QSFP56 200GBASE-SR4 Optical Transceiver

LQ200-SR4MC

Description

Fly Global Trading Limited's LQ200-SR4MC modules are designed and optimized for 200G Ethernet and Datacenter applications. They are compliant with IEEE 802.3bs and QSFP56 MSA SFF-8665. The modules offer 4 independent transmit and receive channels, each is capable of 50Gb/s operation for an aggregate data rate of 200Gb/s over 100m of OM4 multi-mode fiber or 70m of OM3 multi-mode fiber. Digital diagnostics functions are available via a 2-wire serial interface.

Applications

- 200G BASE-SR4 Ethernet
- Data Center
- InfiniBand HDR

Standard

- Compliant to IEEE 802.3bs 200GAUI-4
- Compliant to IEEE 802.3cd 200GBASE-SR4
- Compliant to CMIS4.0/ SFF-8636
- Compliant to RoHS

Features

- Hot-pluggable QSFP56 module
- Single MPO12/APC receptacle
- 4 channels full-duplex transceiver module
- Single 3.3V power supply
- Maximum power consumption < 2.5W
- Commercial operating temperature range: 0°C ~ 70°C
- Link distance up to 70m over OM3 fiber / 100m over OM4 fiber
- 4 x 53G 850nm VCSEL-based transmitter
- 212.5G electrical interface
- Built-in digital diagnostic functions
- I²C management interface

Ordering Information

Part Number	Description
LQ200-SR4MC	QSFP56, 200GBASE-SR4, 70m on OM3 and 100m on OM4 MMF, 0°C ~ 70°C

V1.1

LQ200-SR4MC

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Note
Maximum Voltage Supply	V_{cc}	-0.3		3.6	V	
Storage Temperature	T_{st}	-20		85	°C	
Relative Humidity	RH	5		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage (Vcc-GND)	V_{cc}	3.135	3.3	3.465	V	
Power Supply Current	I_{cc}			760	mA	1
Operating Temperature (Case)	T_{op}	0		70	°C	
Power Consumption				2.5	W	
Transmission Distance	L1			70	m	OM3
Transmission Distance	L2			100	m	OM4
Data Rate	DR		26.5625		Gb/s	

Notes:

1. Max. current at V_{cc}=3.3V.

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Input Differential Impedance	Z_{in}	90	100	110	Ω	
Input Amplitude	V_{in-pp}	50		1500	mV	
Receiver						
Output Differential Impedance	Z_{out}	90	100	110	Ω	
Differential Data Output Swing	V_{out}-pp	700		900	mV	

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Wavelength (range)	λ	840	850	860	nm	
RMS Spectral Width	SW_{RMS}			0.6	nm	
Optical Output Power	P_o	-6.5		4.0	dBm	
Optical Modulation Amplitude (OMA)	P_{oma}	-4.5		3.0	dBm	
Laser Off Power	P_{off}			-30	dBm	
Extinction Ratio	ER	3			dB	

LQ200-SR4MC

Optical Return Loss Tolerance	T_{RL}			12	dB	
Receiver						
Wavelength (range)	λ	840	850	860	nm	
Average Receive Power, per channel	P_{IN}	-6.0		4.0	dBm	
Receiver Sensitivity (OMA)	P_{sens}			-3.4	dBm	
Receiver Overload (average power)	P_{IN-OL}			4.0	dBm	
Stressed Receiver Sensitivity (OMA), per Lane	SRS			-3.4	dBm	
LOS De-Assert	LOS_d			-6.0	dBm	
LOS Assert	LOS_a	-12			dBm	
LOS Hysteresis	LOS_h	0.5			dB	
Damage Threshold	P_{DT}	5.0			dBm	
Receiver Reflectance	R_{RX}			-12	dB	

PIN Definition

Top Side
Viewed From Top

Bottom Side
Viewed From Bottom
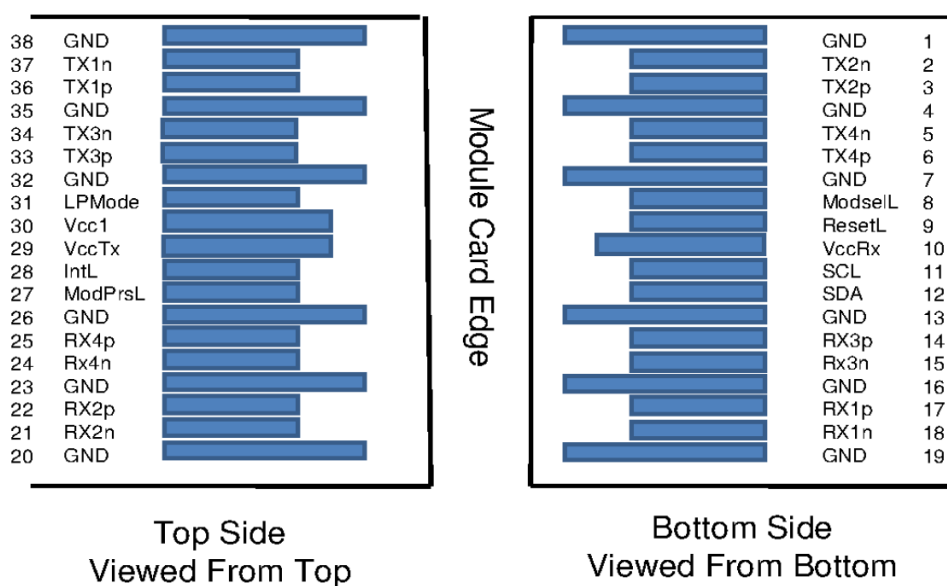
Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	**1**
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	**1**
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	**1**
8	LVTTL-I	ModselL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	

LQ200-SR4MC

| 10		Vcc Rx	+3.3V Power Supply Receiver	2	**2**
11	LVCMOS-I/O	SCL	2-wire serial interface clock	3	
12	LVCMOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	**1**
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	**1**
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	**1**
20		GND	Ground	1	**1**
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	**1**
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	**1**
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		Vcc Tx	+3.3V Power supply transmitter	2	**2**
30		Vcc1	+3.3V Power supply	2	**2**
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	**1**
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	**1**
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	**1**

Notes

1. Circuit ground is internally isolated from chassis ground; GND is the symbol for signal and supply (power) common for the module. All are common within the 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 shall be applied concurrently. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the module in any combination. The connector pins are each rated for a maximum current of 1060 mA.

Optical Interface Lanes and Assignment

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

LQ200-SR4MC
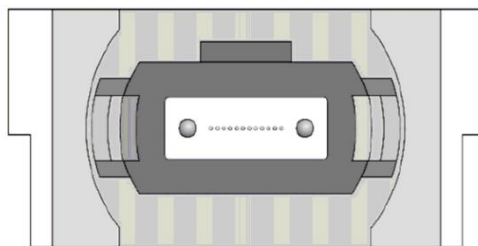
Transmit Channels: 1 2 3 4
Unused positions: x x x x
Receive Channels: 4 3 2 1

Mechanical Dimensions

LQ200-SR4MC transceiver modules mechanical dimensions. (Unit: mm)