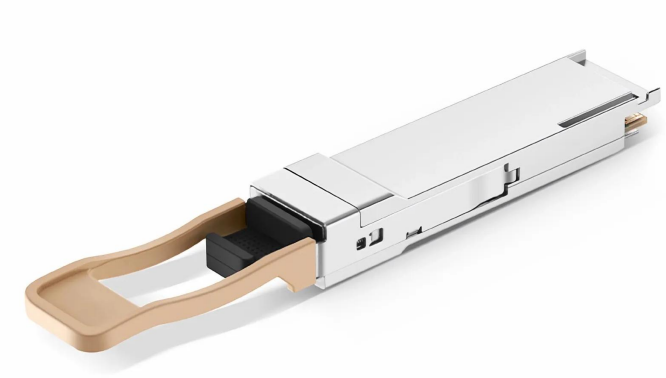
LQ-M85200-SR8C

QSFP-DD,200GBASE-2SR4,850nm, Optical Transceiver Module, 100m Reach

Features

- Up to 28Gbps data rate per channel
- 8 duplex channels transmitters and receivers
- Integrated 850nm VCSEL array and PD array
- Single MPO-24 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



Applications

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

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.

Absolute Maximum Ratings

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

Recommended Operating Conditions

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

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter (per Lane)						
Signaling Speed per Lane			25.78125		Gbps	NRZ
Center wavelength		840	850	860	nm	
RMS Spectral Width	SW			0.6	nm	
Average Launch Power per lane	TXPx	-8.4		2.4	dBm	
Tx OMA per lane	TxOMA	-6.4		3	dBm	
Difference in power between any two lane(OMA)	DPx			4	dBm	
Average launch power of off transmitter per lane				-30	dBm	
Transmitter and Dispersion eye closure per lane	TDEC			4.3	dB	
Launch power in OMA minus TDEC		-7.3			dBm	
Optical Extinction Ratio	ER	2			dB	
Optical Return Loss Tolerance	ORL			12	dB	

Encircled Flux	FLX		>86%at 19um <30%at 4.5um		dBm	
Relative Intensity Noise	RIN			RIN	dB/Hz	
Receiver (per Lane)						
Signaling Speed per Lane			25.78125		Gbps	NRZ
Center wavelength		840		860	nm	
Damage Threshold	DT	3.4			dBm	
Average receive power per lane	RXPx	-10.3		2.4	dBm	
Receiver power (OMA) per lane	RxOMA			3	dBm	
Receiver reflectance	Rfl			-12	dB	
vertical eye closure penalty, per lane				1.9	dB	
Stressed Receive Sensitivity(OMA) per lane	SRS			-5.2	dBm	
Sensitivity(OMA) per lane	S			-10.3	dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dBm	

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit	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			

