Asterfusion 100G QSFP28 CWDM4 Duplex LC SMF 2km Optical Transceiver

Features

- 4x25.78125Gb/s electrical interface
- Uncooled 4x25.78125Gb/s CWDM transmitter
- Maximum 2km on SMF
- Power consumption <3.5W
- Hot Pluggable QSFP28 form factor
- Duplex LC connector receptacle
- Built-in digital diagnostic functions
- Compliant with CMIS
- Operating case temperature 0°C to +70°C

Overview

The 100G CWDM4 QSFP28 transceiver module supports up to 2 kilometers on SMF. It complies with the QSFP28 Multi-Source Agreement (MSA) and the 100G CWDM4 MSA standards. The 100G CWDM4 has four center wavelengths 1270 nm, 1290 nm, 1310 nm, and 1330 nm, allowing the transmission of multiple signals simultaneously over a single fiber. Its energy efficiency comes from its low power consumption of 3.5 watts and commercial temperature range of 0 to 70 degrees Celsius. The optical module offers stable connections in the data center backbone, high-performance computing clusters, and enterprise high-bandwidth interconnectivity. It supports digital diagnostics, fully complying with the Common Management Interface Specification (CMIS).

Product Applications

- AI Inference Fabric
- Data Center Fabric
- HPC Fabric

- Campus Spine-Leaf connection
- High-speed Servers
- High-speed WAN connection
- 5G xHaul
- Telecom WAN/MAN
- Ethernet Storage Fabric

Networking

The transceiver can connect to another transceiver with the same specifications.

Figure 1 Connect two 100G-port switches

Specifications

Electrical Specifications

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Consumption					3.5	W
Supply Current	Icc				1050	mA

Optical Characteristics

Transmitter Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Signaling rate, each lane (range)	GBb			25.78125		GBb

Center Wavelength	λ0		1264.5		1277.5	nm
	λ1		1284.5		1297.5	nm
	λ2		1304.5		1317.5	nm
	λ3		1324.5		1337.5	nm
Side-mode suppression ratio	SMSR		30			dB
Total average launch power					8.5	dBm
Average launch power, each lane	Pf		-6.5		2.5	dBm
Optical Modulation Amplitude (OMA), each lane	TxOMA		-4		2.5	dBm
Transmitter and Dispersion Penalty	TDP				3	dB
Launch power in OMA minus TDP, each lane	Tx-TDP		-5			dBm
Average launch power of OFF transmitter, each lane					-30	dBm
Extinction ratio	ER		3.5			dB
Optical return loss tolerance					20	dB
Transmitter reflectance					-12	dB

Receiver Characteristics

Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Signaling rate, each lane (range)	GBb			25.78125		GBb
Center Wavelength	λ0		1264.5		1277.5	nm
	λ1		1284.5		1297.5	nm
	λ2		1304.5		1317.5	nm
	λ3		1324.5		1337.5	nm
Damage threshold			3.5			dBm
Average power at receiver input, each lane			-10		2.5	dBm
Receive power, each lane (OMA)					2.5	dBm
Receiver reflectance					-26	dB

Receiver sensitivity (OMA)	SOMA	BER@5e-5			-10	dBm
LOS Assert	LOSA		-24			dBm
LOS De-Assert	LOSD				-11.6	dBm
LOS Hysteresis			0.5		6	dB

Optical Interface Lanes and Assignment

The optical interface port is a Duplex LC receptacle. The transmit and receive optical lanes shall occupy the positions depicted in Figure 2.

