

RA-QA0GXX-C00

100Gb/s QSFP28 Active Optical Cable

Product Features

- Four-channel full-duplex active optical cable
- Transmission data rate up to 26Gbit/s per channel
- Reliable VCSEL array technology using multi-mode fiber
- Low power consumption <2.5W
- Operating case temperature: 0°C to 70°C
- 3.3V power supply voltage
- RoHS 6 compliant
- Hot Pluggable QSFP form factor

Applications

- Infiniband QDR/DDR/SDR
- Data center
- 40G Ethernet
- 4G/8G/10G Fiber Channel

The RayOptek QSFP28 active optic cables are a high performance, low power consumption, long reach interconnect solution supporting 100G Ethernet ,or InfiniBand QDR/DDR/SDR, 12.5G/10G/8G/4G/2G fiber channel ,PCIe and SAS. It is compliant with the QSFP MSA and IEEE P802.3ba. RayOptek QSFP28 AOC is an assembly of 4 full-duplex lanes, where each lane is capable of transmitting data at rates up to 25.78125Gb/s, providing an aggregated rate of 104Gb/s. RayOptek QSFP28 AOC is one kind of parallel transceiver which provides increased port density and total system cost savings.

Ordering Information

Part Number	Description
RA-QA0GXX-C00	100G QSFP28 Active Optical Cable

Notes:

where "xx" denotes cable length in meters. Examples are as follows:

xx = 03 for 3m, xx = 10 for 10m, xx = 50 for 50m, xx = A0 for 100m

For More Information:

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Regulatory Compliance

Feature	Standard	Performance
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022:2010, Class B	Compatible with standards
Electromagnetic susceptibility (EMS)	EN 55024:2010	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class I laser product

Absolute Maximum Ratings

The operation in excess of any absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Max	Unit	Notes
Storage Temperature	T _S	-40	85	°C	
Operating Case Temperature	T _{OP}	0	70	°C	
Power Supply Voltage	V _{CC}	-0.3	3.6	V	
Relative Humidity (non-condensation)	RH	0	85	%	
Input Voltage	V _{in}	-0.3	V _{CC} +0.3	V	

Recommended Operating Conditions and Power Supply Requirements

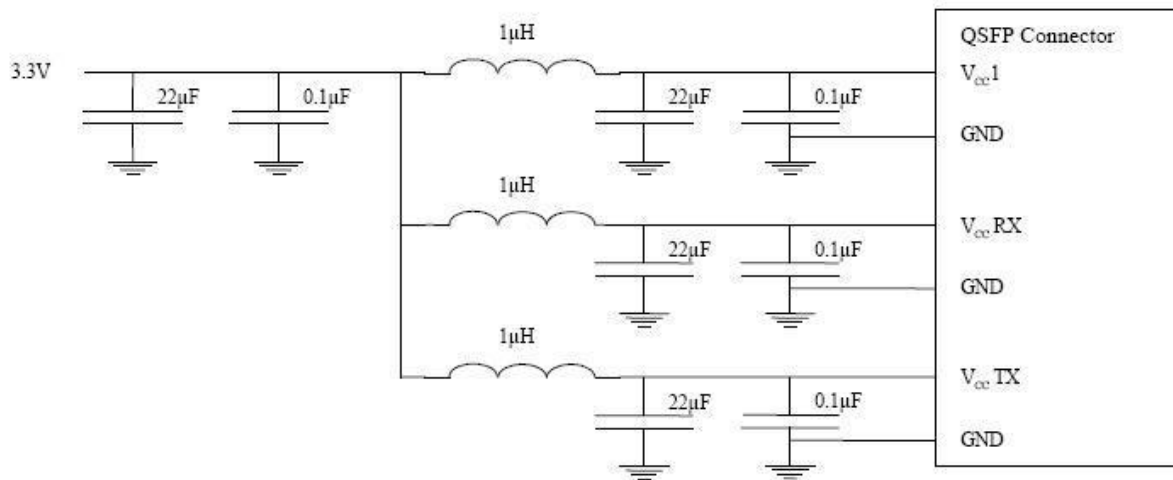
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	T _{OP}	0		70	°C	
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Power Consumption				2.5	W	
Data Rate	DR		25.78125		Gbps	
Data Speed Tolerance	ΔDR	-100		+100	ppm	
Link Distance with OM3 fiber	D	0		70	m	

