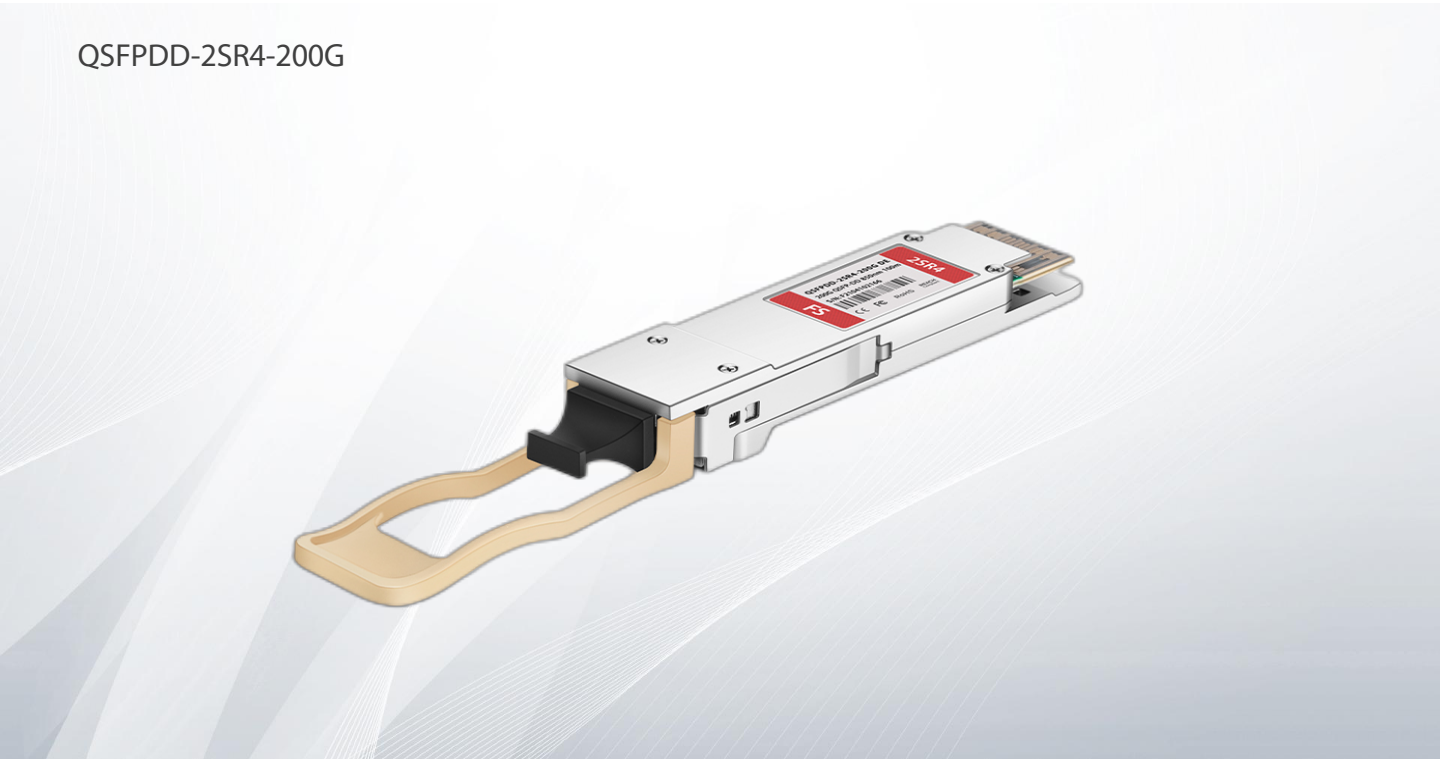
QSFP-DD 200GBASE-2SR4 850nm 100m Transceiver

QSFPDD-2SR4-200G



Application

- 200GBASE-SR8 Ethernet
- 2×100GBASE-SR4 Ethernet
- Switch & Router Connections
- Data Centers
- Other 200G Interconnect Requirements

