QSFP-100G-SR1.2-AO

Cisco® Compatible TAA 100GBase-SR BX QSFP28 Transceiver (MMF, 844nm to 918nm, 100m, LC, DOM)

Features

- QSFP28 MSA compliant
- Supports KP4 FEC @ 100G data rate
- Supports 100GE aggregate bit rates
- Up to 100m OM4 MMF transmission
- Operating case temperature: 10 to 70 C @ 100G
- Two independent full-duplex channels
- Maximum power consumption 4W
- Single 3.3V power supply
- RoHS compliant and lead-free
- LC optical connector



Applications

- 100GBase Ethernet

Product Description

This Cisco® QSFP28 transceiver provides 100GBase-SR BX throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 844nm to 918nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow 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

Rev. 090523

Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit	Notes
Maximum Supply Voltage		Vcc	-0.5	3.6	V	
Storage Temperature		T_S	-40	85	℃	
Operating Case Temperature		T_{OP}	10	70	℃	
Operating Relative Humidity		RH	0	85	%	
Damage Threshold		TH_d	5		dBm	
Data Rate Accuracy			-100	100	ppm	
Pre-FEC Bit Error Ratio					$2.4x10^{-4}$	
Post-FEC Bit Error Ratio					$1x10^{-12}$	1
Link Distance	**OM3**	D1		70	m	2
	OM4	D2		100	m	2
	OM5	D3		150	m	2

Notes:

1. FEC provided by host system.
2. FEC required on host system to support maximum distance.

Electrical Characteristics

Parameter	Test Point	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Control Input Voltage High		2		Vcc	V	
Control Input Voltage Low		0		0.8	V	
Power Consumption				4	W	
Supply Current	Icc			1.21	A	
Transmitter						
Overload Differential Voltage pk-pk	TP1a	900			mV	
Common Mode Voltage (Vcm)	TP1	-350		2850	mV	1
Differential Termination Resistance Mismatch	TP1			10	%	At 1MHz
Differential Return Loss (SDD11)	TP1			See CEI-28G-VSR Equation 13-19	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC11, SCD11)	TP1			See CEI-28G-VSR Equation 13-20	dB	
Stresses Input Test	TP1a	See CEI-28G-VSR Section 13.3.11.2.1				
Receiver						
Differential Voltage, pk-pk	TP4			900	mV	
Common Mode Voltage (Vcm)	TP4	-350		2850	mV	1
Common Mode Noise, RMS	TP4			17.5	mV	
Differential Termination Resistance Mismatch	TP4			10	%	At 1MHZ
Differential Return Loss (SDD22)	TP4			See CEI-28G-VSR Equation 13-19	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC22, SCD22)	TP4			See CEI-28G-VSR Equation 13-21	dB	
Common Mode Return Loss (SCC22)	TP4			-2	dB	2
Transition Time, 20 to 80%	TP4	9.5			ps	
Vertical Eye Closure (VEC)	TP4			5.5	dB	
Eye Width at 10^{-15} probability (EW15)	TP4	0.57			UI	
Eye Height at 10^{-15} probability (EH15)	TP4	228			mV	

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.
2. From 250MHz to 30GHz

Optical Characteristics

Parameter	Symbol	KP4 FEC Mode			Unit	Notes
		Min.	Typ.	Max.		
Transmitter						
Center Wavelength Line0	λC	844		863	nm	
Center Wavelength Line1	λC	900		918	nm	
RMS Spectral Width	Δλrms			λ1: 0.6 λ2: 0.65	nm	
Average Launch Power, each Lane	P_{AVG}	-6.2		4	dBm	1
Optical Modulation Amplitude (OMA), each Lane	P_{OMA}	-4.2		3	dBm	
Launch power in OMA minus TDP, each lane		-5.6			dBm	
TDECQ, each lane				4.5	dBm	
Extinction Ratio	ER	3.0			dB	
Transmitter transition time, each lane (max)				31	ps	
RIN12 OMA				-128	dB/Hz	
Optical Return Loss Tolerance	TOL			12	dB	
Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Encircled Flux		≥ 86% at 19 µm ≤ 30% at 4.5 µm				2
Signaling rate, each lane		26.5625± 100ppm			Gbps	
Receiver						
Center Wavelength Lane0	$λ_C$	844	850	863	nm	
Center Wavelength Lane1	$λ_C$	900	910	918	nm	
Damage Threshold, each Lane	TH_d	5			dBm	3
Average Receive Power, each lane		-8.2			dBm	4
Average power at receiver input, each lane (overload)				4	dBm	
Receiver Reflectance	R_R			-12	dB	
Stressed receiver sensitivity in OMA, Lane2				-3.5	dBm	5
Receiver sensitivity (OMA outer), each lane				Max(-6.6, SECQ-8) as per IEEE cl 150	dBm	
LOS Assert	LOSA	-30		-14.2	dBm	
LOS Deassert	LOSD			-11.2	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Even if the mTDEC <0.9 db, the OMA (min) must exceed this value.
2. If measured into type A1a.2 50um fiber in accordance with IEC 61280-1-4.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.

4. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. Measured with conformance test signal at TP3 as per the following:

Stressed eye closure (SECq), each lane	4.5	dB
OMA of each aggressor, each lane	3	dBm

Pin Descriptions

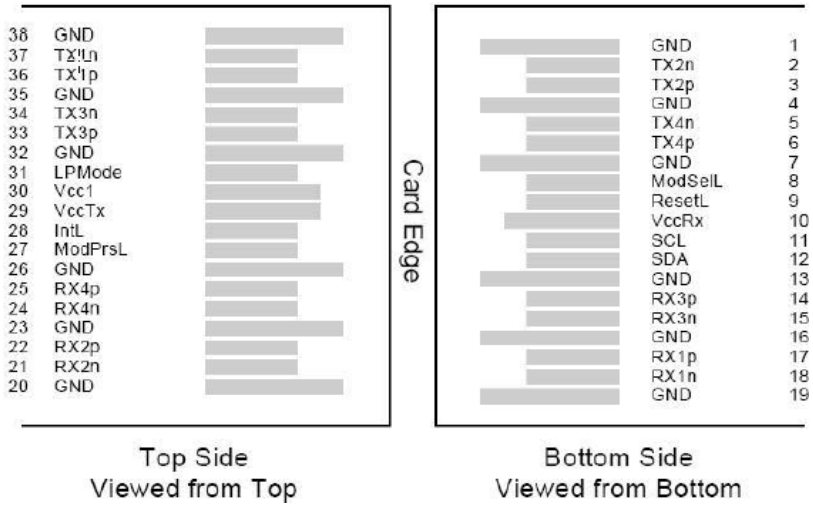
Pin	Logic	Symbol	Name/Descriptions	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	1
8	LVTLL-I	ModSelL	Module Select	
9	LVTLL-I	ResetL	Module Reset	
10		VccRx	+3.3V Power Supply Receiver	2
11	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVCMOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	1
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	

29		VccTx	+3.3 V Power Supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	1

Notes:

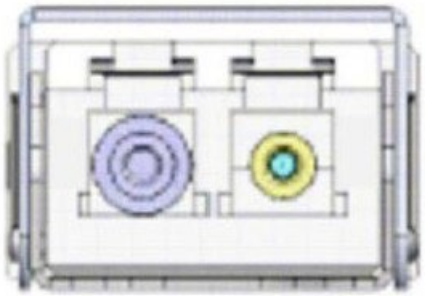
1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. VccRx, Vcc1 and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering isshown in Figure 4 below. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP28 transceiver module in any combination. The connector pins areeach rated for a maximum current of 1000mA.

