

# LQD400-SR8

## QSFP-DD 400Gb/s SR8 100m DDM

### PRODUCT FEATURES

- Hot pluggable QSFP-DD form factor
- Supports 400Gb/s aggregate bit rate
- Up to 53.125Gbps data rate per channel
- Maximum link length of 70m on OM3 and 100m on OM4
- Power dissipation: <10W
- PAM4 Modulation
- Commercial: 0°C to +70°C



### APPLICATIONS

- 400GBASE-SR8 400G Ethernet
- Data Center

### Compliance

- QSFP-DD MSA.
- IEEE802.3cd
- RoHS

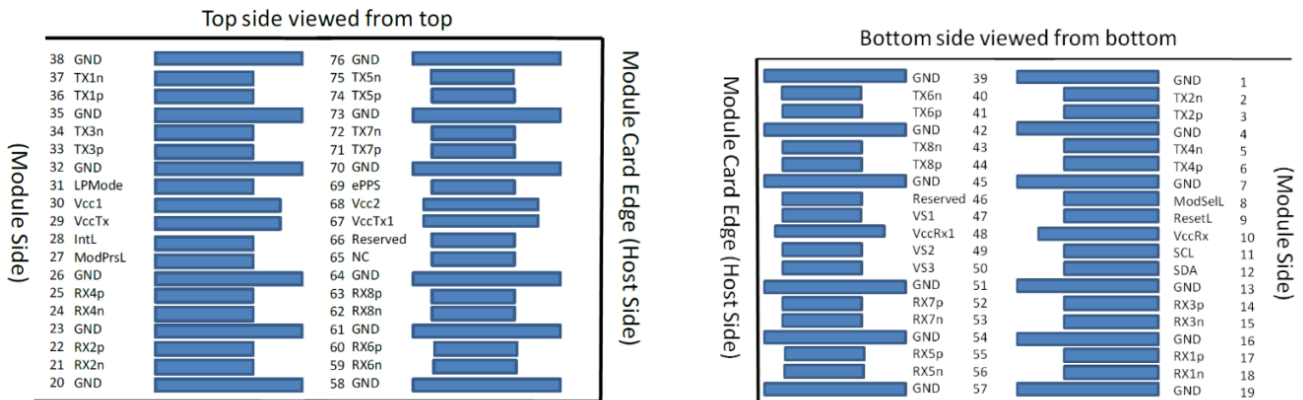
## PRODUCT DESCRIPTION

LQD400-SR8 is a QSFP-DD optical transceiver for 400G links over multimode fiber. It is compliant with the QSFP-DD MSA specifications. It operates at 53.125Gbps per lane up to 70m over OM3 and 100m OM4 Multi-mode fiber.

## Ordering information

Package	Product part NO.	Data	Media	Wavelength(nm)	Transmission	Temperature Range	
		Rate(Gbps)			Distance(m)	( ° C )	
QSFP-DD	LQD400-SR8	8X53.125	Multi-mode fiber	850	70(OM3) 100(OM4)	0~70	Commercial

## Pin Diagram



## I. Pin Descriptions

Pad	Symbol	Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMode	Low Power mode;	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	
39	GND	Ground	
40	Tx6n	Transmitter Inverted Data Input	
41	Tx6p	Transmitter Non-Inverted Data Input	
42	GND	Ground	
43	Tx8n	Transmitter Inverted Data Input	
44	Tx8p	Transmitter Non-Inverted Data Input	
45	GND	Ground	
46	Reserved	For future use	
47	VS1	Module Vendor Specific 1	
48	VccRx1	3.3V Power Supply	
49	VS2	Module Vendor Specific 2	
50	VS3	Module Vendor Specific 3	
51	GND	Ground	
52	Rx7p	Receiver Non-Inverted Data Output	
53	Rx7n	Receiver Inverted Data Output	
54	GND	Ground	

Pad	Symbol	Description	Notes
55	Rx5p	Receiver Non-Inverted Data Output	
56	Rx5n	Receiver Inverted Data Output	
57	GND	Ground	
58	GND	Ground	
59	Rx6n	Receiver Inverted Data Output	
60	Rx6p	Receiver Non-Inverted Data Output	
61	GND	Ground	
62	Rx8n	Receiver Inverted Data Output	
63	Rx8p	Receiver Non-Inverted Data Output	
64	GND	Ground	
65	NC	No Connect	
66	Reserved	For future use	
67	VccTx1	3.3V Power Supply	
68	Vcc2	3.3V Power Supply	
69	Reserved	For future use	
70	GND	Ground	
71	Tx7p	Transmitter Non-Inverted Data Input	
72	Tx7n	Transmitter Inverted Data Input	
73	GND	Ground	
74	Tx5p	Transmitter Non-Inverted Data Input	
75	Tx5n	Transmitter Inverted Data Input	
76	GND	Ground	

## II. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Storage Temperature	T <sub>s</sub>	-40		85	°C	
Storage Ambient Relative Humidity	H <sub>A</sub>	0		85	%	
Maximum Supply Voltage	V <sub>cc</sub>	-0.5		3.6	V	
Lead Soldering Temperature/Time	TSOLD			260/10	°C/sec	1
Lead Soldering Temperature/Time	TSOLD			360/10	°C/sec	2

Note:

