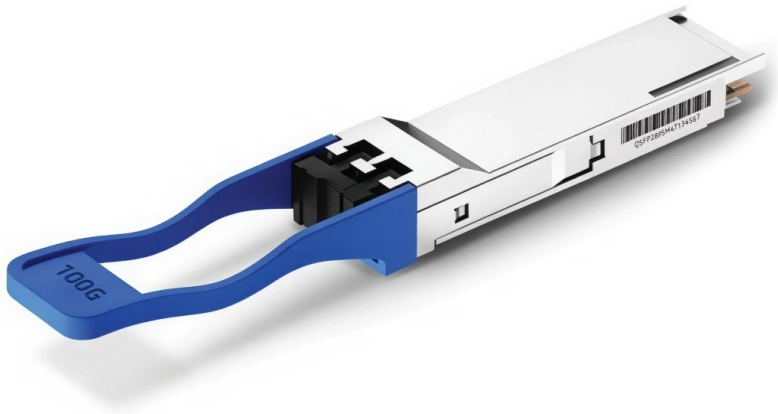
100G QSFP28 PSM4 Transceiver

Overview

The 100G QSFP28 PSM4 optical transceiver is engineered for high-performance, parallel 100-Gigabit connectivity over single-mode fiber up to 500 meters. It operates through four independent transmit and receive lanes at 25.78125 Gbps each, delivering consistent optical performance for modern data center and cloud environments.

The module integrates an MPO12 connector interface and supports real-time digital diagnostics through a 2-wire management interface, ensuring reliable operation, simplified monitoring, and seamless interoperability across high-density 100G infrastructure.



Features and Benefits

- Supports 100G Ethernet over 4×25G parallel single-mode fiber
- Provides 500 m reach with MPO12 connectivity
- Low power design optimized for high-density deployments
- Integrated Digital Diagnostics Monitoring for real-time insight
- Fully compliant with QSFP28 MSA, IEEE 802.3bm, and PSM4 standards

Applications

- 100G data center interconnects
- High-capacity cloud and hyperscale environments
- Parallel optics deployments using MPO/MTP cabling
- High-density switch-to-server links

Absolute Maximum Rating

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	-40	85	ºC
Relative Humidity	Rh	0	65	%
Supply Voltage	V_{CC3}	-0.5	3.6	V
RX Input Maximum Power, each Lane	Pmax		3	dBm

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0	25	70	ºC
Power Supply Voltage	V_{CC3}	3.135	3.3	3.465	V
	I_{CC3}			1010	mA
Power Dissipation	P_D			3.5	W
Data Rate (NRZ) per Lane			25.78125		Gbps
Data Rate (NRZ) Total			103.125		Gbps
Transmission Distance			0.5		km

Optical Characteristics (Transmitter)					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Centre Wavelengths, each Lane	λC	1295	1310	1325	nm
Side-Mode Suppression Ratio	SMSR	30			dB
Laser Off Power	Poff			-30	dBm
Extinction Ratio	ER	3.5			dB
Relative Intensity Noise	Rin			-128	dB/Hz
Optical Return Loss Tolerance				20	dB
Average Launch Power per Lane	Pavg	-5		2.0	dBm
Total Average Launch Power	PT			8	dBm
Transmitter and Dispersion Penalty per Lane				3.8	dB
Transmitter Reflectance	Rr			-12	dB
Operating Data Rate, per Lane			25.78125		Gbps
Operating Date Rate, Total			103.125		Gbps
Optical Eye Mask Margin[1]	>5%				
Transmitter Eye Mask Definition (X1, X2, X3, Y1, Y2, Y3)	(0.31, 0.4, 0.45, 0.34, 0.38, 0.4)				

NOTES:

1. 1000 consecutive snapshots at typical rate

Optical Characteristics (Receiver)					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Centre Wavelengths	λ0	1295	1310	1325	nm
Receive Sensitivity (OMA), each Lane[1]					dBm
LOS Assert	LosA	-30		-9	dBm
LOS De-Assert	LosD			-15	dBm
LOS Hysteresis	LosH	0.5			dB
Overload (OMA)	Pin	2			dBm
Receiver Reflectance				-26	dB
Operating Data Rate, per Lane			25.78125		Gbps
Operating Data Rate, Total			103.125		Gbps
Rx Output Rise and Fall Time	Tr/Tf	9.5			ps

NOTES:

1. Measured with 25.78125Gb/s, PRBS31 NRZ, BER=1E-12

Electrical Characteristics					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Input Differential Impedence			100		Ω
Differential Data Input Swing		300		900	mV
Differential Data Output Swing		400		900	mV

Control and Status I/O Timing					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Initialization Time	t_init			2000	ms
Reset Init Assert Time	t_reset_init			2	us
Serial Bus Hardware Ready Time	t_serial			2000	ms
Reset Asset Time	t_reset			2000	ms
LPMode Assert Time	ton_LPMode			100	us
LPMode De-Assert Time	toff_LPMode			300	ms
IntL Assert Time	ton_IntL			200	ms
IntL De-Assert Time	toff_IntL			500	us
Rx LOS Asset Time	ton_los			100	ms
Tx Fault Assert Time	ton_Txfault			200	ms
Flag Assert Time	ton_flag			200	ms
Mask Assert Time	ton_mask			100	ms
Mask De-Assert Time	ton_mask			100	ms
Power_override or Power_set Assert Time	ton_Pdown			100	ms
Power_override or Power_set De-Assert Time	toff_Pdown			300	ms

