

Datasheet:

LRAOC-QSFP28-3M

100G QSFP28 Active Optical Cable

1、Description

The LRAOC-QSFP28-3M is a Four-Channel, Pluggable, Parallel, Fiber-Optic QSFP+ SR4 for 100 or 40 Gigabit Ethernet , Infiniband FDR/EDR Applications. This transceiver is a high performance module for short-range multi-lane data communication and interconnect applications. It integrates four data lanes in each direction with 100 Gbps bandwidth. Each lane can operate at 25Gbps up to 70 m using OM3 fiber or 100 m using OM4 fiber.

2、Features

- Four-channel full-duplex active optical cable
- Multirate capability: 10 Gb/s and 25 Gb/s per channel
- QSFP28 high-density form factor
- Reliable VCSEL array technology using multimode fiber
- power dissipation: <3.5W per cable end
- Commercial operating case temperature range: 0°C to 70°C
- UL certification optional cables
- Hot Pluggable



3、Applications

- IEEE 802.3bm 100GBASE SR4 and
- 40GBASE SR4128G Fiber Channel
- Infiniband FDR/EDR

4、QSFP28 AOC Specifications

Parameter	Description
Module Form Factor	QSFP28 (Supports SFF8431/SFF8432/SFF8472)
Protocols Supported	InfiniBand, Ethernet, Fiber Channel
Channel Data Rate	Rate 1 to 103.125Gbps
BER	<10 ⁻¹²
Operating Case Temperature	0 to + 70°C
Storage Temperature	-20 to + 85°C
Supply Voltage	3.3V
Supply current	230mA per end typical
Management Interface Serial	I2C (Supports SFF8472)

5、Recommended Operating Conditions and Supply Requirements

Form Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc	3.13	3.3	3.47	V	
Operating Case temperature	Tca	0		70	°C	
Data Rate Per Lane	fd		25.78125		Gbps	
Humidity	Rh	5		85	%	
Fiber Bend Radius	Rb	3			cm	

6、Electrical Characteristics (EOL, TOP = 0 to 70°C, VCC = 3.135 to 3.465 Volts)

NOTE: The EDR module requires an electrical connector compliant with SFF-8662 or SFF-8672 be used on the host board to guarantee its electrical interface specification. Please check with your connector supplier.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc1, VccTx, VccRx	3.15		3.45	V	
Supply Current	Icc			1010	mA	
Module total power	P			3.5	W	1,2
Input electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Differential Termination Resistance Mismatch				10	%	
Transition Time, 20 to 80%	Tr, Tf	10			ps	
Output electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	

Differential Termination Resistance Mismatch				10	%	
Transition Time, 20 to 80%	Tr, Tf	9.5			ps	
Bit Error Rate	BER			E-12		3

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Settable in various discrete steps via the I2C interface.
3. BER=10⁻¹²; PRBS 231-1@25.78125Gbps

7、 Pin Descriptions

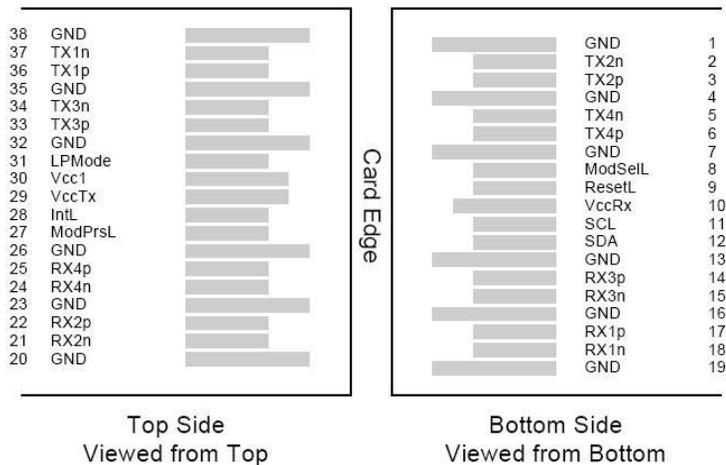
Pin	Symbol	Name/Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	

28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMODE	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

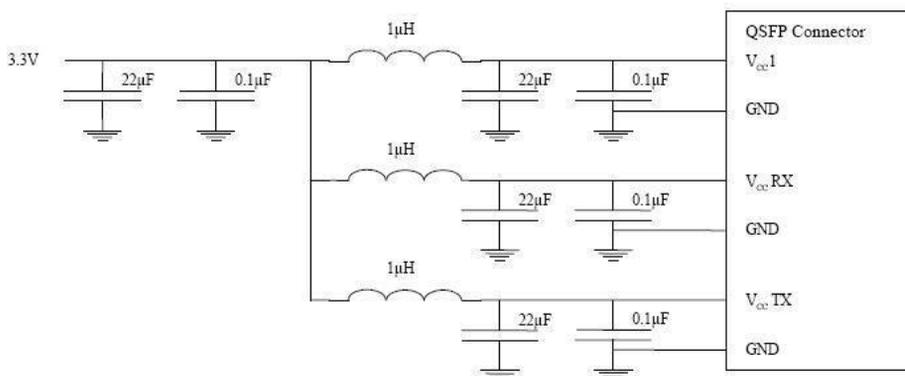
NOTES:

1. Module circuit ground is isolated from module chassis ground within the module. GND is the symbol for signal and supply (power) common for QSFP modules.
2. The connector pins are each rated for a maximum current of 500mA.