Principle diagram

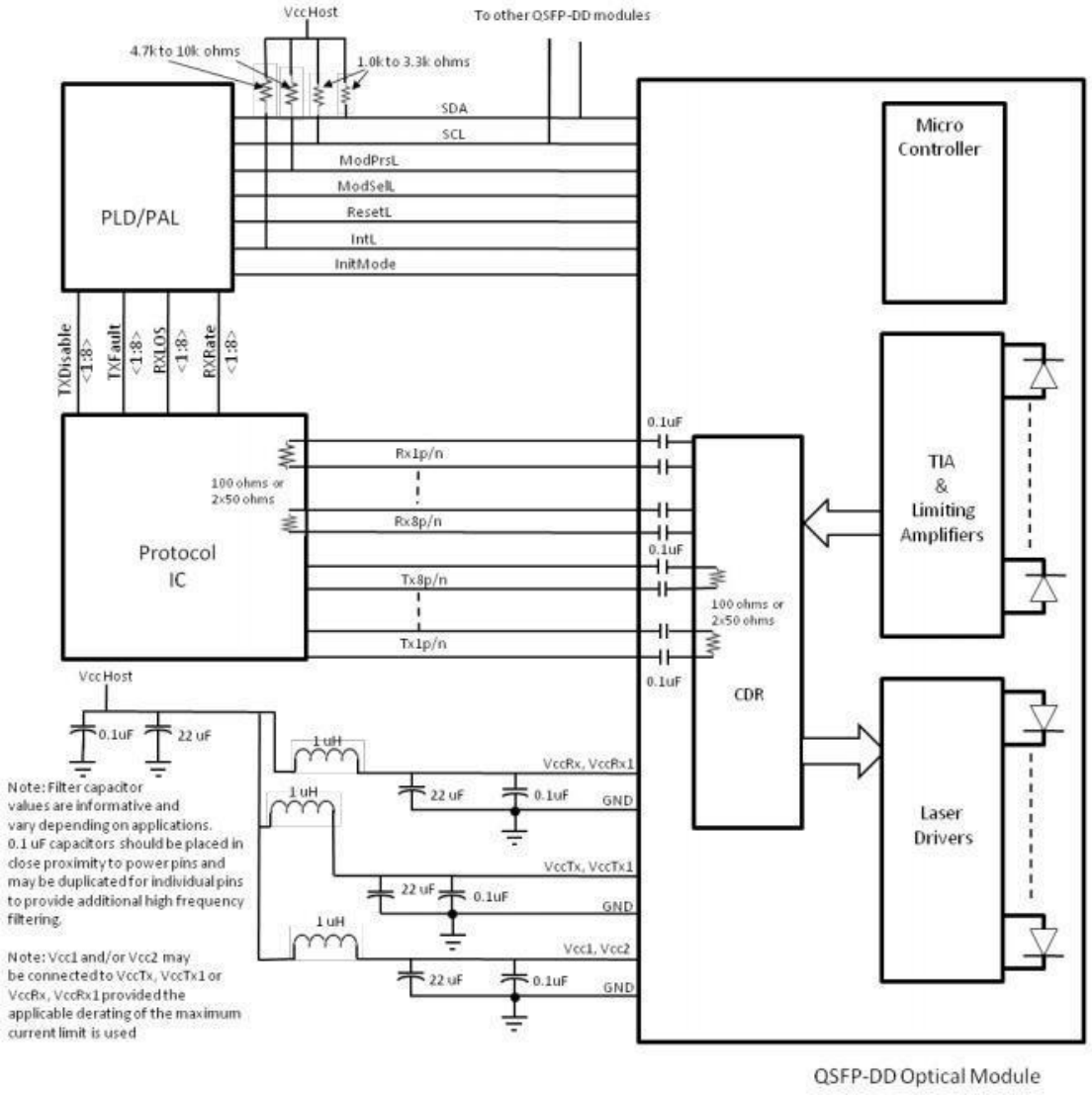


Figure 1. Module Principle Diagram

Pin Description

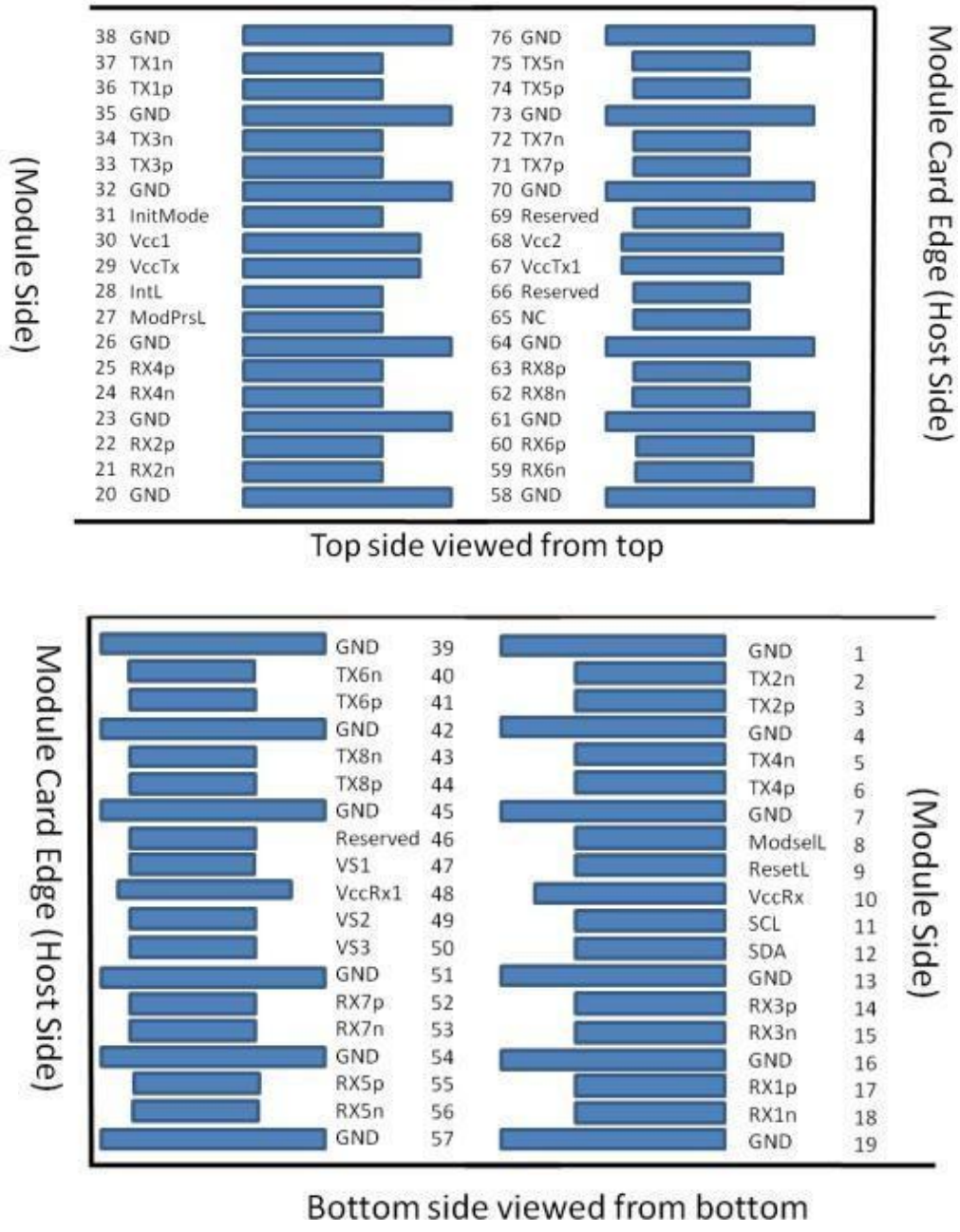


Figure2.ElectricalPin-outDetails

Pin	Logic	Symbol	Name/Description	Note
1		GND	Module GroundNote5	1
2	CML-I	Tx2-	Transmitter inverted data input	
