



### **MMA1B00-E100-OPC**

Mellanox® MMA1B00-E100 Compatible TAA 100GBase-SR4 QSFP28 Transceiver Infiniband EDR (MMF, 850nm, 100m, MPO, DOM)

#### **Features**

- SFF-8665 Compliance
- MPO Connector
- Transmitter: 4x25Gb/s 850nm VCSEL
- Receiver: 4x25Gb/s PIN
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



#### **Applications:**

- 100GBase Ethernet
- Infiniband EDR
- Access and Enterprise

#### **Product Description**

This Mellanox® MMA1B00-E100 compatible QSFP28 transceiver provides 100GBase-SR4 throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Mellanox®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. 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	Notes
Supply Voltage	V <sub>CC</sub>	-0.5		3.6	V	
Storage Temperature	T <sub>s</sub>	-40		85	°C	
Case Operating Temperature	T <sub>c</sub>	0		70	°C	
Relative Humidity	RH	0		85	%	
Rx Damage Threshold per Lane	P <sub>Rdmg</sub>	3.4			dBm	
Data Rate	DR		103.125		Gb/s	
Bit Error Ratio (pre-FEC)	BER			5x10 <sup>-5</sup>		1
Transmission Distance	TD			70	m	2 OM3 MMF
Transmission Distance	TD			100	m	2 OM4 MMF

### Notes:

1. Tested with a  $2^{31} - 1$  PRBS.
2. Requires FEC on the host to support maximum distance, per 100GBASE-SR4.

**Electrical Characteristics (Top=0~70°C, Vcc=3.14~3.47V)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.47	V	
Supply Current	I <sub>CC</sub>			1.06	A	
Power Dissipation	P <sub>D</sub>			3.5	W	
<b>Transmitter</b>						
Signaling rate per lane	DRPL	25.78125 ± 100 ppm			Gb/s	
Differential input return loss (min)	RL <sub>d</sub> (f)	9.5–0.37f, 0.01≤f<8			dB	
	RL <sub>d</sub> (f)	4.75–7.4log10(f/14), 8 ≤f<19			dB	
Differential to common mode input return loss (min)	RL <sub>dc</sub> (f)	22-20(f/25.78), 0.01≤f<12.89			dB	
	RL <sub>dc</sub> (f)	15-6(f/25.78), 12.89≤f<19			dB	
Differential termination mismatch	T <sub>m</sub>			10	%	
Eye width	E <sub>w</sub>			0.46	UI	
Applied pk-pk sinusoidal jitter	P <sub>pj</sub>	Per IEEE 802.3bm				
Eye height	E <sub>h</sub>		95		mV	
DC common mode voltage	DC <sub>v</sub>	-350		2850	mV	
<b>Receiver</b>						
Signaling rate per lane	DRPL	25.78125 ± 100 ppm			Gb/s	
Differential data output swing	V <sub>out</sub> (pp)	400		800	mV	
Eye width	E <sub>w</sub>	0.57			UI	
Vertical eye closure	V <sub>ec</sub>			5.5	dB	
Differential output return loss (min)	RL <sub>d</sub> (f)	9.5–0.37f, 0.01≤f<8			dB	
	RL <sub>d</sub> (f)	4.75–7.4log10(f/14), 8 ≤f<19			dB	
Common to differential mode conversion return loss (min)	RL <sub>dc</sub> (f)	22-20(f/25.78), 0.01≤f<12.89			dB	
	RL <sub>dc</sub> (f)	15-6(f/25.78), 12.89≤f<19			dB	
Differential termination mismatch	T <sub>m</sub>			10	%	
Transition time, 20% to 80%	T <sub>r</sub> /T <sub>f</sub>	12			ps	1

**Notes:**

1. 20%~80%

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling rate, each lane	DRpl	25.78125 ±100 ppm			Gb/s	1
Center Wavelength	λ	840	850	860	nm	
RMS Spectral Width	RSW		0.6		nm	
Average launch power, each lane	Pavg	-8.4		2.4	dBm	2
Optical modulation amplitude, each lane (OMA)	OMA	-6.4		3	dBm	
Extinction ratio	ER	2			dB	
Average Launch Power of OFF Transmitter, per Lane	RIN			-30	dBm	
Encircled Flux	FLX	>86% at 19 um <30% at 4.5 um			dBm	
Optical return loss tolerance				12	dB	
Transmitter eye mask {X1, X2, X3, Y1, Y2, Y3}		{0.3,0.38,0.45,0.35,0.41,0.5}				2
Receiver						
Receive Rate for Each Lane	DRpl	25.78125 ±100 ppm			Gb/s	3
Four Lane Wavelength Range	λ	840		860	nm	
Overload Input Optical Power	Pmax	3.4			dBm	
Average Receive Power for Each Lane	Pin	-10.3		2.4	dBm	4
Stressed Receiver Sensitivity (OMA) per lane	Psens_srs			-5.2	dBm	
Receiver Reflectance	REFLr			-12	dB	
Receiver Eye Mask Definition {X1, X2, X3, Y1, Y2,Y3}		{0.28,0.5,0.5,0.33,0.33,0.4}				5
Los De-Assert	Pd			-13	dBm	
Los Assert	Pa	-30			dBm	
Loss Hysteresis	Pd-Pa	0.5			dBm	

