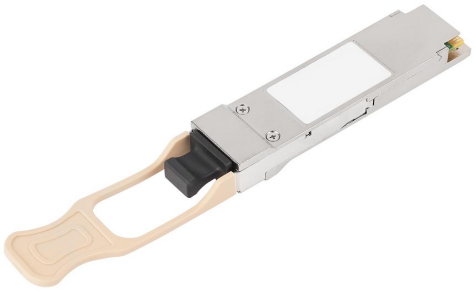
100G QSFP28 SR4 850nm 100M MPO MMF Fiber Optic Transceiver



Code and Description

Code	Description
7211010	100G QSFP28 SR4 850nm 100M MPO MMF Fiber Optic Transceiver

Applications

- 100GBASE-SR4 100G Ethernet Links; InfiniBand QDR applications
- 100G Datacom connections

Features

- Up to 27.952Gbps per channel bandwidth;
- QSFP28 MSA compliant
- High Reliability 850nm VCSEL technology
- Maximum link length of 100m links on OM3 multimode fiber
- MPO connector
- Hot pluggable electrical interface
- Digital diagnostic SFF-8436 compliant
- Power Dissipation< 2.5W
- Single +3.3V power supply operating
- Commercial Temperature range 0°C to 70°C
- RoHS Compliant Part

Description

The 100 QSFP28 SR4 100M is a 4x25G hot-pluggable optical transceiver module. It is designed for 100M optical communication applications over multimode fiber using a wavelength of 850nm via MPO connectors.
It is compliant with QSFP28 MSA, IEEE 802.3bm standard.
It is designed with form factor, optical/electrical connection and digital diagnostic interface according to the QSFP28 Multi-Source Agreement (MSA). It has been designed to meet the harshest external operating conditions including temperature, humidity and EMI interference. With these features, this easy to install, hot swappable transceiver is suitable to be used in various applications, such as high-performance computing networks, enterprise core and distribution layer applications, data centers.

Main product parameters

Form Factor	QSFP28	Max Data Rate	100 Gbps
Wavelength	850nm	Max Cable Distance 1	70m on OM3 MMF
Max Cable Distance 2	100m on OM4 MMF	Connector type	MPO/MTP
Fiber cable Type	MMF	Vendor Name	Super Link
Transimitter Type	VCSEL 850nm	Receiver Type	PIN
Transmit Power	- 8.4 ~ +2.4 dBm	Max Receiver sensitivity	- 10.3 dBm
Overload Power	2.4 dBm	Extinction Ratio	3.0 dB
DDM	Supported	Operating Temp.	0°C to 70°C (32°F to 158°F)

Communication's Hot 100G transceiver types

Code	Description
7211010	100G QSFP28 SR4 850nm 100M MPO MMF Fiber Optic Transceiver
7211020	100G QSFP28 PSM4 1310nm 2KM MPO SMF Fiber Optic Transceiver
7211030	100G QSFP28 LR4 CWDM 2KM LC SMF Fiber Optic Transceiver
7211050	100G QSFP28 LR4 LAN WDM 10KM LC SMF Fiber Optic Transceiver
7211060	100G QSFP28 ER4 LAN WDM 30KM/40KM LC SMF Fiber Optic Transceiver
7211070	100G QSFP28 ZR4 LAN WDM 80KM LC SMF Fiber Optic Transceiver

Detailed product specifications

1 Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature (°C)	Ts	-40		85	°C
Relative Humidity	RH	5		95	%
Power Supply Voltage	VCC	-0.3		3.6	V
Signal Input Voltage	Vin	Vcc-0.3		Vcc+0.3	V

2 Recommended Operating Environment

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Case operating Temperature	TOP	0		70	°C	
Power Supply Voltage	VCC	3.13	3.3	3.46	V	
Power Supply Current	ICC			750	mA	
Data Rate	BR		25.78125		Gbps	Each Channel
Transmission Distance with	TD	0		70/100	m	OM3/OM4

3 Electrical Characteristics (TOP = 0 to 70 °C, VCC = 3.14 to 3.46 Volts)

Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Note**
Supply Voltage	Vcc	3.14	3.3	3.46	V	
Supply Current	Icc			750	mA	
Transmitter						
Input differential impedance	Rin		100		Ω	1
Differential data input swing	Vin.pp	180		1000	mV	
Single ended input voltage tolerance	VinT	-0.3		4	V	
Receiver						
Differential data output swing	Vout.pp	300		850	mV	2
Single-ended output voltage		-0.3		4	V	

Notes:
1) Connected directly to TX data input pins. AC coupled thereafter.
2) Into 100Ω ohms differential termination.

