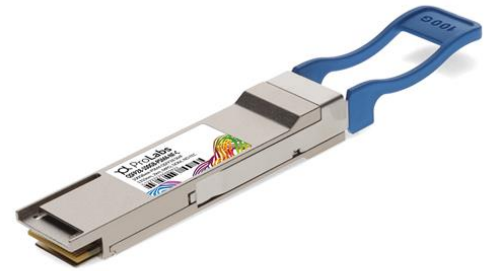


## QSFP28-100GB-PSM4-NF-C

MSA and TAA 100GBase-PSM4 QSFP28 Transceiver (SMF, 1310nm, 2km, MPO, DOM, No FEC)

### Features:

- Compliant to IEEE 802.3bm
- 4 Parallel Lanes Design
- Compliant with MSA 100G PSM4 Specifications
- Up to 25.78125Gbps Per Channel Data Links
- Single 3.3V Power Supply
- 4-Channel PIN Photo Detector
- Up to 2km on SMF with No FEC
- Class 1 Laser Safety Certified
- Commercial Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



### Applications:

- 100GBase Ethernet

### Product Description

This Industry Standard QSFP28 transceiver provides 100GBase-PSM4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO 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."



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	-0.5		4	V	
Storage Temperature	T <sub>stg</sub>	-40		85	°C	
Case Operating Temperature	T <sub>c</sub>	0	25	70	°C	
Relative Humidity	RH	5		95	%	
Data Rate	BR		25.78125		Gbps	

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	3.135	3.3	3.465	V	
Power Supply Current	I <sub>CC</sub>			1060	mA	
Power Dissipation	P <sub>DISS</sub>			3500	W	
<b>Transmitter</b>						
Input Differential Impedance	Z <sub>IN</sub>	90	100	110	Ω	
Differential Data Input Swing	V <sub>IN,pp</sub>	190		700	mVp-p	
AC Common-Mode Input Voltage Tolerance		15			mV	
<b>Receiver</b>						
Output Differential Impedance	Z <sub>OUT</sub>	90	100	110	Ω	
Differential Data Output Swing	V <sub>OUT,pp</sub>	300		850	mVp-p	1
AC Common-Mode Output Voltage		12		7.5	ps	
Single-Ended Output Voltage		-0.3		4		

### Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Launch Optical Power Per Lane	Po	-4.5		4	dBm	1
Side-Mode Suppression Ratio	SMSR	30			dB	
Center Wavelength	$\lambda$	1295	1310	1325	nm	
Extinction Ratio	ER	3.5			dB	2
Optical Return Loss Tolerance	ORLT			20	dB	
POUT @Tx_Disable Asserted	Poff			-30	dBm	1
Transmitter Eye Mask Definition	{X1, X2, X3, Y1, Y2, Y3} {0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					
<b>Receiver</b>						
Center Wavelength	$\lambda_C$	1295		1325	nm	
Average Receive Power Per Lane	P1	-7.5		2.0	dBm	
Receiver Sensitivity Per Lane	S			-7.5	dBm	3
Receiver Overload Per Channel	POL	2.0			dBm	3
Damage Threshold	Pdamage	3.0			dBm	
LOS De-Assert	LOSD			-12.5	dBm	
LOS Assert	LOSA	-24			dBm	
LOS Hysteresis		0.5			dB	

### Notes:

1. The optical power is launched into the SMF.
2. Measured with a PRBS  $2^{31}-1$  test pattern @25.78125Gbps.
3. Measured with PRBS  $2^{31}-1$  test pattern, @25.78125Gbps per lane, and BER= $1 \times 10^{-12}$ .