### Notes:

1. Transmitter consists of 4 lasers operating at a maximum speed of 25.78125Gb/s ±100ppm each.
2. Hit Ratio  $1.5 \times 10^{-3}$  hits/sample.
3. Receiver consists of 4 photodetectors operating at a maximum speed of 25.78125Gb/s ±100ppm each.
4. Minimum value is informative only and not the principal indicator of signal strength.
5. Hit Ratio  $5 \times 10^{-5}$  hits/sample.

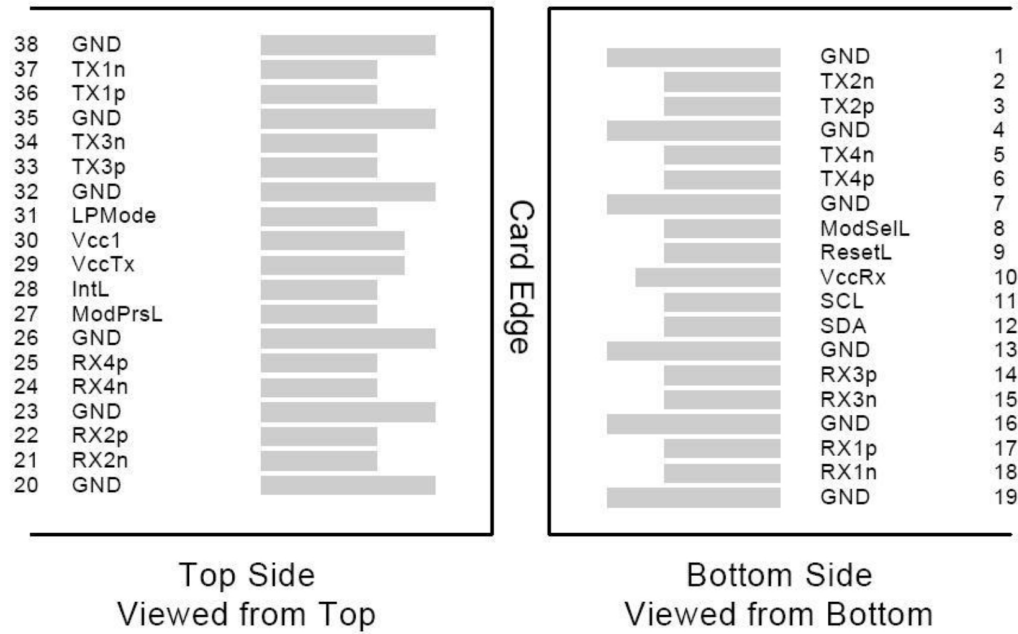
## Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
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	MODSEIL	Module Select	2
9	LVTTL-I	ResetL	Module Reset	2
10		VCCR <sub>x</sub>	+3.3v Receiver Power Supply	
11	LVC MOS-I	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, internal pulled down to GND	
28	LVTTL-O	IntL	Interrupt output should be pulled up on host board	2
29		VCCT <sub>x</sub>	+3.3v Transmitter Power Supply	
30		VCC1	+3.3v Power Supply	
31	LVTTL-I	LPM <sub>Mode</sub>	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	
38		GND	Module Ground	1