Features

- Up to 28Gbps data rate per channel
- 8 duplex channels transmitters and receivers
- Integrated 850nm VCSEL array and PD array
- Single MPO24 connector receptacle optical interface compliant
- Single +3.3V power supply
- DDM function implemented
- Hot-pluggable QSFP-DD form factor
- Maximum link length of 100m on 24 core MPO OM4 (MMF) fiber
- Power dissipation:<4.5W
- International class 1 laser safety certified
- Operating temperature range: 0℃ ~ +70 ℃
- Compliant with ROHS10

Description

The 200G QSFP-DD SR8 Transceiver is designed to transmit and receive serial optical data links up to 28 Gb/s data rate(per channel) over multi-mode fiber. It is a small-form- factor hot pluggable transceiver module integrated with the high performance VCSEL laser and high sensitivity PIN receiver. It is compliant with 100G Ethernet specs; QSFP-DD MSA. It also functions as a 2x100G QSFP-DD SR8 transceiver that supports 2x100G connections to two 100G QSFP28 SR4 transceivers using a MPO breakout cable.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	℃	-40	85
Relative Humidity	RH	%	5	95
Power Supply Voltage	Vcc	V	-0.5	+3.6

II. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Case Temperature Range	Tc	℃	0		70
Power Supply Voltage	Vcc	V	3.14	3.3	3.46
NRZ Bit Rate(Per channel)	BR	Gbps		25.78	

III. Optical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Transmitter(per Lane)						
Signaling Speed per Lane		Gbps		25.78125		NRZ
Center wavelength		nm	840	850	860	
RMS Spectral Width	SW	nm			0.6	
Average Launch Power per lane	TXPx	dBm	-8.4		2.4	
Tx OMA per lane	TxOMA	dBm	-6.4		3	
Difference in power between any two lane(OMA)	DPx	dBm			4	
Average launch power of off transmitter per lane		dBm			-30	
Transmitter and Dispersion eye closure per lane	TDEC	dB			4.3	
Launch power in OMA minus TDEC		dBm	-7.3			
Optical Extinction Ratio	ER	dB	2			
Optical Return Loss Tolerance	ORL	dB			12	
Encircled Flux	FLX	dBm		>86% at 19um <30%at 4.5um		
Relative Intensity Noise	RIN	dB/Hz			RIN	

Receiver(per Lane)						
Signaling Speed per Lane		Gbps		25.78125		NRZ
Center wavelength		nm	840		860	
Damage Threshold	DT	dBm	3.4			
Average receive power per lane	RXPx	dBm	-10.3		2.4	
Receiver power (OMA) per lane	RxOMA	dBm			3	
Receiver reflectance	Rfl	dB			-12	
vertical eye closure penalty, per lane		dB			1.9	
Stressed Receive Sensitivity(OMA) per lane	SRS	dBm			-5.2	
Sensitivity(OMA) per lane	S	dBm			-10.3	
LOS De-Assert	LOSD	dBm			-12	
LOS Assert	LOSA	dBm	-30			
LOS Hysteresis		dBm	0.5			

