

LQD400-SR8

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

PRODUCT FEATURES

- Supports 400Gb/s aggregate bit rate
- 8x26.5625GBd(PAM4)electrical interface
- Maximum link length of 100m on OM4 Multimode Fiber (MMF)
- Hot-pluggable QSFP-DD footprint
- Single MPO 16 receptacle
- Low power Consumption
- RoHS-6 compliant and lead-free
- +3.3V single power supply
- Support Digital Diagnostic Monitor interface
- Case operating temperature

Commercial: 0°C to +70°C

APPLICATIONS

- 400GBASE-SR8
- 400G Ethernet
- Data center / Cloud application

Compliance

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

Ordering information

Part NO.	Bit Rate(Gbps)	Laser (nm)	Distance(m)	Media	DDMI	Connector	Temp
LQD400-SR8	425	850	100(OM4)	multi-modefiber	YES	MPO 1X16	0~70°C

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Storage Temperature	T _S	-40		85	°C	
Storage Ambient Humidity	H _A	0		85	%	
Maximum Supply Voltage	V _{CC}	-0.5		3.6	V	
Lead Soldering Temperature/Time	T _{SOLD}			260/10	°C/sec	1
Lead Soldering Temperature/Time	T _{SOLD}			360/10	°C/sec	2

Notes:

- Suitable for wave soldering.
- Only for soldering by iron.

II. Recommended Operating Conditions

Data Rate Specifications	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{CC}	3.13	3.3	3.47	V	
Baud Rate(per channel) PAM4	BR		26.5625		GBd	1
Operating Case Temperature	T _c	0		70	°C	
Link distance on OM4 MMF	d			100	meters	

Note:

- Supports 400GBASE-SR8 per IEEE 802.3cd.

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter(per lane)						
Average Output Power per lane	P _{OUT}	-6.5		4	dBm	
Outer Optical Modulation Amplitude per lane	OMA _{OUT}	-4.5		3	dBm	
Extinction Ratio	ER	3			dB	
Center Wavelength	λ _C	840		860	nm	
RMS Spectral Width	σ			0.6	nm	
Launch power in OMA _{OUT} minus TDECQ	P _{TDECQ}	-5.9			dBm	

Transmitter and dispersion eye closure (each lane)	TDECQ			4.5	dB	
Transmitter OFF Output Power	P _{Off}			-30	dBm	
Optical Return Loss Tolerance	ORLT			12	dB	
Receiver(per lane)						
Input Optical Wavelength	λ_{IN}	840		860	nm	
Average Receive Power per lane	P _{in}	-8.4		4	dBm	
Receiver Power(OMA _{OUT}) each lane	R _{OMA}			3	dBm	
Rx Sensitivity(OMA _{OUT}) per lane (SECQ=1.4 dB)	R _{SENS}			-6.5	dBm	1
Stressed Rx Sensitivity(OMA) per lane	SR _{SENS}			-3	dBm	
Damage threshold	P _{DT}	5			dBm	
Receiver Reflectance	R _{fl}			-12	dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-9	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Note:

1. BER<2.4E-4,Pattern PRBS31Q.

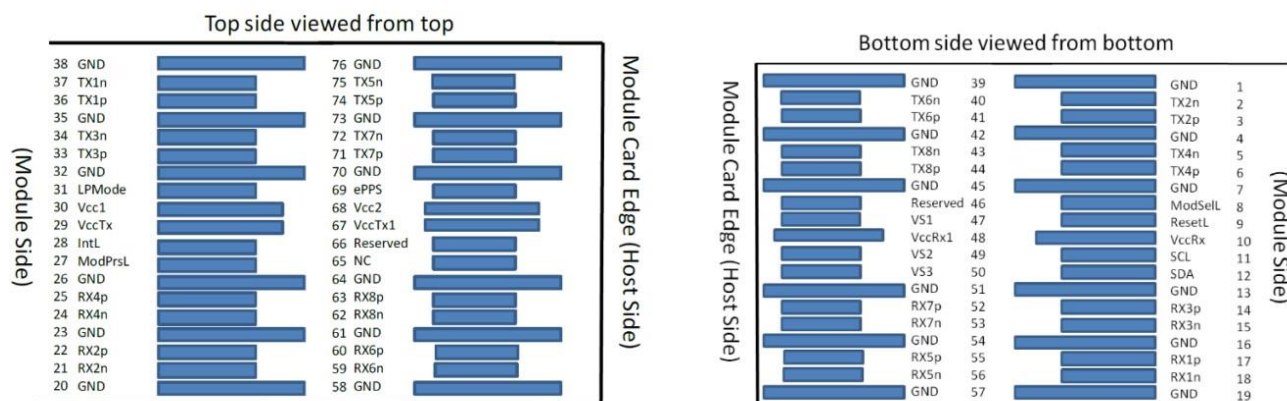
IV. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{cc1} , V _{ccTx} , V _{ccRx}	3.15		3.45	V	
Power Dissipation	P _d			10	W	
Transmitter(per Lane)						
Input different impedance	R _{in}	90	100	110	Ω	
Single ended input voltage tolerance	V _{inT}	-0.3		4.0	V	
Differential Input Voltage Amplitude	V _{in,pp}			900	mV	
Receiver (per Lane)						
Error Bit Rate	BER			2.4E-4		
Output different impedance	R _{out}	90	100	110	Ω	
Single-ended output voltage	V _{outR}	-0.3		4.0	V	
Differential Output Voltage Amplitude	V _{out,pp}			900	mV	