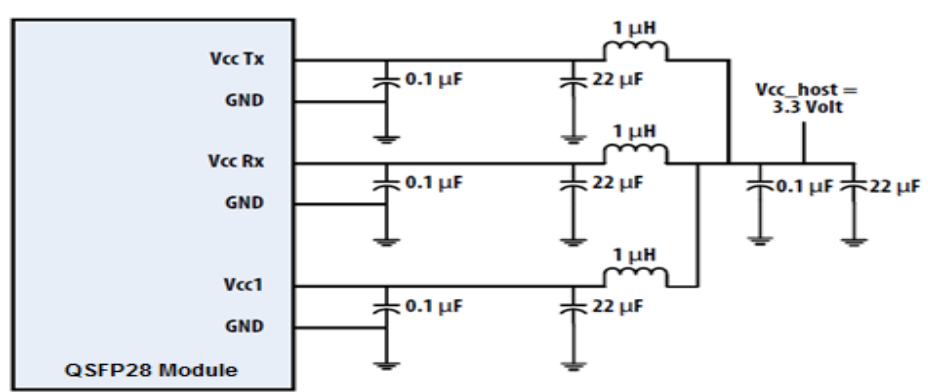
### Notes:

1. Module circuit ground is isolated from module chassis ground with in the module.
2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.

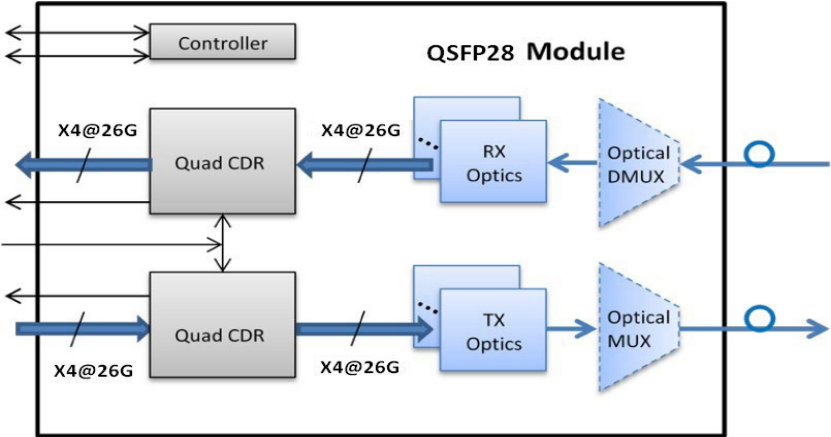
### Electrical Pin-out Details



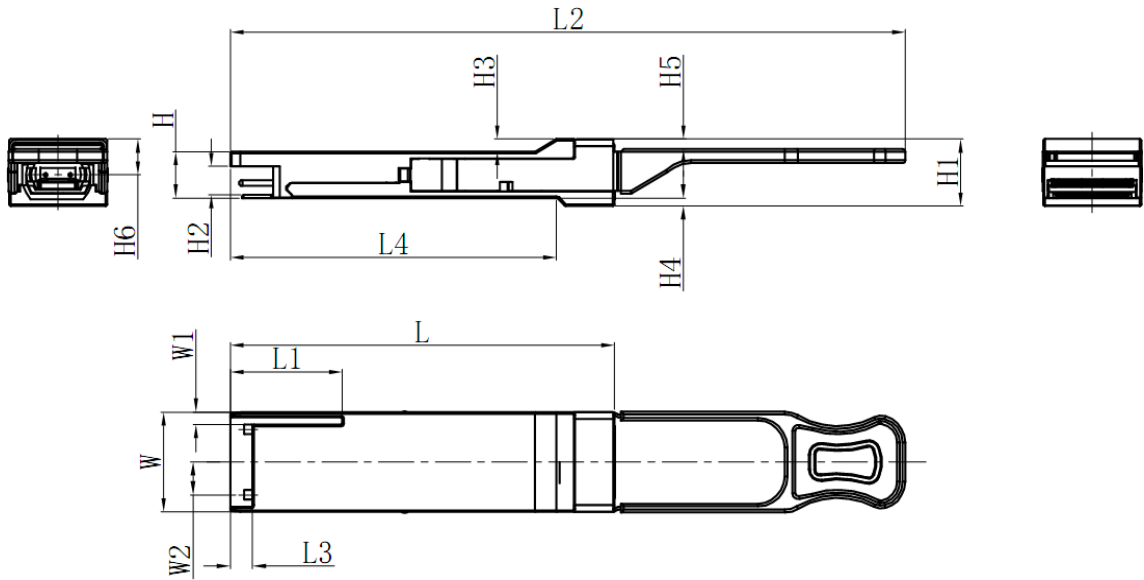
### Recommended Power Supply Filter



Functional Diagram



Mechanical Specifications



Unit: mm

	L	L1	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5	H6
Max	72.2	-	128	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6	2.0	-
Type	72.0	-	-	4.20	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5	1.8	6.55
Min	68.8	16.5	124	4.05	61.0	18.25	2.2	5.8	8.4	12.0	5.05	2.1	1.3	1.6	-

## **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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