MMA1B00-E100-AO

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

Features:

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



Applications:

- Infiniband EDR
- 100GBase Ethernet
- Access and Enterprise

Product Description

This NVIDIA® 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 NVIDIA®. 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.

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."

TAA COMPLIANT

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	Vcc	-0.5		3.6	V	
Storage Temperature	Ts	-40		85	°C	
Case Operating Temperature	Tc	0		70	°C	
Relative Humidity	RH	0		85	%	
Rx Damage Threshold per Lane	P_{Rdmg}	3.4			dBm	
Data Rate	DR		103.125		Gb/s	
Bit Error Ratio (pre-FEC)	BER			$5x10^{-5}$		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℃, Vcc=3.14~3.47V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V_{cc}	3.14	3.3	3.47	V	
Supply Current	Icc			1.06	A	
Power Dissipation	P_D			3.5	W	
Transmitter						
Signaling rate per lane	DRPL	25.78125 ± 100 ppm			Gb/s	
Differential input return loss (min)	RLd(f)	9.5–0.37f, 0.01≤f<8			dB	
	RLd(f)	4.75–7.4log10(f/14), 8 ≤f<19			dB	
Differential to common mode input return loss (min)	RLdc(f)	22-20(f/25.78), 0.01≤f<12.89			dB	
	RLdc(f)	15-6(f/25.78), 12.89≤f<19			dB	
Differential termination mismatch	Tm			10	%	
Eye width	Ew			0.46	UI	
Applied pk-pk sinusoidal jitter	Ppj	Per IEEE 802.3bm				
Eye height	Eh		95		mV	
DC common mode voltage	DCv	-350		2850	mV	
Receiver						
Signaling rate per lane	DRPL	25.78125 ± 100 ppm			Gb/s	
Differential data output swing	Vout（pp）	400		800	mV	
Eye width	Ew	0.57			UI	
Vertical eye closure	Vec			5.5	dB	
Differential output return loss (min)	RLd(f)	9.5–0.37f, 0.01≤f<8			dB	
	RLd(f)	4.75–7.4log10(f/14), 8 ≤f<19			dB	
Common to differential mode conversion return loss (min)	RLdc(f)	22-20(f/25.78), 0.01≤f<12.89			dB	
	RLdc(f)	15-6(f/25.78), 12.89≤f<19			dB	
Differential termination mismatch	Tm			10	%	
Transition time, 20% to 80%	Tr/Tf	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	P_{avg}	-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	R_{IN}			-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	P_{max}	3.4			dBm	
Average Receive Power for Each Lane	P_{in}	-10.3		2.4	dBm	4
Stressed Receiver Sensitivity (OMA) per lane	P_{sens_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 x 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 x 10^{-5} hits/sample.

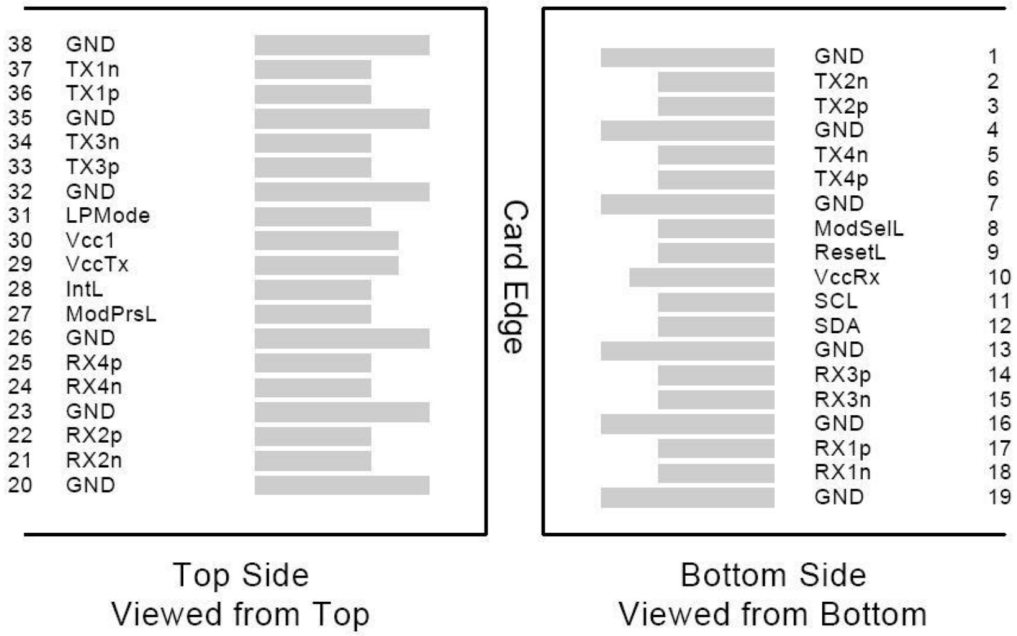
Pin Descriptions

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		VCCRx	+3.3v Receiver Power Supply	
11	LVCMOS-I	SCL	2-wire Serial interface clock	2
12	LVCMOS-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		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	
38		GND	Module Ground	1