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	ModuleVendorSpecific 1	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.

Digital Diagnostic Memory Map

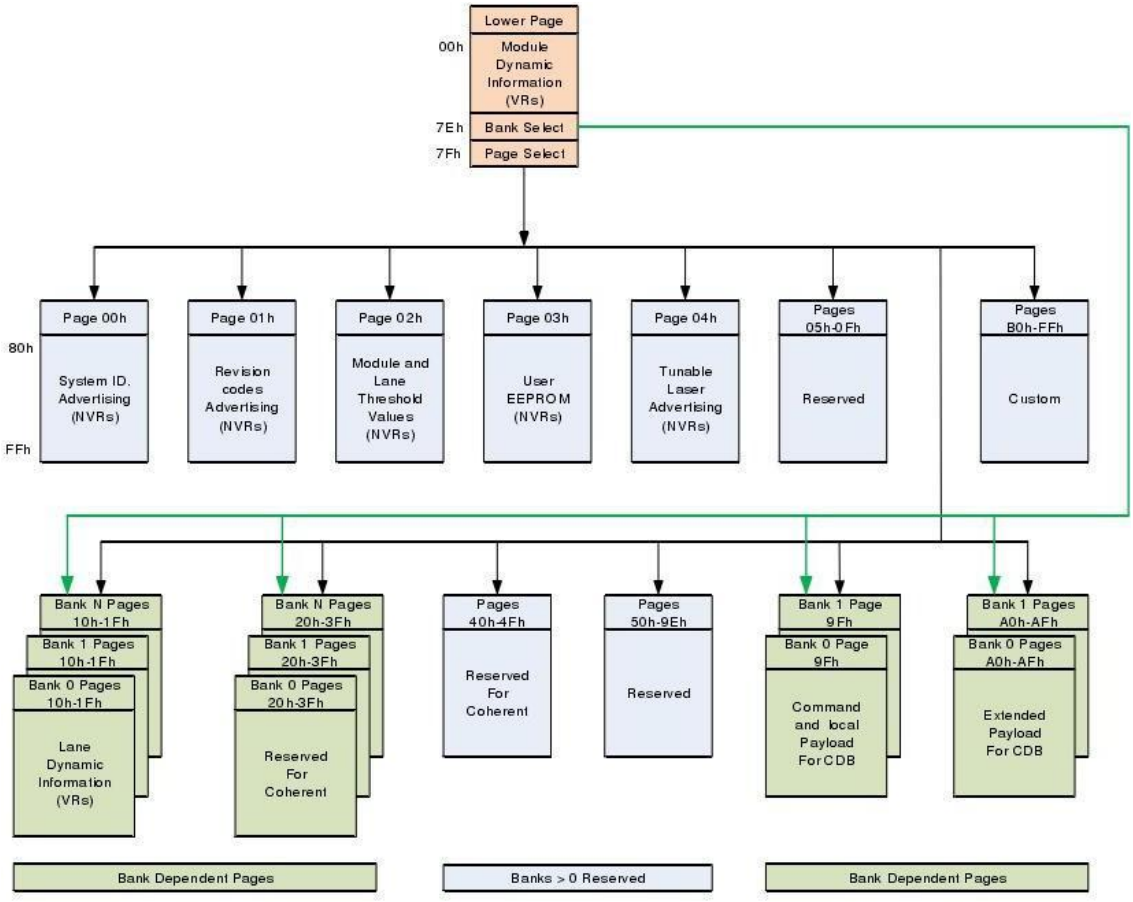


Figure 3 Digital Diagnostic Memory Map

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.