V. Digital Diagnostic Functions

Compatible with QSFP-DD CMIS rev 4.0.

VI. Pin Diagram



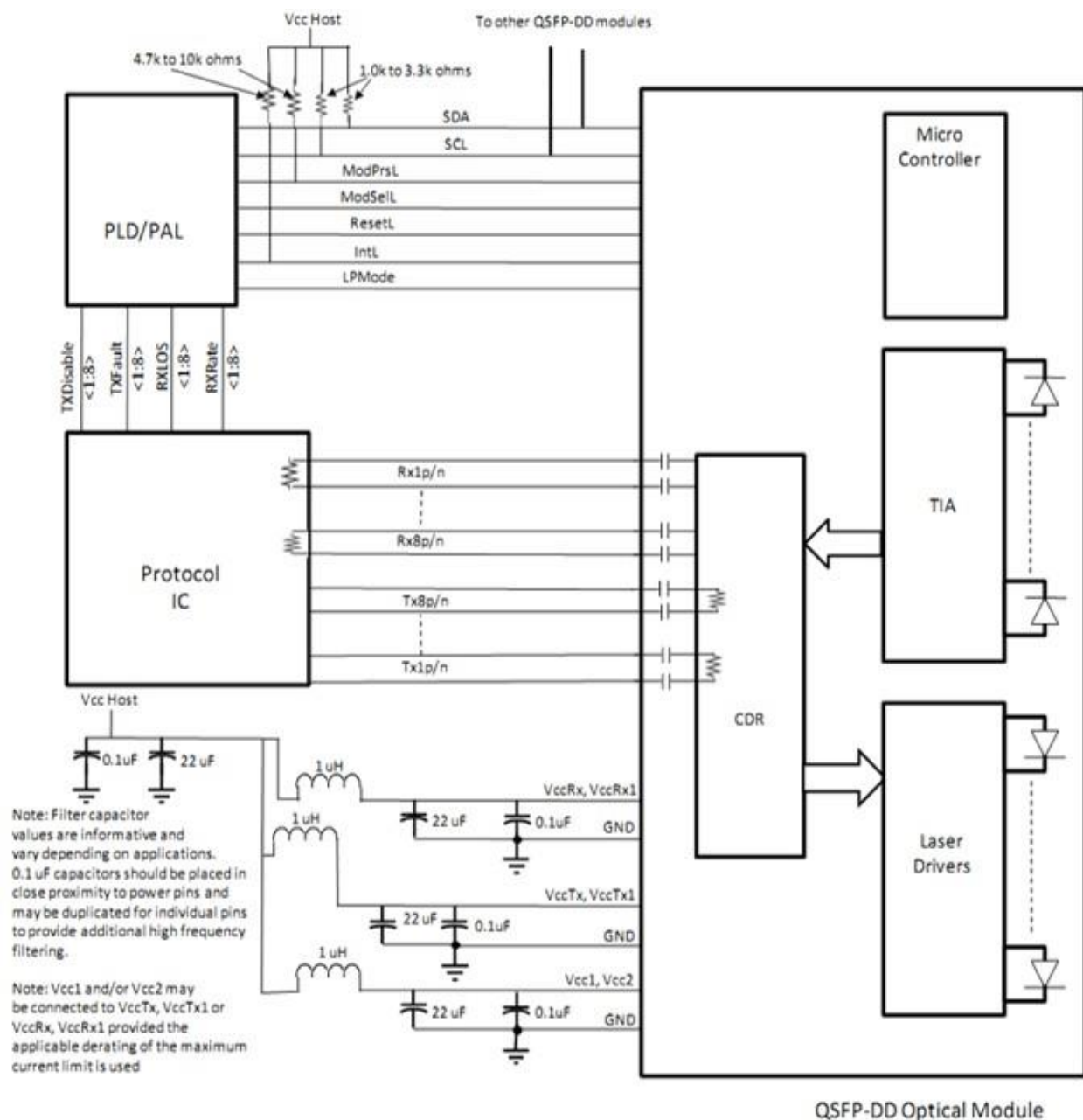
VII. Pin Descriptions

PIN	Symbol	Description	Ref.
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	