8、 Host Board Connector Pin (Top View)



9、 Power Supply Filtering

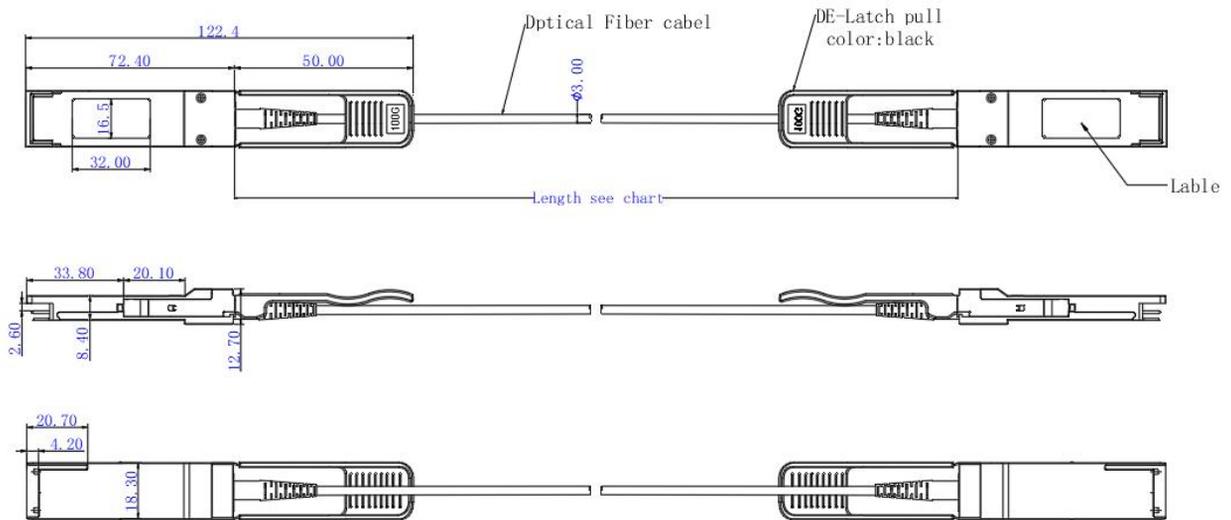


10、EEPROM Serial ID Memory Contents:

Serial ID: Data Fields (Page 00)

Address	Name	Description
128	Identifier (1 Byte)	Identifier Type of serial transceiver
129	Ext. Identifier (1 Byte)	Extended identifier of serial transceiver
130	Connector (1 Byte)	Code for connector type
131-138	Transceiver (8 Bytes)	Code for electronic compatibility or optical compatibility
139	Encoding (1 Byte)	Code for serial encoding algorithm
140	BR, nominal (1 Byte)	Nominal bit rate, units of 100 Mbits/s
141	Extended RateSelect Compliance (1 Byte)	Tags for Extended RateSelect compliance
142	Length SMF (1 Byte)	Link length supported for SM fiber in km
143	Length E-50 μm (1 Byte)	Link length supported for EBW 50/125 μm fiber, units of 2 m
144	Length 50 μm (1 Byte)	Link length supported for 50/125 μm fiber, units of 1 m
145	Length 62.5 μm (1 Byte)	Link length supported for 62.5/125μm fiber, units of 1 m
146	Length copper (1 Byte)	Link length supported for copper, units of 1 m
147	Device Tech (1 Byte)	Device technology
148-163	Vendor name (16 Bytes)	QSFP vendor name (ASCII)
164	Extended Transceiver (1 Byte)	Extended Transceiver Codes for InfiniBand [†]
165-167	Vendor OUI (3 Bytes)	QSFP vendor IEEE vendor company ID
168-183	Vendor PN (16 Bytes)	Part number provided by QSFP vendor (ASCII)
184-185	Vendor rev (2 Bytes)	Revision level for part number provided by vendor (ASCII)
186-187	Wavelength (2 Bytes)	Nominal laser wavelength (Wavelength = value / 20 in nm)
188-189	Wavelength Tolerance (2 Bytes)	Guaranteed range of laser wavelength (+/- value) from Nominal wavelength (Wavelength Tol. = value / 200 in nm)
190	Max Case Temp (1 Byte)	Maximum Case Temperature in Degrees C
191	CC_BASE (1 Byte)	Check code for Base ID fields (addresses 128-190)
192-195	Options (4 Bytes)	Rate Select, TX Disable, TX Fault, LOS
196-211	Vendor SN (16 Bytes)	Serial number provided by vendor (ASCII)
212-219	Date code (8 Bytes)	Vendor's manufacturing date code
220	Diagnostic Monitoring Type (1 Byte)	Indicates which type of diagnostic monitoring is implemented
221	Enhanced Options (1 Byte)	Indicates which optional enhanced features are implemented
222	Reserved (1 Byte)	Reserved
223	CC_EXT	Check code for the Extended ID Fields (addresses 192-222)
224-255	Vendor Specific (32 Bytes)	Vendor Specific EEPROM

11、 Mechanical Dimensions



未注尺寸公差±0.1

单位：毫米

ESD

This transceiver is specified as ESD threshold 1KV for high speed data pins and 2KV for all others electrical input pins, tested per MIL-STD-883, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.