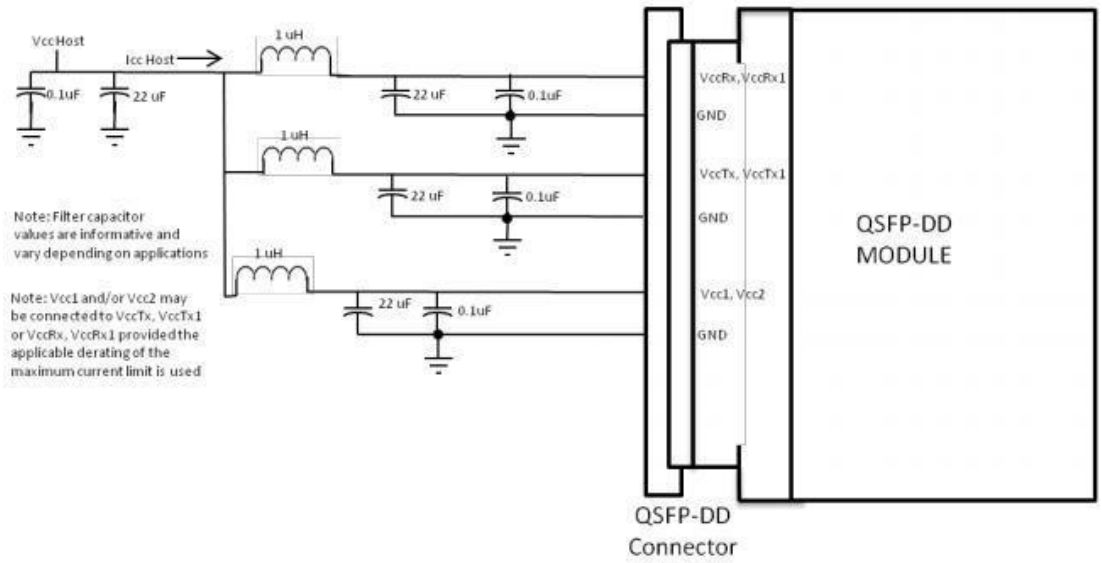


Figure 4 Recommended Host Board Power Supply Filtering

Module Mechanical Dimensions

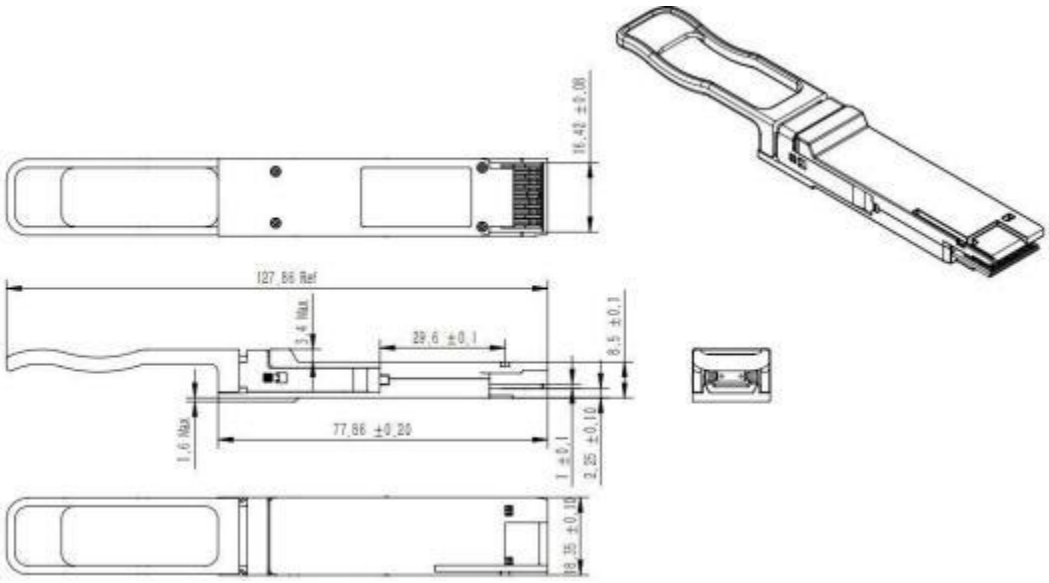


Figure 5 Package Outline

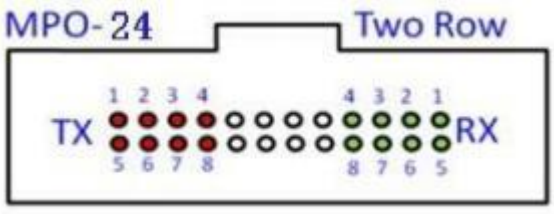


Figure 6 MPO Pinout Diagram and Description

Ordering information

Part Number	Product Description
LQ-M85200-SR8C	QSFP-DD, 200GBASE-2SR4, 850nm, MPO-24, 100m.