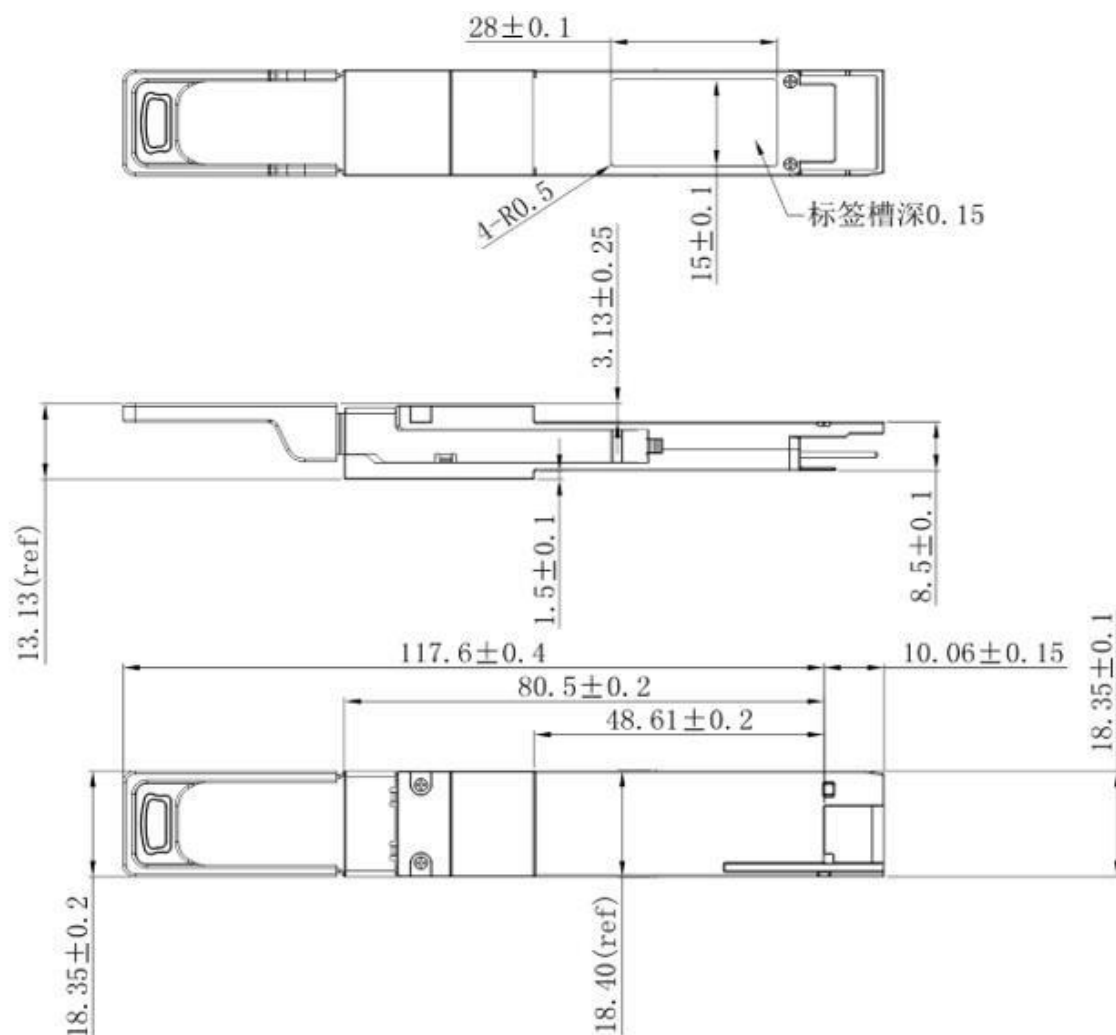
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMode	Low Power mode;	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input	
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	
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	

VIII.Recommended Interface Circuit



IX. Mechanical Specifications(Unit: mm)



Revision History

Version No.	Date	Description
1.0	June 16, 2021	Preliminary datasheet

Contact:

Add: Building 7, Mobile Terminal Industrial Park, East Lake Comprehensive Bonded Zone, 777 Optics Valley 3 Road, East Lake New Technology Development Zone, Wuhan, China

Tel: (+86) 86-27-88870005

Postal: 430205

E-mail:sales@lightrend.com

<http://www.lightrend.com>