## Pin Descriptions

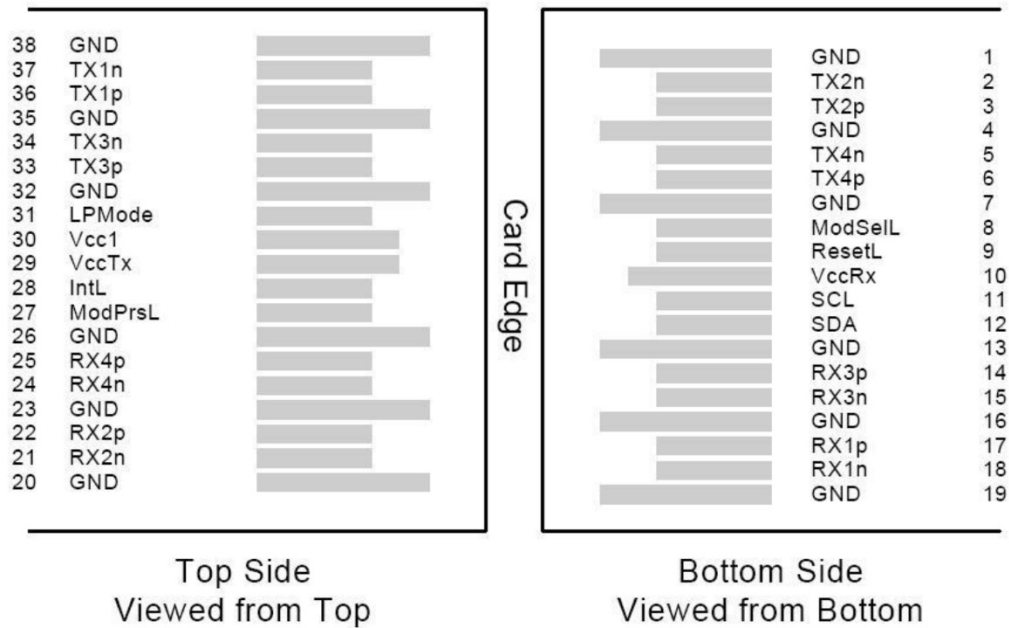
Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground).	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Input.	
4	GND	Transmitter Ground (Common with Receiver Ground).	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Input.	
7	GND	Transmitter Ground (Common with Receiver Ground).	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	+3.3V Receiver Power Supply.	
11	SCL	2-Wire Serial Interface Clock.	2
12	SDA	2-Wire Serial Interface Data.	2
13	GND	Transmitter Ground (Common with Receiver Ground).	1
14	Rx3+	Receiver Non-Inverted Data Output.	
15	Rx3-	Receiver Inverted Data Output.	
16	GND	Transmitter Ground (Common with Receiver Ground).	1
17	Rx1+	Receiver Non-Inverted Data Output.	
18	Rx1-	Receiver Inverted Data Output.	
19	GND	Transmitter Ground (Common with Receiver Ground).	1
20	GND	Transmitter Ground (Common with Receiver Ground).	1
21	Rx2-	Receiver Inverted Data Output.	
22	Rx2+	Receiver Non-Inverted Data Output.	
23	GND	Transmitter Ground (Common with Receiver Ground).	1
24	Rx4-	Receiver Inverted Data Output.	1
25	Rx4+	Receiver Non-Inverted Data Output.	
26	GND	Transmitter Ground (Common with Receiver Ground).	1
27	ModPrsL	Module Present.	
28	IntL	Interrupt.	2
29	VccTx	+3.3V Transmitter Power Supply.	
30	Vcc1	+3.3V Power Supply.	
31	LPMoDe	Low-Power Mode.	2
32	GND	Transmitter Ground (Common with Receiver Ground).	1
33	Tx3+	Transmitter Non-Inverted Data Input.	
34	Tx3-	Transmitter Inverted Data Output.	
35	GND	Transmitter Ground (Common with Receiver Ground).	1
36	Tx1+	Transmitter Non-Inverted Data Input.	