Electrical Pin-Out Details

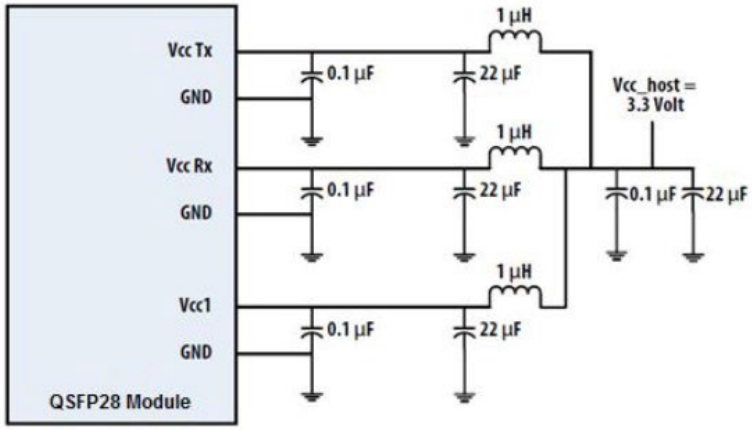


Optical Interface Lanes and Assignments

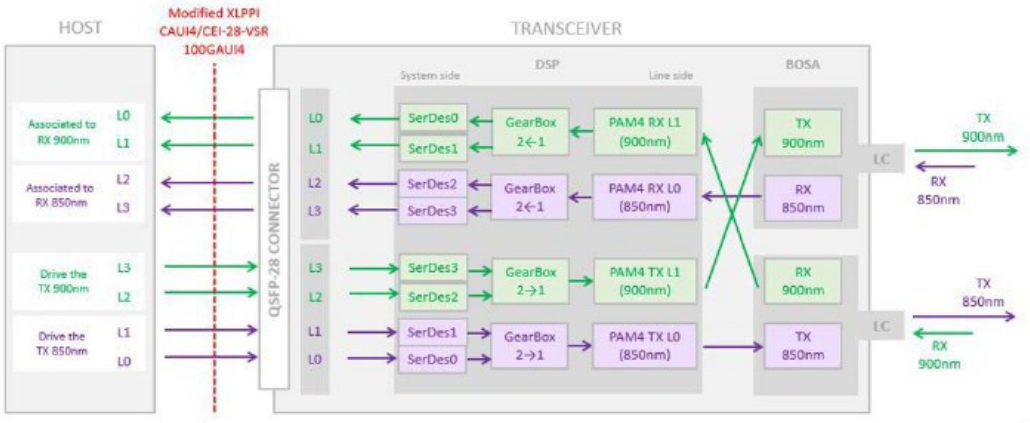
The orientation of the multi-mode fiber facets of the optical connector



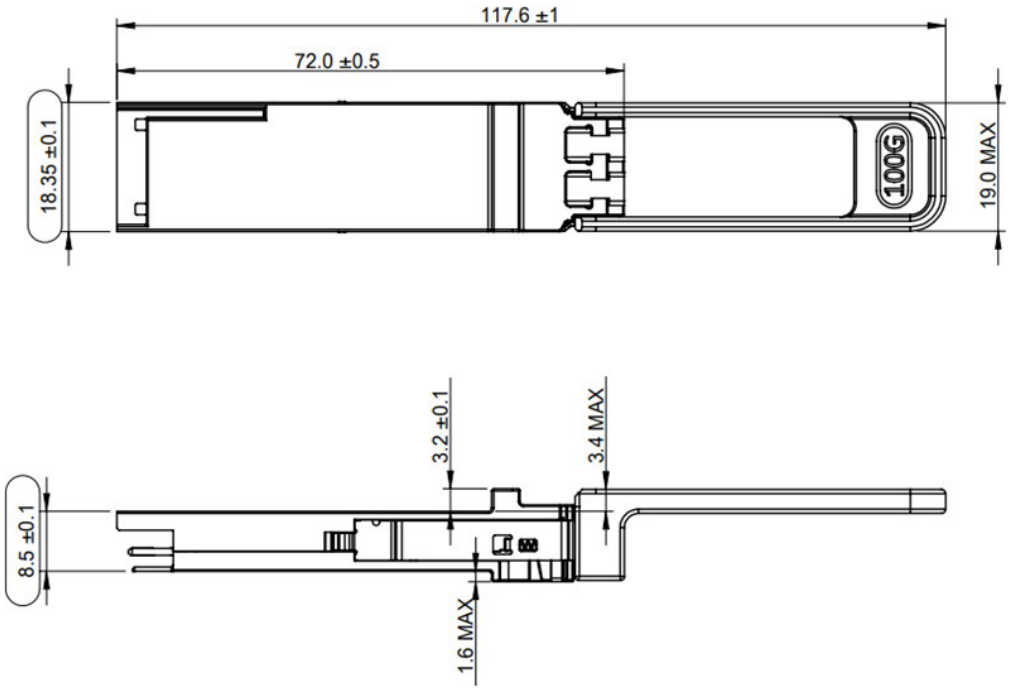
Recommended Power Supply Filter



Transceiver Block Diagram



Mechanical Specifications



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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