IV. Principle diagram

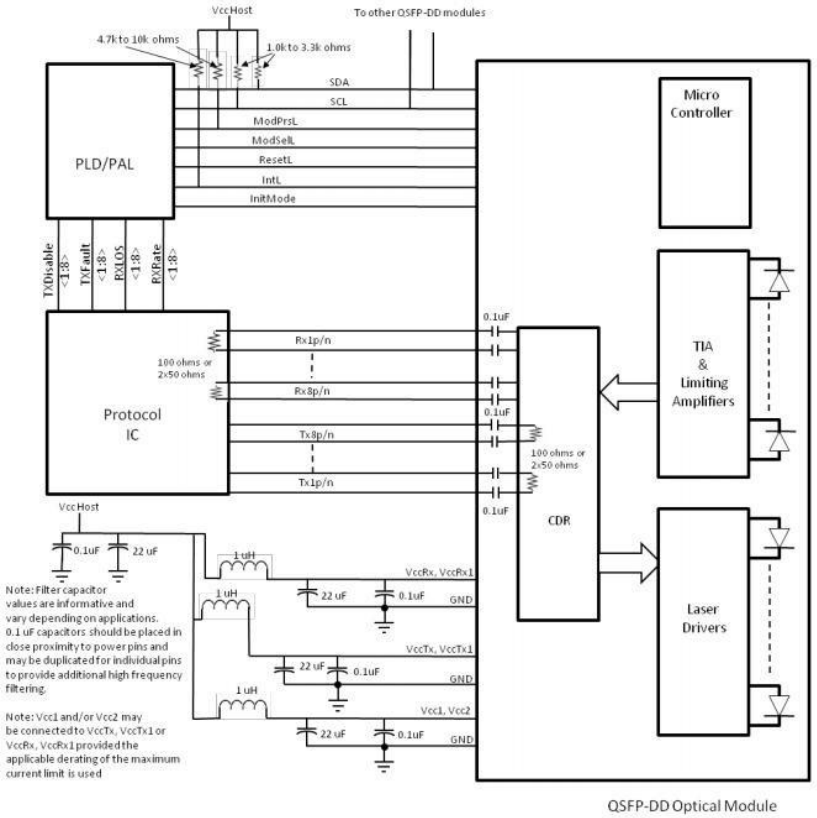


Figure 1. Module Principle Diagram

V. Electric Ports Definition

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Supply Voltage	VCC VCC3.3-Tx VCC3.3-Rx	V	3.14	3.3	3.46	
Supply Current	Icc	mA			1300	
PowerConsumptoin	Pc	W			4.5	
Transceiver Power -on Initialize Time		ms			2000	
		Transmitter				
Single Ended Input VoltageTolerance	VinT	V	-0.3		4.0	

Differential Data Input Swing	VIN	mVp-p	300		1200	
AC Common Mode Output Voltage(RMS)		mV	15			
Differential Input Impedance		Ω	90	100	110	
Receiver						
Single Ended Input VoltageTolerance	VoutR	V			0.2	
Differential Data Output Swing	Vout,PP	mVp-p	350		850	
AC Common Mode Output Voltage(RMS)		mV			7.5	
Differential Output Impedance		Ω	90	100	110	
IIC communication						
IIC Clock frequency		KHZ		100	400	
clock stretching		us			500	
Data hold time		ns	300			

VI. Pin Description

PIN	Logic	Symbol	DESCRIPTION	NOTE
1		GND	Ground	1
2	CML-I	Tx2n	TransmitterInvertedDataInput	
3	CML-I	Tx2p	TransmitterNon-InvertedDataInput	
4		GND	Ground	1
5	CML-I	Tx4n	TransmitterInvertedDataInput	
6	CML-I	Tx4p	TransmitterNon-InvertedDataInput	
7		GND	Ground	1
8	LVTTL-I	ModSelL	ModuleSelect	
9	LVTTL-I	ResetL	ModuleReset	
10		VccRx	+3.3VPowerSupplyReceiver	2
11	LVCOMS-I/O	SCL	2-WireSerialInterfaceClock	
12	LVCOMS-I/O	SDA	2-WireSerialInterfaceData	
13		GND	Ground	1
14	CML-0	Rx3p	ReceiverNon-InvertedDataOutput	
15	CML-0	Rx3n	ReceiverInvertedDataOutput	
16		GND	Ground	1
17	CML-0	Rx1p	ReceiverNon-InvertedDataOutput	
18	CML-0	Rx1n	ReceiverInvertedDataOutput	
19		GND	Ground	1
20		GND	Ground	1
21	CML-0	Rx2n	ReceiverInvertedDataOutput	
22	CML-0	Rx2p	ReceiverNon-InvertedDataOutput	