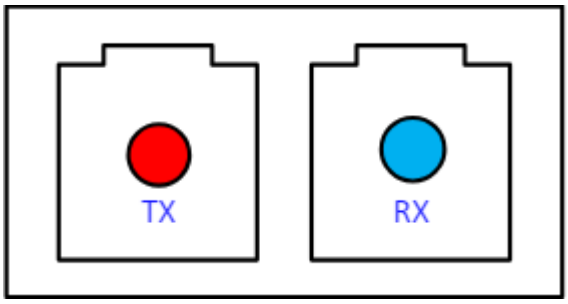

Figure 2 Optical Receptacle and Channel Orientation

Mechanical Dimensions

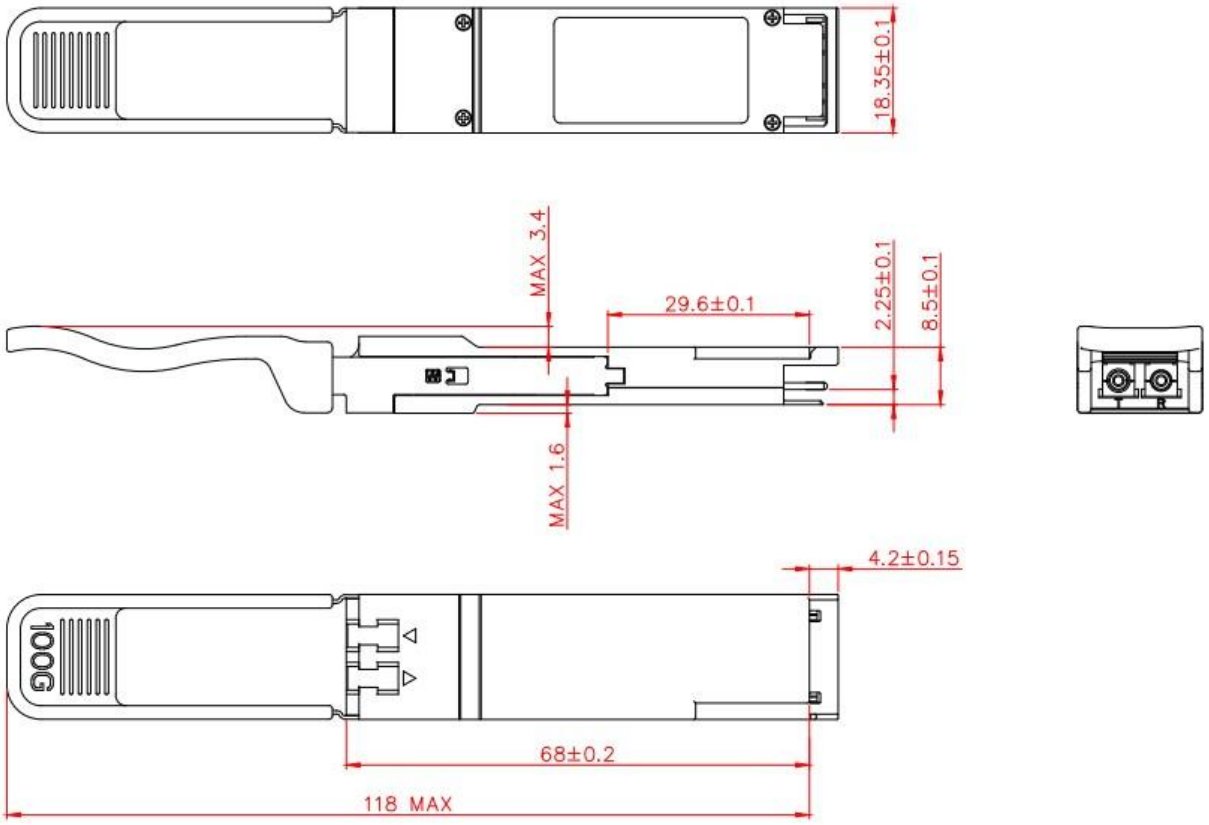

Figure 3 Mechanical Specifications (mm)

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Min.	Max.	Unit
Storage Temperature	TStorage		-40	+85	℃
Relative Humidity	RH		0	+85	%

Recommended Operating Conditions

(T=25°C, unless noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Case Temperature	T_C		0		70	℃

Power Supply Voltage	V_{CC}		3.135	3.3	3.465	V
Signaling Rate each Channel				25.78125		Gbps
Supply Noise Rejection					100	mV
Receiver Differential Data Output				100		Ohm
Operating Distance	D				2	km

PIN Description

It complies with the 100G CWDM4 MSA Specification, see https://cwdm4-msa.org .

QSFP28 Pin Description

PIN	Logic	Symbol	Name/Description	Note
1		GND	Ground	
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		VccRx	+ 3.3V Power Supply Receiver	
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	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	
20		GND	Ground	
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	
24	CML-O	Rx4n	Receiver Inverted Data Output	

25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	
30		Vcc1	+3.3 V Power Supply	
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	

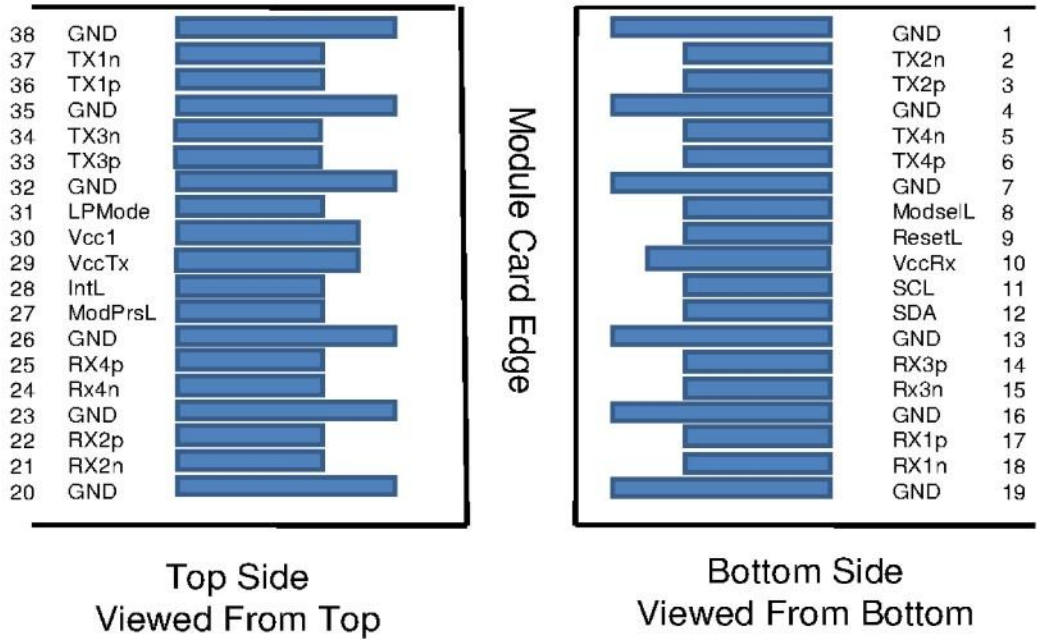

Figure 4 Electrical Pin-out Details

Digital Diagnostic Specification

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

Order Information

Part Number	Description
OT-100G-QSFP-CWDM4	100G, QSFP28, Duplex LC, CWDM4, 2km

Warranty and Service Support

Asterfusion optical transceivers come with 2-year Basic H/W service and warranty.

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