Pin-Out Definition

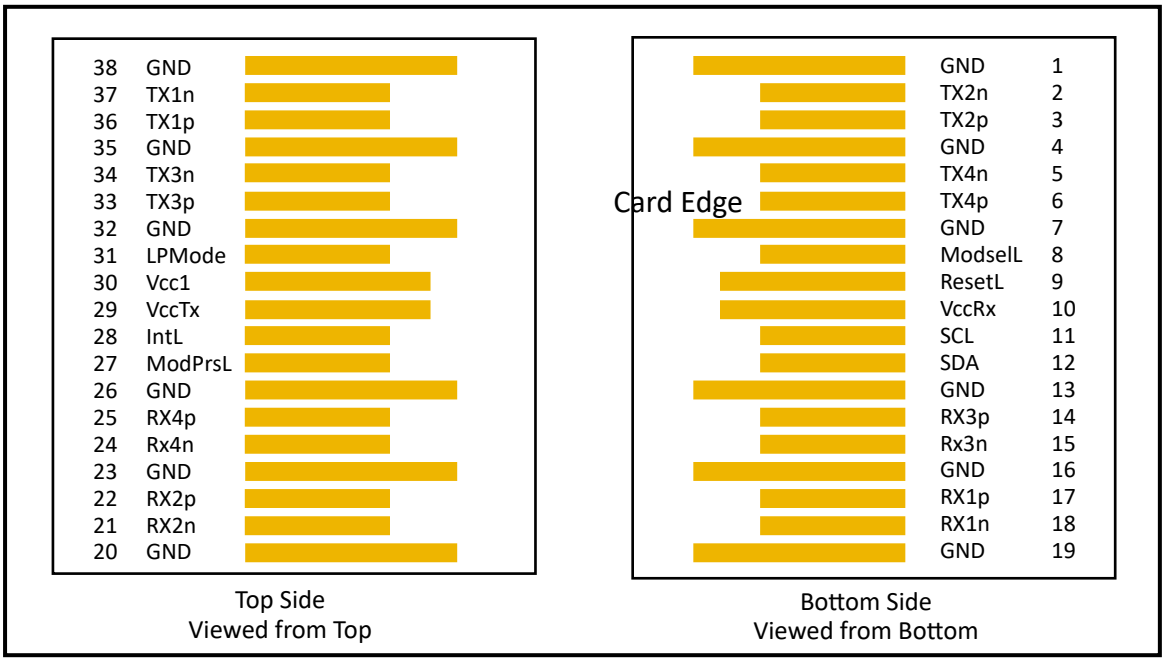


Figure 1. Pin Map

Pin Description			
Pin	**Name**	**Description**	**Notes**
1	GND	Module Ground	Note 1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	

Pin Description (Continued)			
Pin	**Name**	**Description**	**Notes**
4	GND	Module Ground	Note 1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Module Ground	
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power Supply Receiver	Note 2
11	SCL	2-Wire serial Interface Clock	
12	SDA	2-Wire serial Interface Data	
13	GND	Module Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Module Ground	Note 1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	Note 1
19	GND	Module Ground	Note 1
20	GND	Module Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Module Ground	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Module Ground	Note 1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power Supply Transmitter	Note 2
30	Vcc1	+3.3V Power Supply	Note 2
31	LPMode	Low Power Mode	
32	GND	Module Ground	Note 1
33	Tx3p	Transmitter Non-Inverted Data Output	
34	Tx3n	Transmitter Inverted Data Output	
35	GND	Module Ground	Note 1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Module Ground	Note 1

NOTES:

1. GND is the symbol for signal and supply (power) common for the QSFP+ module. All the common within the QSFP+ 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. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering is shown in Figure 7. Vcc Rx Vcc1 and VccTx may be internally connected within the QSFP+ module in any combination. The connector pins are each rated for a maximum current of 500 mA.

Optical Interface

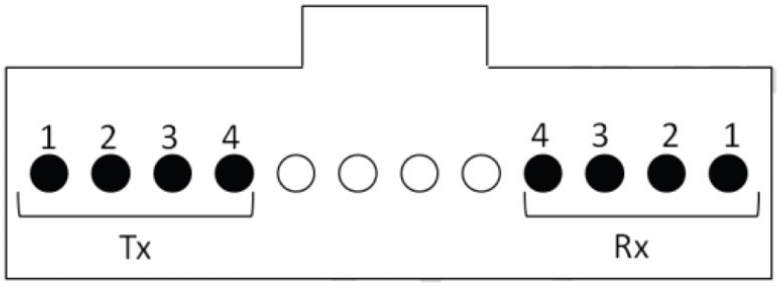


Figure 2. Optical lane assignment (front view of MPO receptacle)

The 4 transmit and 4 receive optical lanes of the PSM4 transceiver take the ordered positions as depicted in 12-fiber MPO channel assignment picture shown in Figure 3.

Standards Compliance

- QSFP28 MSA
- IEEE 802.3bm
- RoHS

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