23		GND	Ground	1
24	CML-0	Rx4n	ReceiverInvertedDataOutput	
25	CML-0	Rx4p	ReceiverNon-InvertedDataOutput	
26		GND	Ground	1
27	LVTTL-0	ModPrsL	ModulePresent	
28	LVTTL-0	IntL	Interrupt	
29		VccTx	+3.3VPowerSupplytransmitter	2
30		Vcc1	+3.3VPowerSupply	2
31	LVTTL-I	InitMode	Initialization mode; In legacyQSFPapplications,theIntiModepadisc alledLPMode	
32		GND	Ground	1
33	CML-I	Tx3p	TransmitterNon-InvertedDataInput	
34	CML-I	Tx3n	TransmitterInvertedDataInput	
35		GND	Ground	1
36	CML-I	Tx1p	TransmitterNon-InvertedDataInput	
37	CML-I	Tx1n	TransmitterInvertedDataInput	
38		GND	Ground	1
39		GND	Ground	1
40	CML-I	Tx6n	TransmitterInvertedDataInput	
41	CML-I	Tx6p	TransmitterNon-InvertedDataInput	
42		GND	Ground	1
43	CML-I	Tx8n	TransmitterInvertedDataInput	
44	CML-I	Tx8p	TransmitterNon-InvertedDataInput	
45		GND	Ground	1

46		Reserved	Forfutureuse	3
47		VS1	ModuleVendorSpecific1	3
48		VccRx1	+3.3VPowerSupplyReceiver	2
49		VS2	ModuleVendorSpecific2	3
50		VS3	ModuleVendorSpecific3	3
51		GND	Ground	1
52	CML-0	Rx7p	ReceiverNon-InvertedDataOutput	
53	CML-0	Rx7n	ReceiverInvertedDataOutput	
54		GND	Ground	1
55	CML-0	Rx5p	ReceiverNon-InvertedDataOutput	
56	CML-0	Rx5n	ReceiverInvertedDataOutput	
57		GND	Ground	1
58		GND	Ground	1
59	CML-0	Rx6n	ReceiverInvertedDataOutput	
60	CML-0	Rx6p	ReceiverNon-InvertedDataOutput	
61		GND	Ground	1
62	CML-0	Rx8n	ReceiverInvertedDataOutput	
63	CML-0	Rx8p	ReceiverNon-InvertedDataOutput	
64		GND	Ground	1
65		NC	NotConnect	3
66		Reserved	Forfutureuse	3
67		VccTx1	+3.3VPowerSupplytransmitter	2
68		Vcc2	+3.3VPowerSupply	2
70		GND	Ground	1
71	CML-I	Tx7p	TransmitterNon-InvertedDataInput	

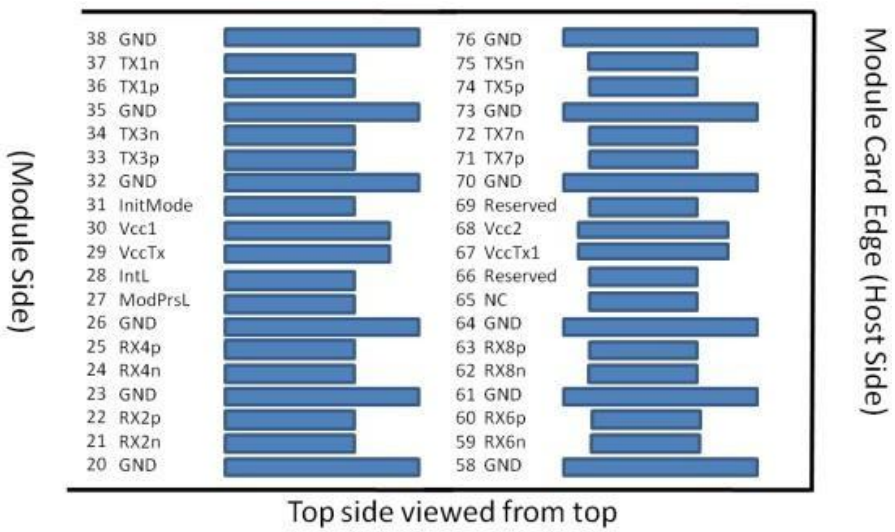
72	CML-I	Tx7n	TransmitterInvertedDataInput	
73		GND	Ground	1
74	CML-I	Tx5p	TransmitterNon-InvertedDataInput	
75	CML-I	Tx5n	TransmitterInvertedDataInput	
76		GND	Ground	1

