QSFP28-100GB-4WDM40-C

MSA and TAA 100GBase-4WDM-40 QSFP28 Transceiver (SMF, 1295nm to 1309nm, 40km, LC, DOM)

Features:

- QSFP28 MSA compliant
- Supports 103Gbps
- Single 3.3V Power Supply and Power dissipation < 4.8W
- Up to 40km over SMF with FEC on host
- Operating case temperature: 0 to 70C
- Four 25Gbps DFB-based LAN-WDM transmitter
- PIN and TIA array on the receiver side
- 4x25G electrical interface
- Duplex LC receptacles
- I2C interface with integrated Digital Diagnostic Monitoring
- RoHS Compliant and Lead Free

Applications:

- x

Product Description

This Industry Standard QSFP28 transceiver provides 100GBase-4WDM-40 throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1295nm to 1309nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Industry Standard 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.

ProLabs' 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. 060524

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5	3.6	V
Storage Temperature	TS	-40	+85	℃
Operating Case Temperature	Tc	0	70	℃
Operating Humidity	RH	5	85	%

Electrical Characteristics

Parameter	Test Point	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Dissipation	PD			5	W	
Transmitter						
Differential data input swing per lane				900	mv_{p-p}	
Input Impedance (Differential)	Zin			10	%	
Stressed Input Parameters						
Eye width		0.46			UI	
Applied pk-pk sinusoidal jitter		IEEE 802.3bm Table 88-13				
Eye height		95			mv	
DC common mode voltage		-350		2850	mv	
Receiver						
Differential output amplitude		200		900	mv_{p-p}	
Output Impedance (Differential)	Zout			10	%	
Eye width		0.57			UI	
Eye height differential		228			mv	
Vertical eye closure				5.5	dB	

Optical Characteristics

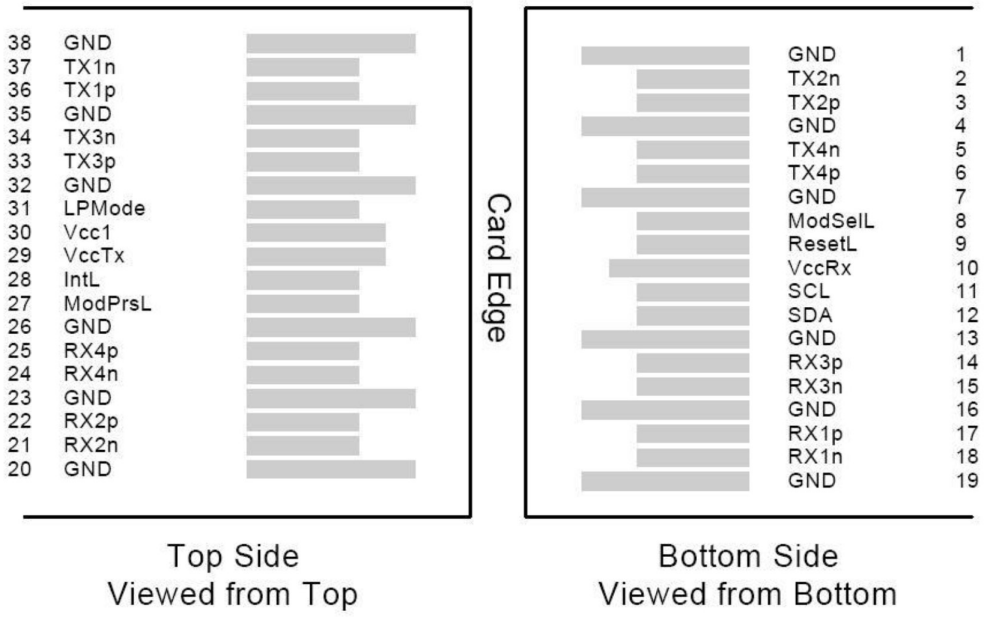
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane	BR_{AVE}		25.78		Gbps	
Data Rate Variation		-100		+100	ppm	
Lane_0 Center Wavelength	λ_{C0}	1294.53	1295.56	1296.59	nm	
Lane_1 Center Wavelength	λ_{C1}	1299.02	1300.05	1301.09	nm	
Lane_2 Center Wavelength	λ_{C2}	1303.54	1304.58	1305.63	nm	
Lane_3 Center Wavelength	λ_{C3}	1308.09	1309.14	1310.19	nm	
Total Average Output Power	Po			12.5	dBm	
Average Launch Power per Lane	Peach	-2.5		6.5	dBm	1
Average launch power of OFF transmitter per lane				-30	dBm	
Side-mode suppression ratio	$SMSR_{min}$	30			dB	
Optical modulation amplitude	Poma	0.5		6.5	dBm	2
Difference in launch power between any two lanes (OMA)				4	dB	
Optical Return Loss Tolerance		20			dB	
Transmitter reflectance				-26		3
Extinction Ratio	ER	4.5			dB	4
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}				4
Receiver						
Signaling Speed per Lane	BR_{AVE}		25.78		Gbps	
Data Rate Variation		-100		+100	ppm	
Damage threshold per Lane	Rdam	-2.5			dBm	
Lane_0 Center Wavelength	λ_{C0}	1294.53	1295.56	1296.59	nm	
Lane_1 Center Wavelength	λ_{C1}	1299.02	1300.05	1301.09	nm	
Lane_2 Center Wavelength	λ_{C2}	1303.54	1304.58	1305.63	nm	
Lane_3 Center Wavelength	λ_{C3}	1308.09	1309.14	1310.19	nm	
Average Receive Power per Lane	Rxpow	-20.5		-3.5	dBm	5
Receive Sensitivity in OMA per Lane	Rxsens			-18.5	dBm	6
Stressed Receiver Sensitivity (OMA) per Lane	RX_{SRS}			-16	dBm	7
Optical Return Loss	ORL			-26	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-20	dBm	
LOS Hysteresis		0.5			dB	
Conditions of Receiver Sensitivity Test (Note 8)						
Vertical Eye Closure Penalty	VECP		2.5		dB	
Stressed Eye J2 Jitter			0.33		UI	