4 Optical Parameters(TOP = 0 to 70 °C, VCC = 3.14 to 3.46 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Ref.
Transmitter						
Center Wavelength	λC	840	850	860	nm	
Average Launch Power, each Lane	PAVG	-8.4		+2.4	dBm	
Spectral Width (RMS)	λrms			0.6	nm	
Extinction Ratio	ER	2			dB	
Transmitter and Dispersion Penalty (TDP), each Lane	TDP			4.3	dB	
Optical Return Loss Tolerance	ORL			12	dB	
Output Eye Mask	Compliant with IEEE 802.3bm					
Receiver						
Receiver Wavelength	λC	840	850	860	nm	
Rx Sensitivity per lane	RSENS			-10.3	dBm	1
Input Saturation Power (Overload)	Psat	2.4		6	dBm	
Receiver Reflectance	Rr			-12	dB	

Note:
1. Measured with a PRBS -5 -1 test pattern, @25.78Gb/s, BER<5.2*10 .

5 Diagnostic Monitoring Interface

The following digital diagnostic characteristics are defined over the normal operating conditions unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Temperature monitor absolute error	DMI_Temp	-3		3	°C	
Supply voltage monitor absolute error	DMI _VCC	-0.1		0.1	V	
Channel RX power monitor absolute error	DMI_RX	-3		3	dB	
Channel Bias current monitor	DMI_Ibias	-10%		10%	mA	
Temperature monitor absolute error	DMI_Temp	-3		3	°C	

6 Power Supply Filtering

The host board should use the power supply filtering shown in Figure1.

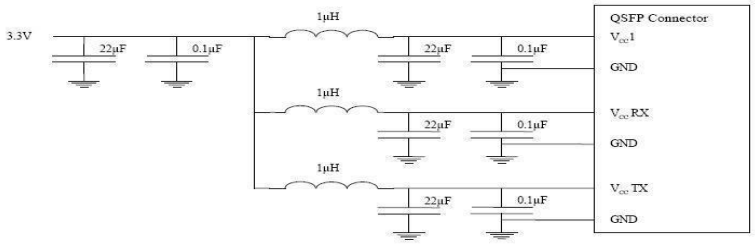


Figure1. Host Board Power Supply Filtering

7 Optical Interface Lanes and Assignment

The optical interface port is a male MPO connector. The four fiber positions on the left as shown in Figure 2, with the key up, are used for the optical transmit signals (Channel 1 through4).
The fiber positions on the right are used for the optical receive signals (Channel 4 through 1).
The central four fibers are physically present.