Electrical Characteristics

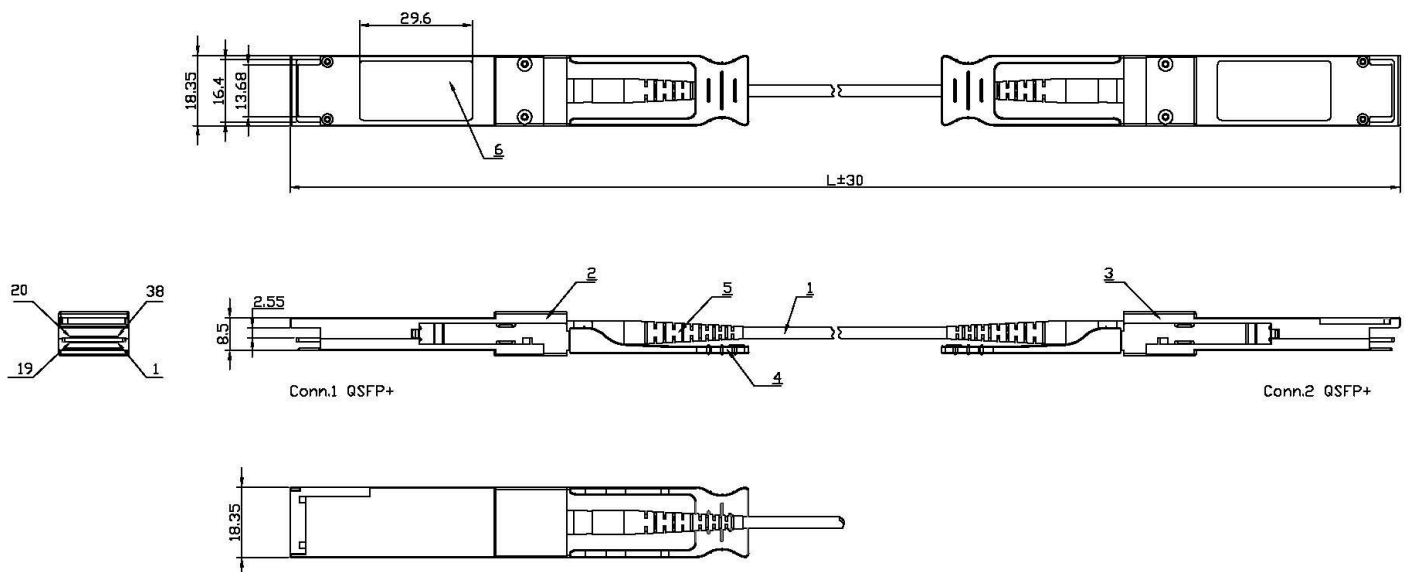
The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Test Point	Min	Typical	Max	Unit	Notes
Differential input impedance	Z _{in}	90	100	110	ohm	
Differential Output impedance	Z _{out}	90	100	110	ohm	
Differential input voltage amplitude	ΔV _{in}	300		1100	mVp-p	
Differential output voltage amplitude	ΔV _{out}	500		800	mVp-p	
Bit Error Rate	BR				E-12	
Input Logic Level High	V _{IH}	2.0		V _{CC}	V	
Input Logic Level Low	V _{IL}	0		0.8	V	
Output Logic Level High	V _{OH}	V _{CC} -0.5		V _{CC}	V	
Output Logic Level Low	V _{OL}	0		0.4	V	

Recommended Power Supply Filter



Mechanical Dimensions



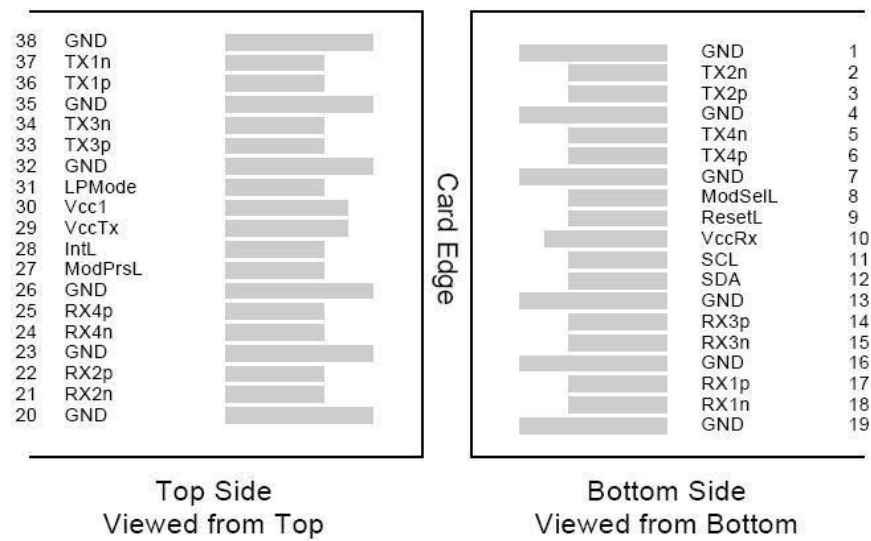
ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all other 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.

Laser Safety

This is a Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

Pin Assignment and Description



Pin Assignment

PIN #	Logic	Symbol	Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	1
8	LVTLL-I	ModSelL	Module Select	
9	LVTLL-I	ResetL	Module Reset	
10		VccRx	+3.3V Power Supply Receiver	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	1

25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
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.

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