37	Tx1-	Transmitter Inverted Data Input.	
38	GND	Transmitter Ground (Common with Receiver Ground).	1

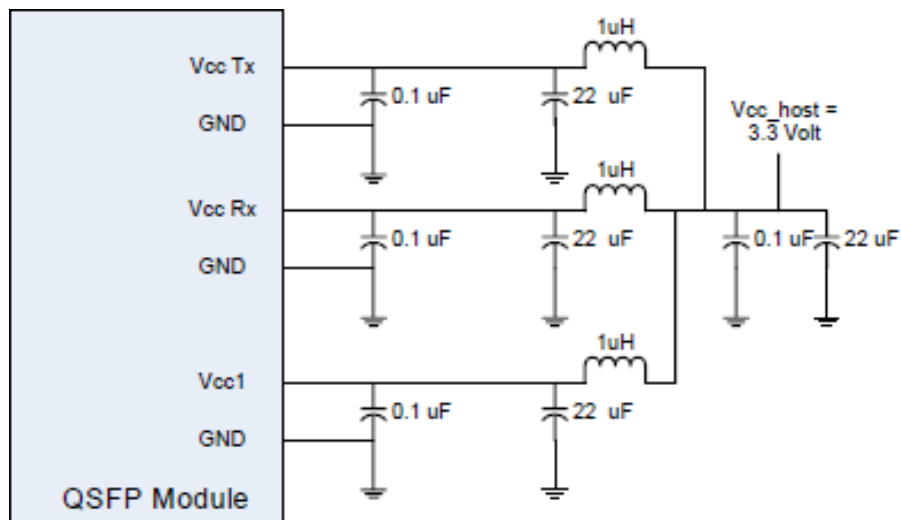
**Notes:**

1. The module signal grounds are isolated from the module case.
2. This is open collector/drain output that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host\_Vcc.