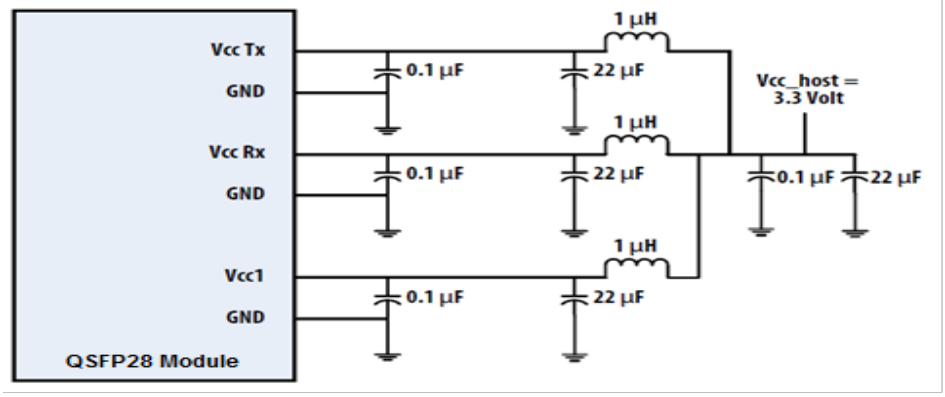
Notes:

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.

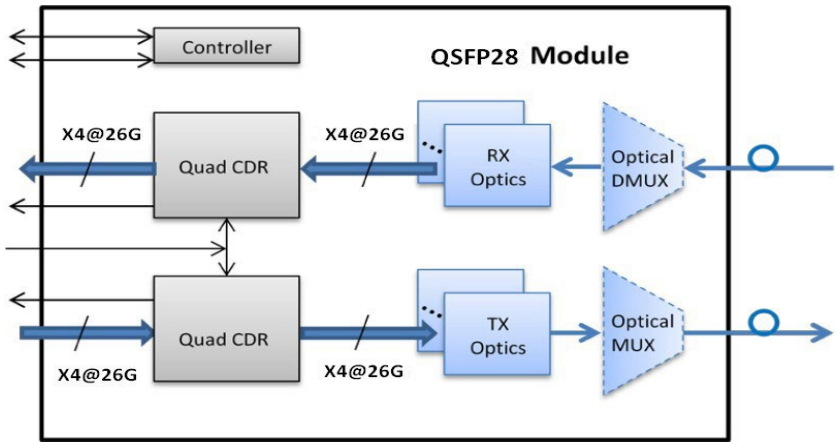
Electrical Pin-out Details



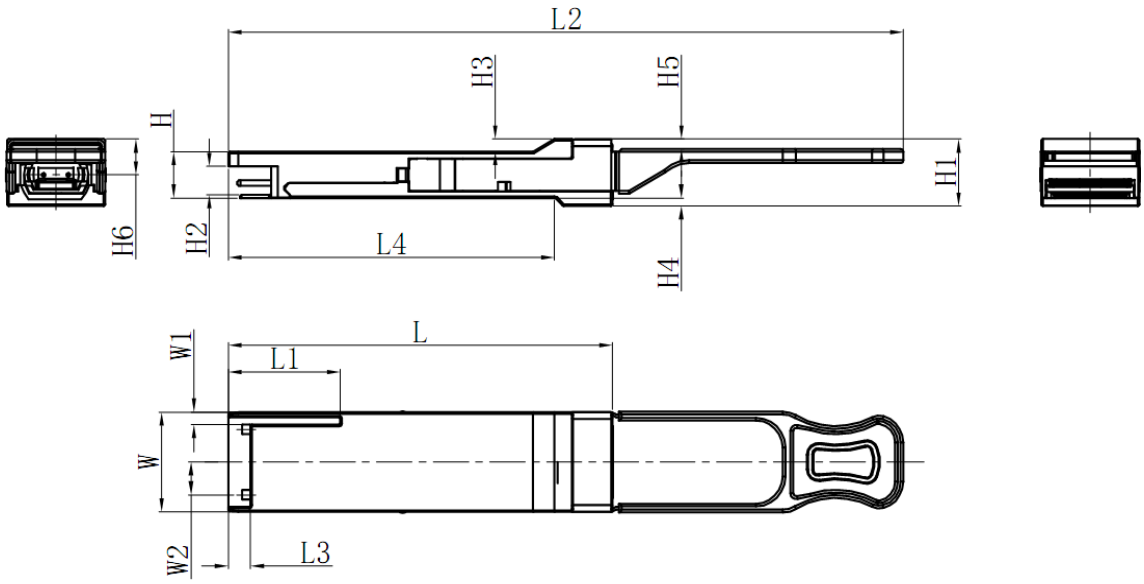
Recommended Power Supply Filter



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	-

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 ingrained 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 ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.



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