1. Suitable for wave soldering.
2. Only for soldering by iron.

### III. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V <sub>cc</sub>	3.135	3.3	3.465	V	
<b>Transmitter</b>						
Input Differential impedace	R <sub>in</sub>		100		Ω	
Differential Data Input Swing	V <sub>in,pp</sub>	400		900	mV	
<b>Receiver</b>						
Differential data output swing	V <sub>out,pp</sub>			900	mV	

### IV. Optical Characteristics

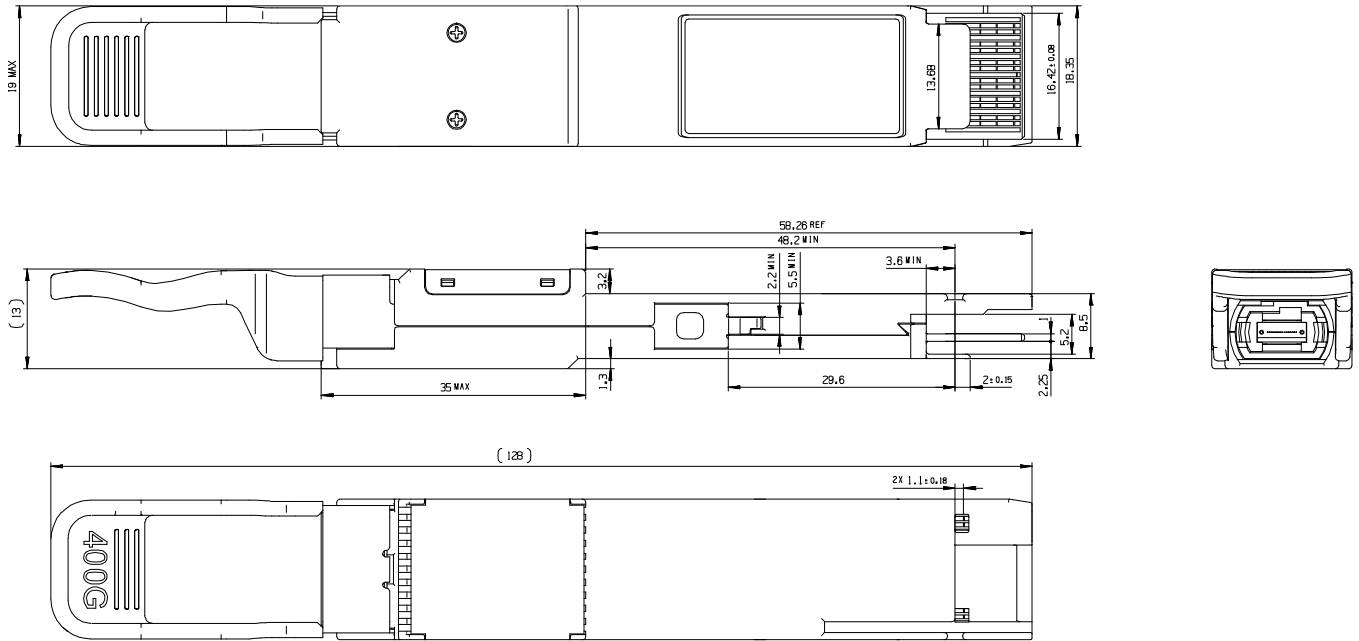
Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
<b>Transmitter(per lane)</b>						
Signaling Speed per Lane		26.5625±100ppm			GBd	
Center Wavelength	λ <sub>C</sub>	840	850	860	nm	
RMS Spectral Width	Δλ			0.6	nm	
Extinction ratio	ER	3	--	--	dB	
Average launch power, each lane	P <sub>o</sub>	-6	--	4	dBm	
OMA, each lane	OMA	-4	--	3	dBm	
Transmitter and dispersion eye closure(TDECQ), each lane(max)	TDECQ			4.9	dB	2
Average launch power of OFF transmitter, each lane	P <sub>off</sub>			-30	dBm	
<b>Receiver(per lane)</b>						
Signaling Speed per Lane		26.5625± 100 ppm			Gb/s	
Damage threshold		5			dBm	
Average receive power, each lane		-7.9		4		
Unstressed receive sensitivity, each lane	R <sub>SENS</sub>			-7	dBm	1
Loss of Signal Assert	P <sub>A</sub>	-30			dBm	
Loss of Signal De-assert	P <sub>D</sub>			-7.5	dBm	
LOS Hysteresis	P <sub>D</sub> - P <sub>A</sub>	0.5		6	dB	

Note :1.Measured where BER=2.4E-4 with a PRBS31Q @26.5625GBaud.

## V. Digital Diagnostic Functions

LQD400-SR8 QSFP-DD transceivers support the I2C-based diagnostics interface specified by the QSFPDD MSA.

## VI. Mechanical Specifications (Unit: mm)



### LQD400-SR8

## VII. Regulatory Compliance

Item	Standard
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B
Electrostatic Discharge to the Electrical Pins (ESD)	MIL-STD-883E Method 3015.7
Electrostatic Discharge to the Receptacle (ESD)	IEC 61000-4-2
RoHS	2011/65/EU
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11
Component Recognition	UL and TUV

## Revision History



Product specification

Version No.	Date	Description
1.0	June 16, 2020	Preliminary datasheet