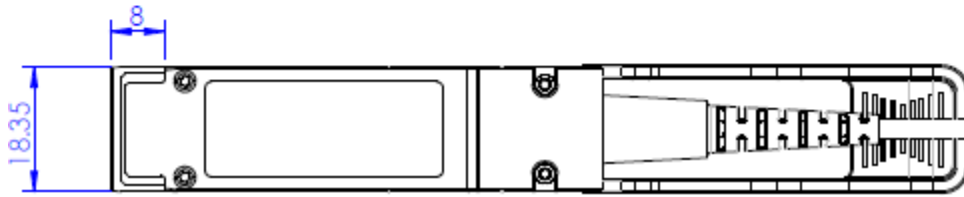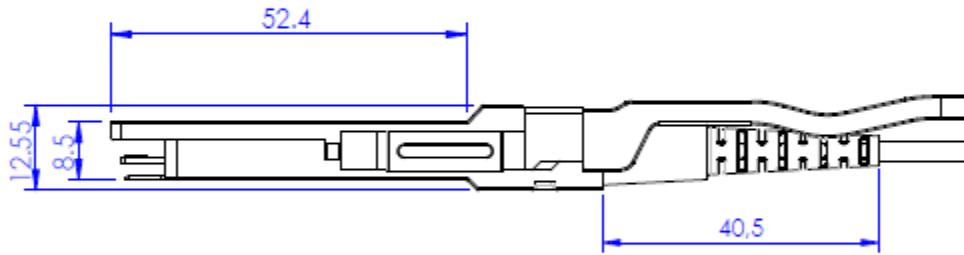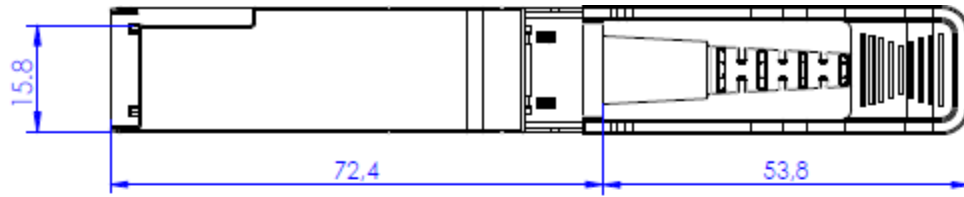| 35		GND	Module Ground.	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	
38		GND	Module Ground.	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP module, and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.

2. VccRx, Vcc1, and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. VccRx, Vcc1, and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Block Diagram

200G QSFP56 Module

Tx1 →
Tx2 →
Tx3 →
Tx4 →
4 channels Driver + CDR
— 4×50G → **VCSEL×4** → 2×50G / 2×50G