Stressed Eye J4 Jitter			0.48		UI	
SRS Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.39, 0.5, 0.5, 0.39, 0.39, 0.4}				

Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Even if the TDP < 1.0dB, the OMA (min) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. Eye mask hit ratio is 5E-5.
5. Average launch 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.
6. Receiver sensitivity (OMA), each lane (max) at 5E-5 BER is a normative specification.
7. Measured with conformance test signal at TP3 for BER = $5*10^{-5}$.
8. Vertical eye closure penalty, stressed eye J2 Jitter, stressed eye J4 Jitter, and SRS eye mask definition are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Electrical Pin-out Details



Pin Descriptions

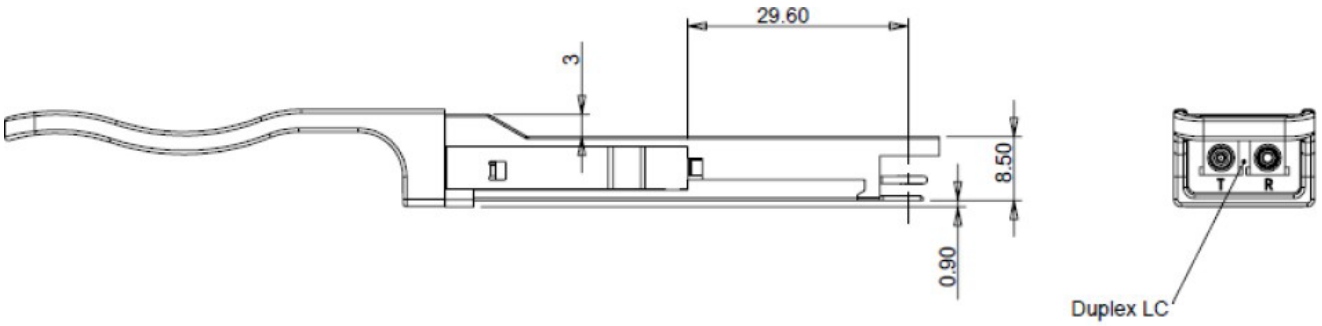
Pin	Symbol	Name/Descriptions	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V Power Supply Receiver	2
11	SCL	2-Wire Serial Interface Clock	1
12	SDA	2-Wire Serial Interface Data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data output	
15	Rx3n	Receiver Inverted Data output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data output	
18	Rx1n	Receiver Inverted Data output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data output	
22	Rx2p	Receiver Non-Inverted Data output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data output	1
25	Rx4p	Receiver non-Inverted Data output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power Supply Transmitter	2
30	Vccl	+3.3V Power Supply	2
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data input	
34	Tx3n	Transmitter Inverted Data output	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data input	
37	Tx1n	Transmitter Inverted Data output	
38	GND	Ground	1

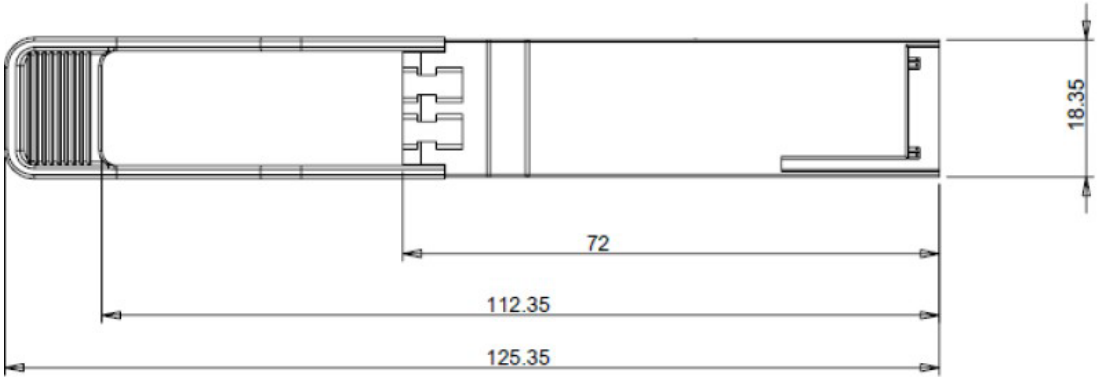
Notes:

1. GND is the symbol for signal and supply (power) common for QSPF28 modules. All are common within the QSPF28 module and all module voltages are referenced to this potential unless otherwise noted. Connected these directly to the host board signal common ground plane.
2. VccRx, Vcc1 and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. VccRx, Vcc1 and VccTx may be internally connected within the QSFP28 transceiver module in any combination. The connector pins are each rated for a maximum current of 1000mA.

Mechanical Specifications

Measurement unit: mm





About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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