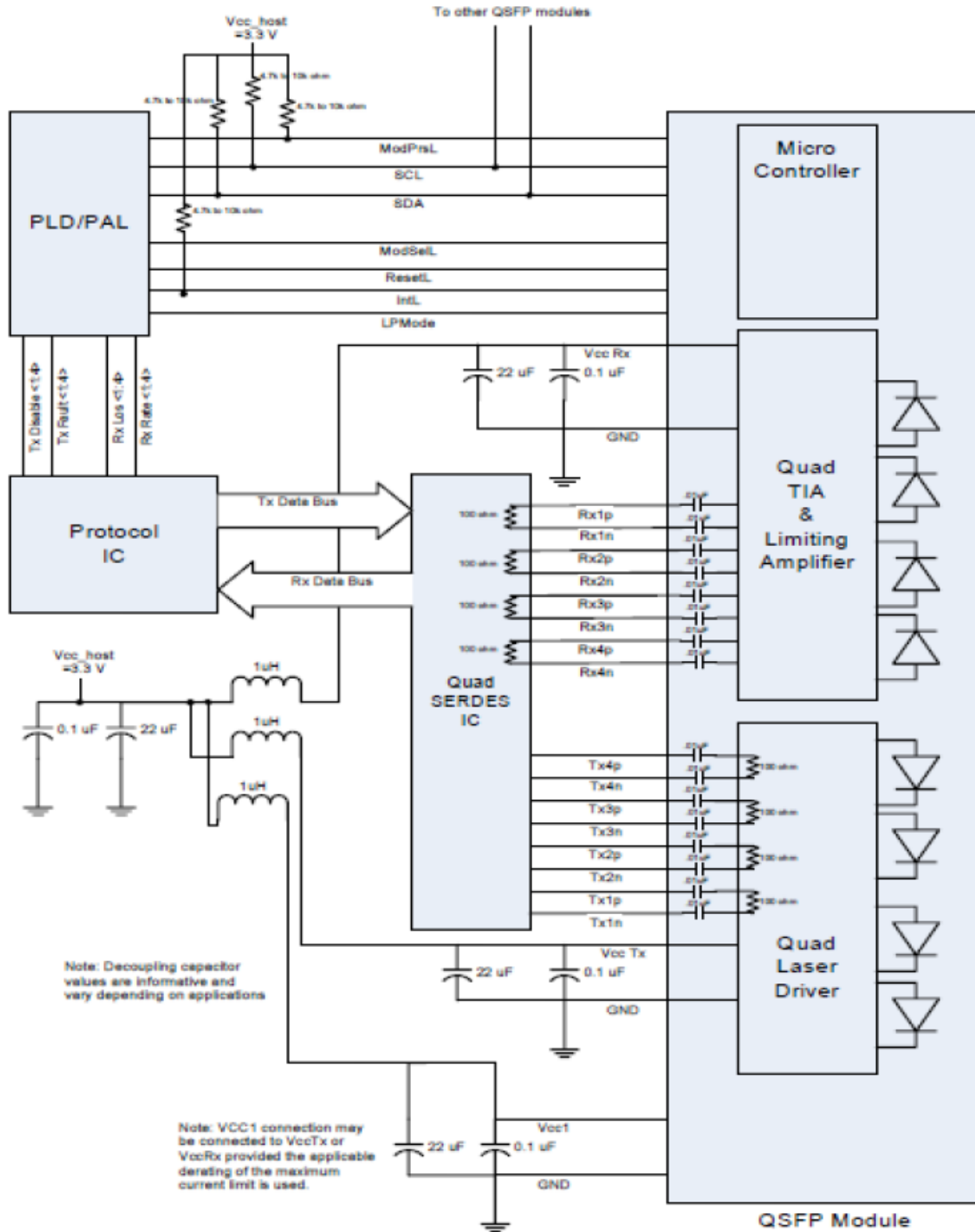
**Electrical Pin-Out Details**



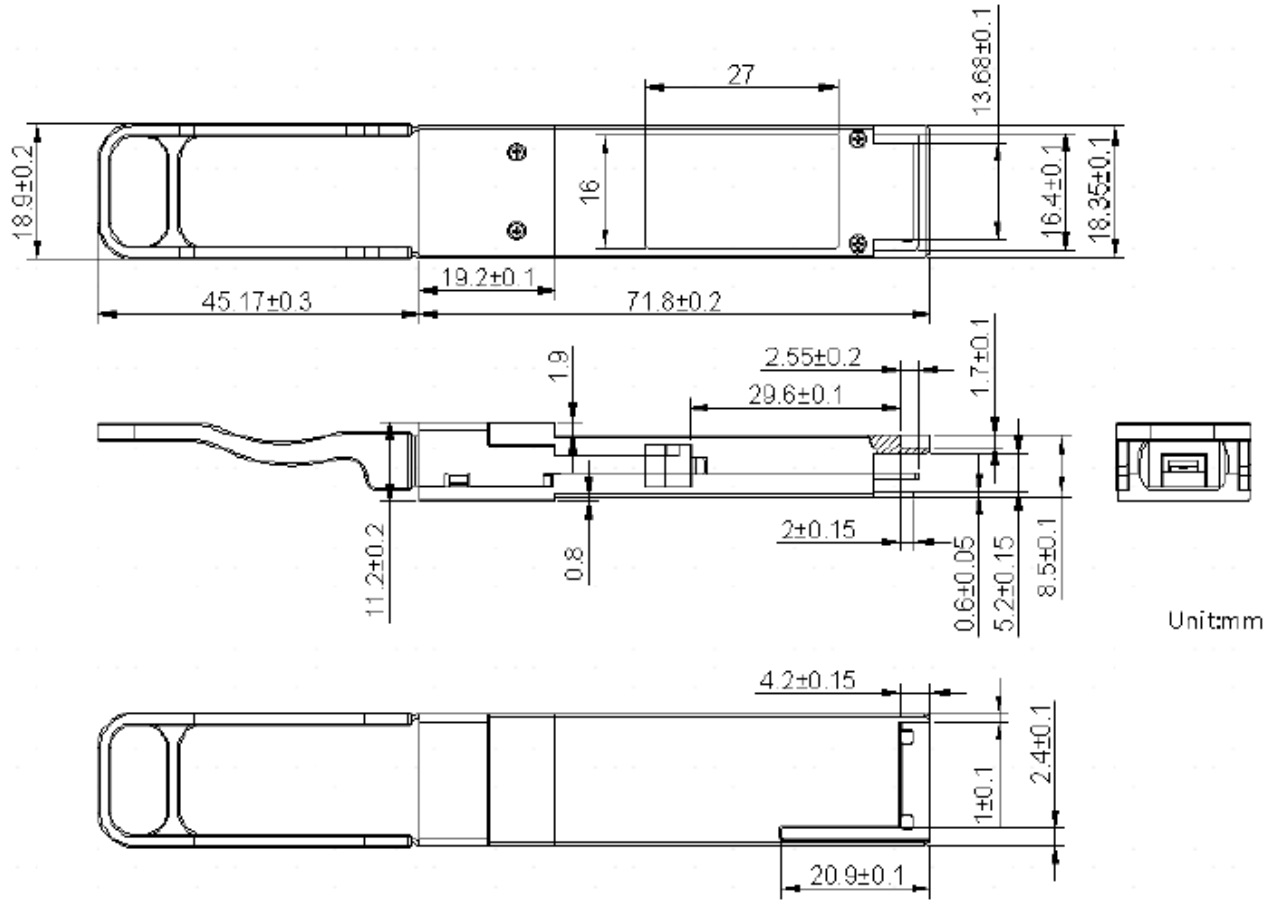
**Recommended Host Board Power Supply Filter Network**



# Transceiver Interface Block Diagram



# Mechanical Specifications



## 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.



## Contact Information

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