Notes:

1. QSFP-DD uses common ground (GND) for all signals and supply (power). All the common within the QSFP-DD module and all module voltages are referenced to this potential unless otherwise noted. Connected theses directly to the host board signal common ground plane.

2. VccRx, VccRx1, Vcc1, Vcc2, VccTx, and VccTx1 shall be applied concurrently. Requirements defined for the host side of the Host Card Edge Connector are listed in Table 4. VccRx, VccRx1, Vcc1, Vcc2, VccTx, and VccTx1 may be internally connected within the module in any combination. The connector Vcc pins are each rated for a maximum current of 1000mA.

3. All Vendor Specific, Reserved and No Connect pins may be terminated with 50 ohms to ground on the host. Pad 65 (No Connect) shall be left unconnected within the module. Vendor Specific and Reserved pads shall have an impedance to GND that is greater than 10 kOhms and less than 100pF.



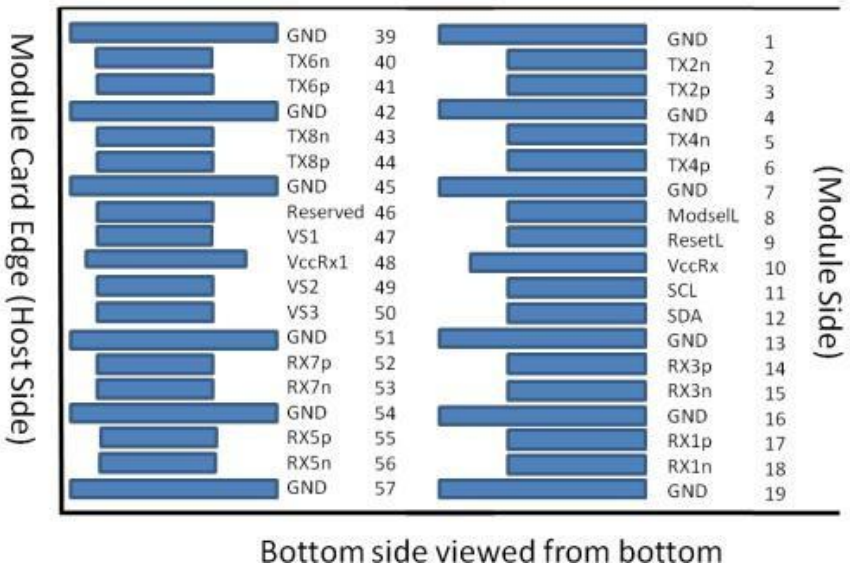


Figure 2. Electrical Pin-out Details

VII. Digital Diagnostic Memory Map

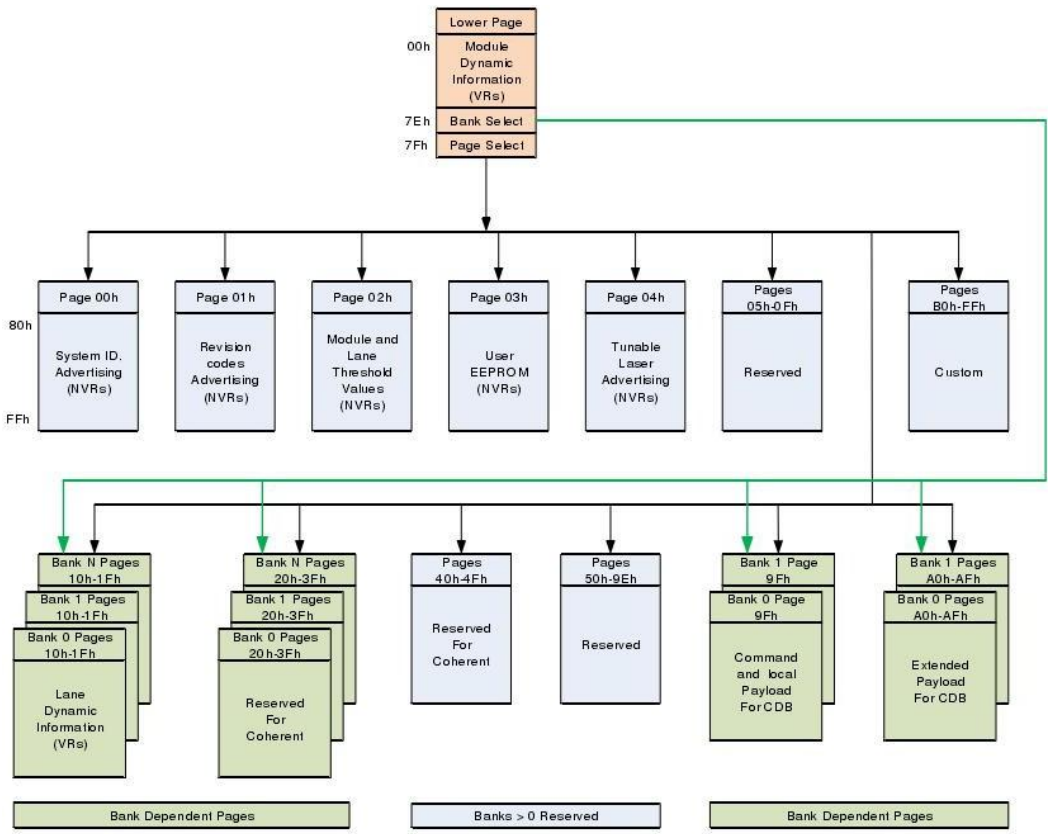


Figure 3 Digital Diagnostic Memory Map

VIII. Host Board Power Supply Filtering

Any voltage drop across a filter network on the host is counted against the host DC set point accuracy specification. Inductors with DC Resistance of less than 0.1 Ohm should be used in order to maintain the required voltage at the Host Edge Card Connector. Figure is the suggested transceiver/host interface.