Rx1 ←
Rx2 ←
Rx3 ←
Rx4 ←
4 channels TIA + CDR
← 4×50G — **PD×4** ← 2×50G / 2×50G

I2C ↔ **MCU**

100G QSFP56 Module

Tx1 →
Tx2 →
2 channels Driver + CDR
— 2×50G → **VCSEL×2** → 2×50G

Rx1 ←
Rx2 ←
2 channels TIA + CDR
← 2×50G — **PD×2** ← 2×50G

I2C ↔ **MCU**
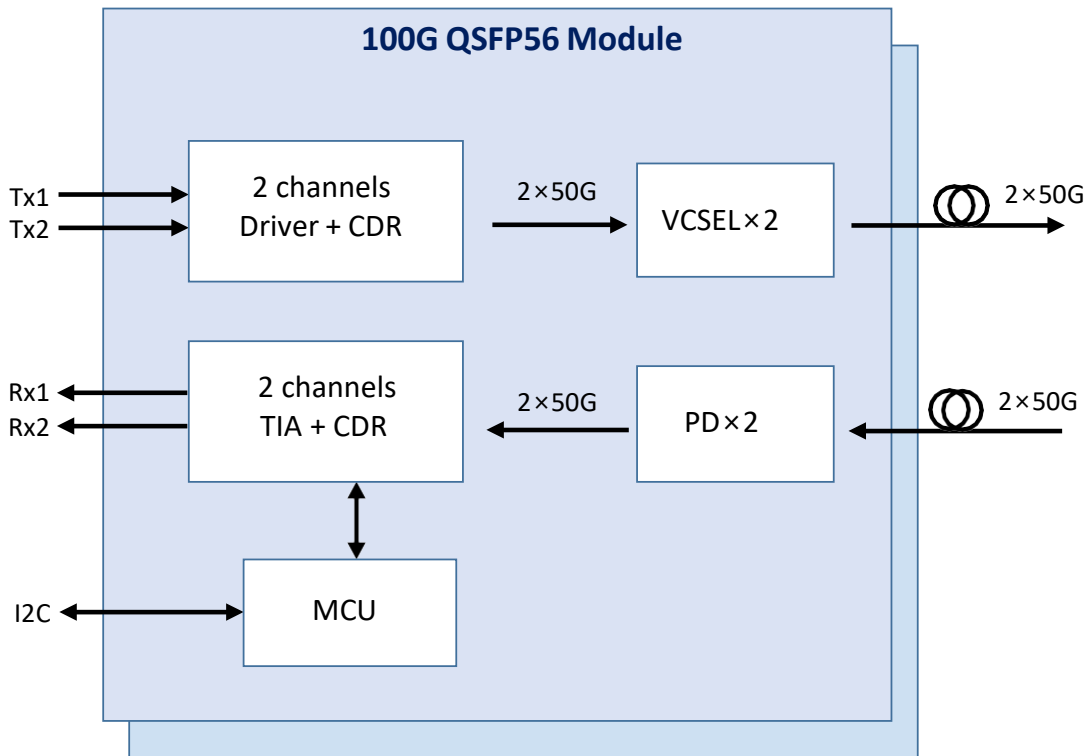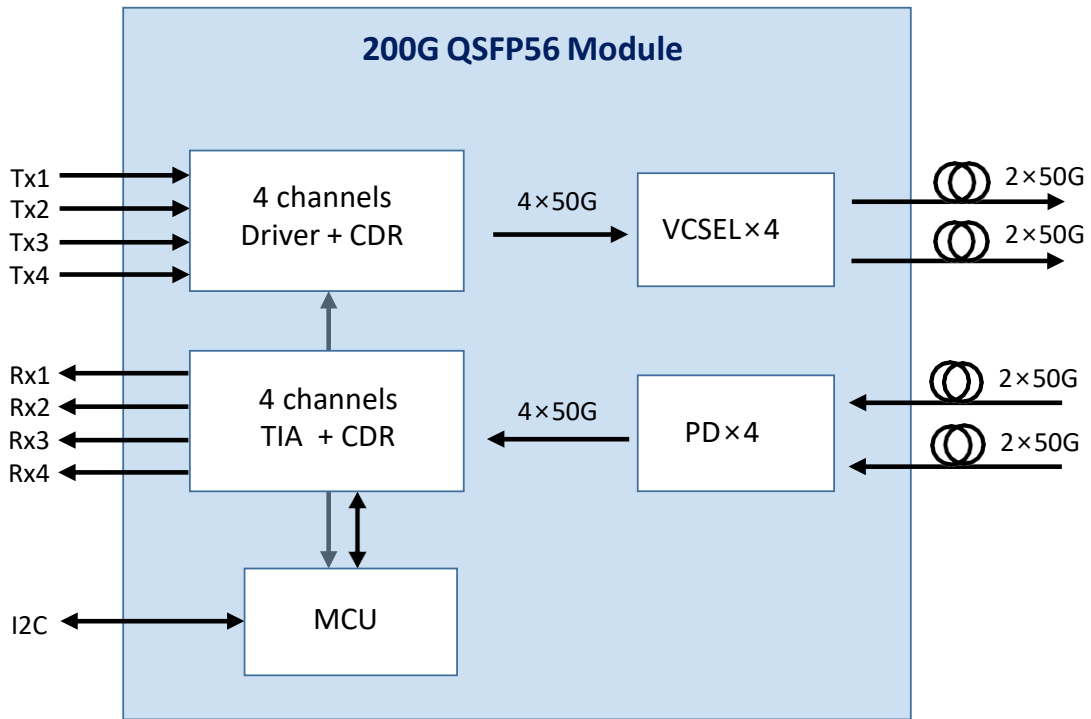
Mechanical Specifications

15.8

72,4   53,8

52.4

12.55   8.5

40,5

8

18.35

72,4   Cable Length = xx meters + Tolerance   72,4
              (Tolerance = +30cm/-0cm)

About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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