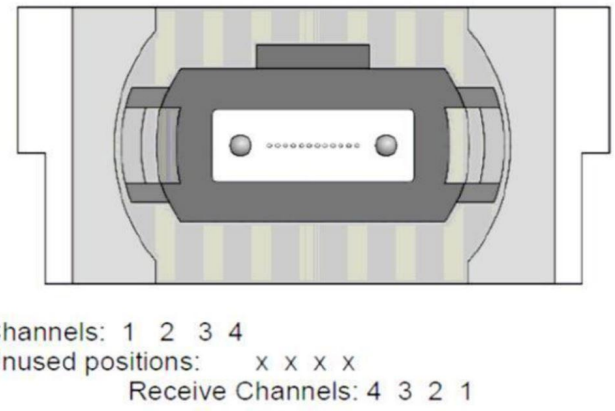


Figure 2. Optical Receptacle and Channel Orientation

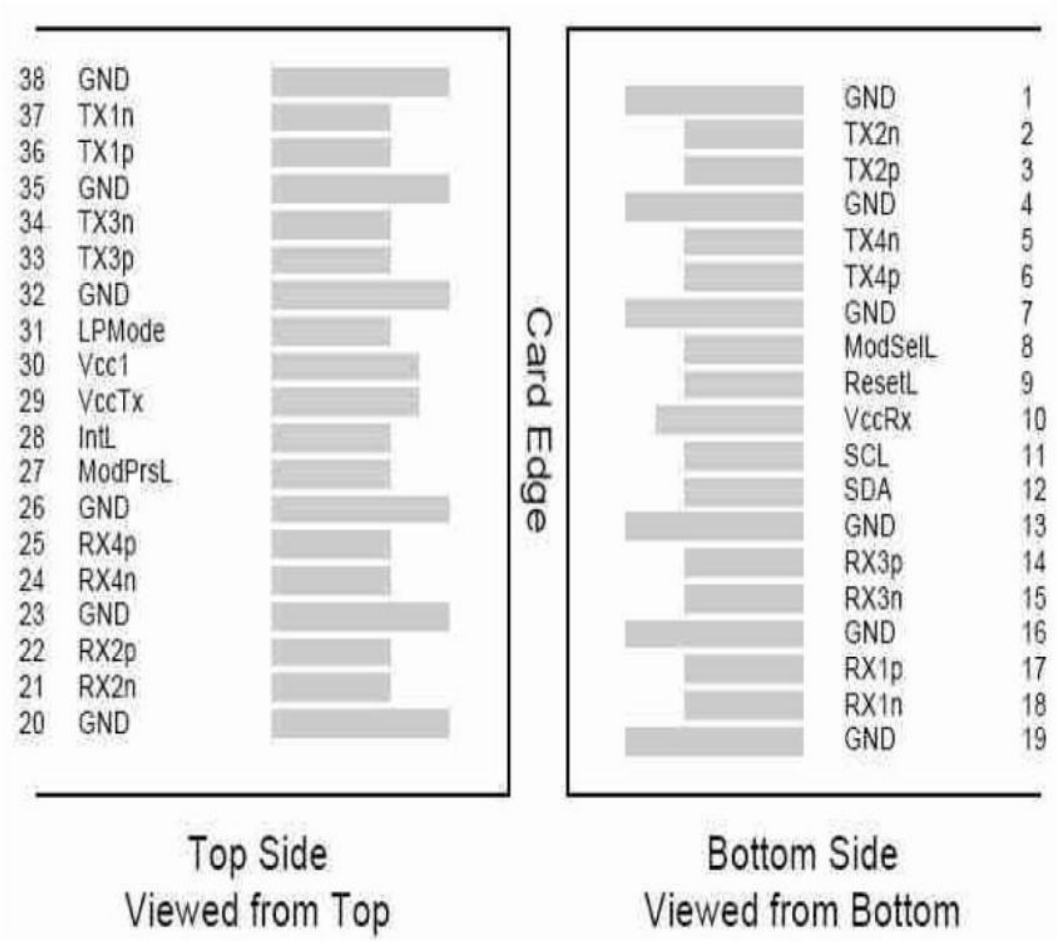
ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all other electrical input pins, tested per MIL-STD-883, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Laser Safty

This is a Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

8 Pin Assignment



9 Transceiver Block Diagram

Pin	Logic	Symbol	Max Unit Conditions	Ref.
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 Output	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Output	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-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	1
14	CML-O	Rx3p	Receiver Inverted Data Output	
15	CML-O	Rx3n	Receiver Non-Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Inverted Data Output	
18	CML-O	Rx1n	Receiver Non-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	
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	+3.3V Power Supply Transmitter	2
30		Vcc1	+3.3V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Inverted Data Output	
34	CML-I	Tx3n	Transmitter Non-Inverted Data Output	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Inverted Data Output	
37	CML-I	Tx1n	Transmitter Non-Inverted Data Output	
38		GND	Ground	1

Note:

1.GND is the symbol for single and supply(power) common for QSFP modules, All are common within the QSFP module and all module voltages are referenced to this potential otherwise noted. Connect these directly to the host board signal common ground plane. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

2.VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. VccRx, Vcc1 and VccTx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for maximum current of 500mA.

10 Diagram Mechnical Drawing