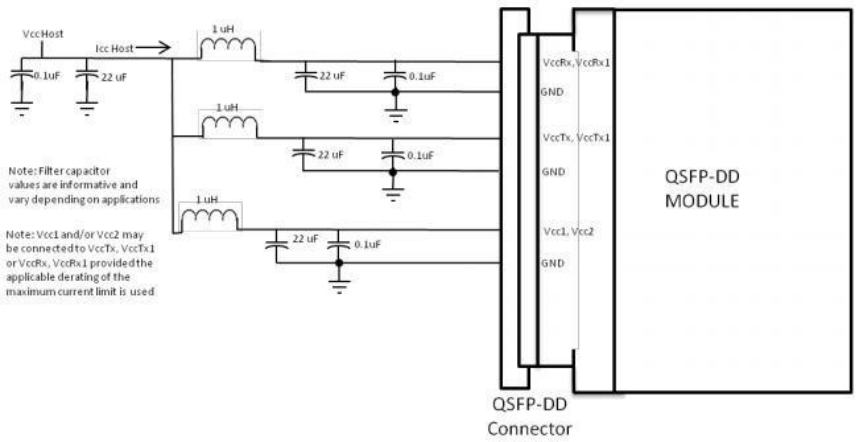


Figure 4 Recommended Host Board Power Supply Filtering

IX. Module Mechanical Dimensions

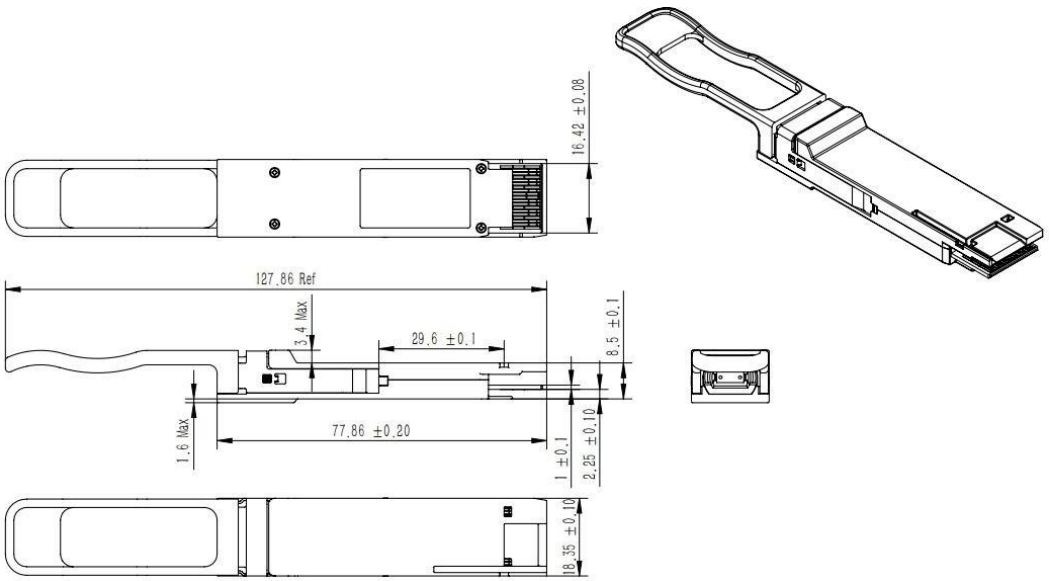


Figure 5 Package Outline

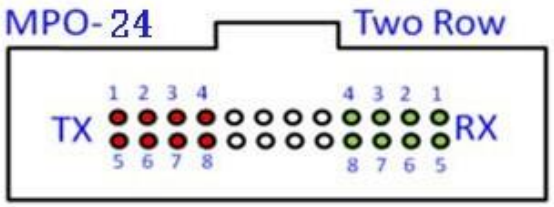


Figure 6 MPO Pinout Diagram and Description

X. Host PCB layout recommendation

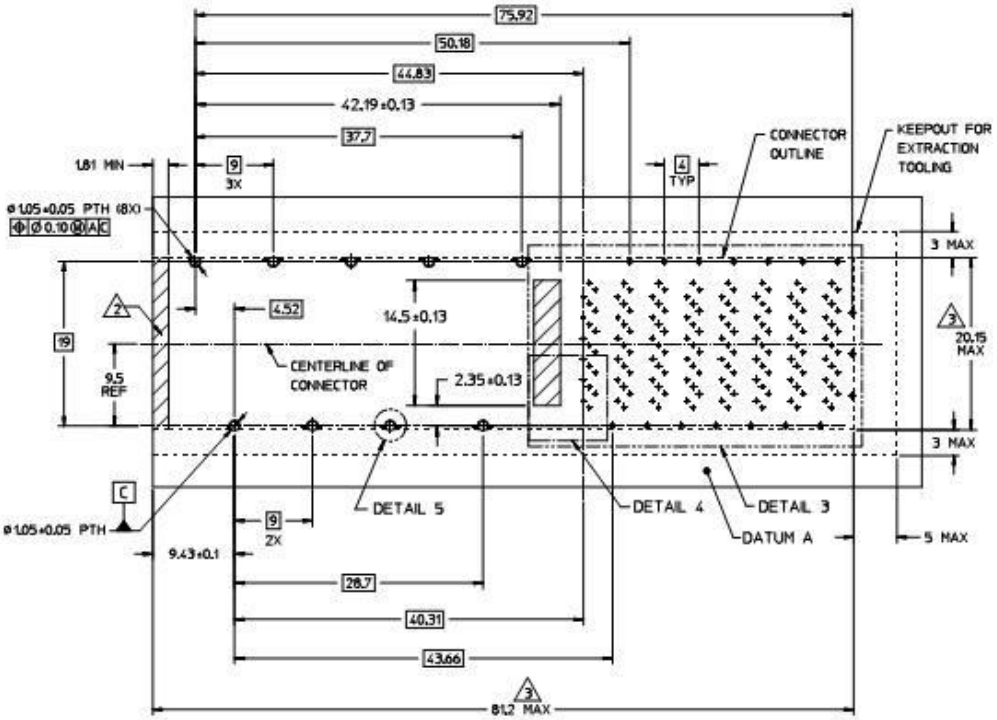


Figure 7 PCB Layout Recommendation

Test Center

FS.COM transceivers are tested to ensure connectivity and compatibility in our test center before shipped out. FS.COM test center is supported by a variety of mainstream original brand switches and groups of professional staff, helping our customers make the most efficient use of our products in their systems, network designs and deployments.

The original switches could be found nowhere but at FS.COM test center, eg: Juniper MX960 & EX 4300 series, Cisco Nexus 9396PX & Cisco ASR 9000 Series, HP 5900 Series & HP 5406R ZL2 V3(J9996A), Arista 7050S-64, Brocade ICX7750-26Q & ICX6610-48, Avaya VSP 7000 MDA 2, etc.

Cisco ASR 9000 Series(A9K-MPA-1X40GE)


ARISTA 7050S-64(DCS-7050S-64)

Juniper MX960


Brocade ICX 7750-26Q

Extreme Networks X670V VIM-40G4X

Mellanox M3601Q


Dell N4032F

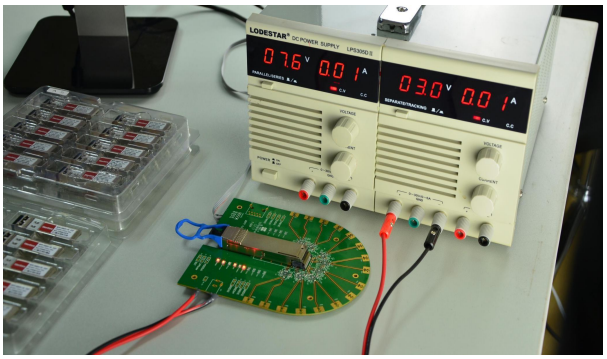
HP 5406R ZL2 V3(J9996A)

AVAYA 7024XLS(7002QQ-MDA)

Test Assured Program

FS.COM truly understands the value of compatibility and interoperability to each optics. Every module FS.COM provides must run through programming and an extensive series of platform diagnostic tests to prove its performance and compatibility. In our test center, we care of every detail from staff to facilities—professionally trained staff, advanced test facilities and comprehensive original-brand switches, to ensure our customers to receive the optics with superior quality.

Our smart data system allows effective product management and quality control according to the unique serial number, properly tracing the order, shipment and every part.



Our in-house coding facility programs all of our parts to standard OEM specs for compatibility on all major vendors and systems such as Cisco, Juniper, Brocade, HP, Dell, Arista and so on.

With a comprehensive line of original-brand switches, we can recreate an environment and test each optics in practical application to ensure quality and distance.

The last test assured step to ensure our products to be shipped with perfect package.

Order Information

Part Number	Description
QDD-2SR4-200G	QSFP-DD 200GBASE-2SR4 850nm 100m Transceiver

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