

**Multi-Mode 40GBASE-SR4
QSFP+ Transceiver RoHS6 Compliant**

Features

- ü Compliant to the IEEE 802.3ba(40GBASE-SR4)
- ü 40Gbps aggregated bidirectional data throughput
- ü Compliant to the QSFP+ MSA SFF-8436 Specification
- ü Active Optical Cables Length up to 100m
- ü VCSEL array transmitter and PIN array receiver
- ü Low Power dissipation <0.35W per channel
- ü Infiniband 4XQDR/40G Base-SR10 Compliant Laser Class 1
- ü Operating case temperature: 0 to +70° C

Applications

- ü InfiniBand QDR (4 x 10G), DDR (4 x 5G) and SDR (4 x 2.5G) interconnects
- ü High Performance and High Productivity computer interconnects
- ü Data Aggregation, Backplane and Proprietary Density Applications
- ü PCI-Express, SAS/SATA, Fibre Channel compatible interconnect
- ü Datacom and Telecom switch and router backplane connections

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _A YQS40-AO85XXM	0		+70	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Aggregate Bit Rate	BR _{AVE}		41.25		Gbps
Lane Bit Rate	BR _{LANE}		10.3125		Gbps

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic Discharge to the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. <u>TüV Certificate</u>
Component Recognition	UL and CUL EN60950-1:2006	UL <u>TüV Certificate</u> (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards ^{note}

Notes:

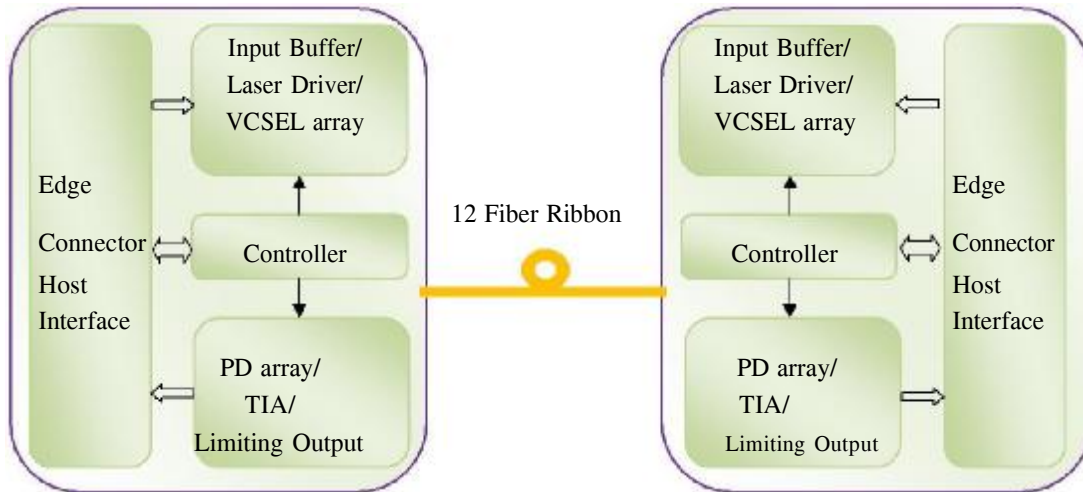
For update of the equipments and strict control of raw materials, BSD has the ability to supply the customized products since Jan 1, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

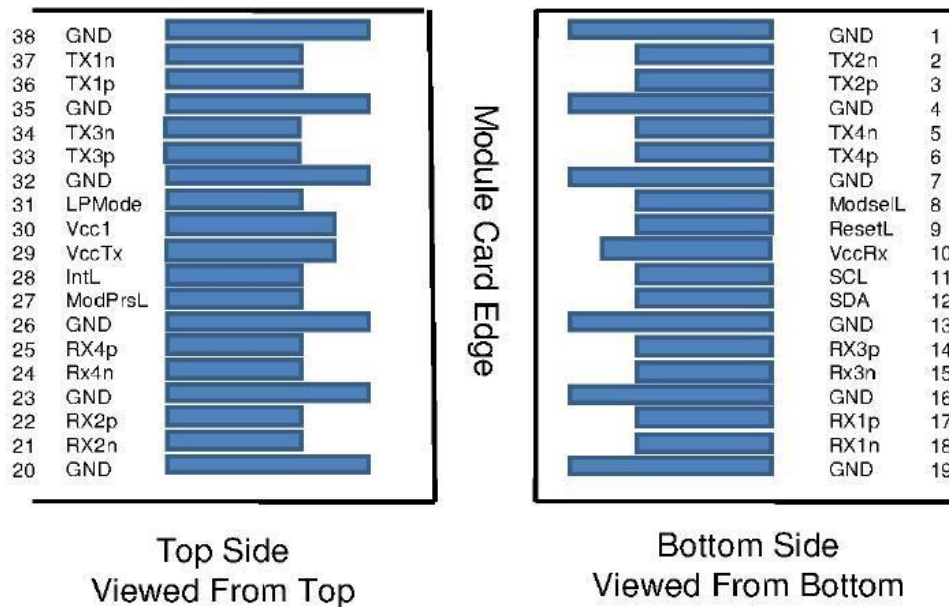
In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for BSD's transceivers, because BSD's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic

components.

Functional Description of Transceiver



QSFP+ Transceiver Electrical Pad Layout



Pin Arrangement and Definition

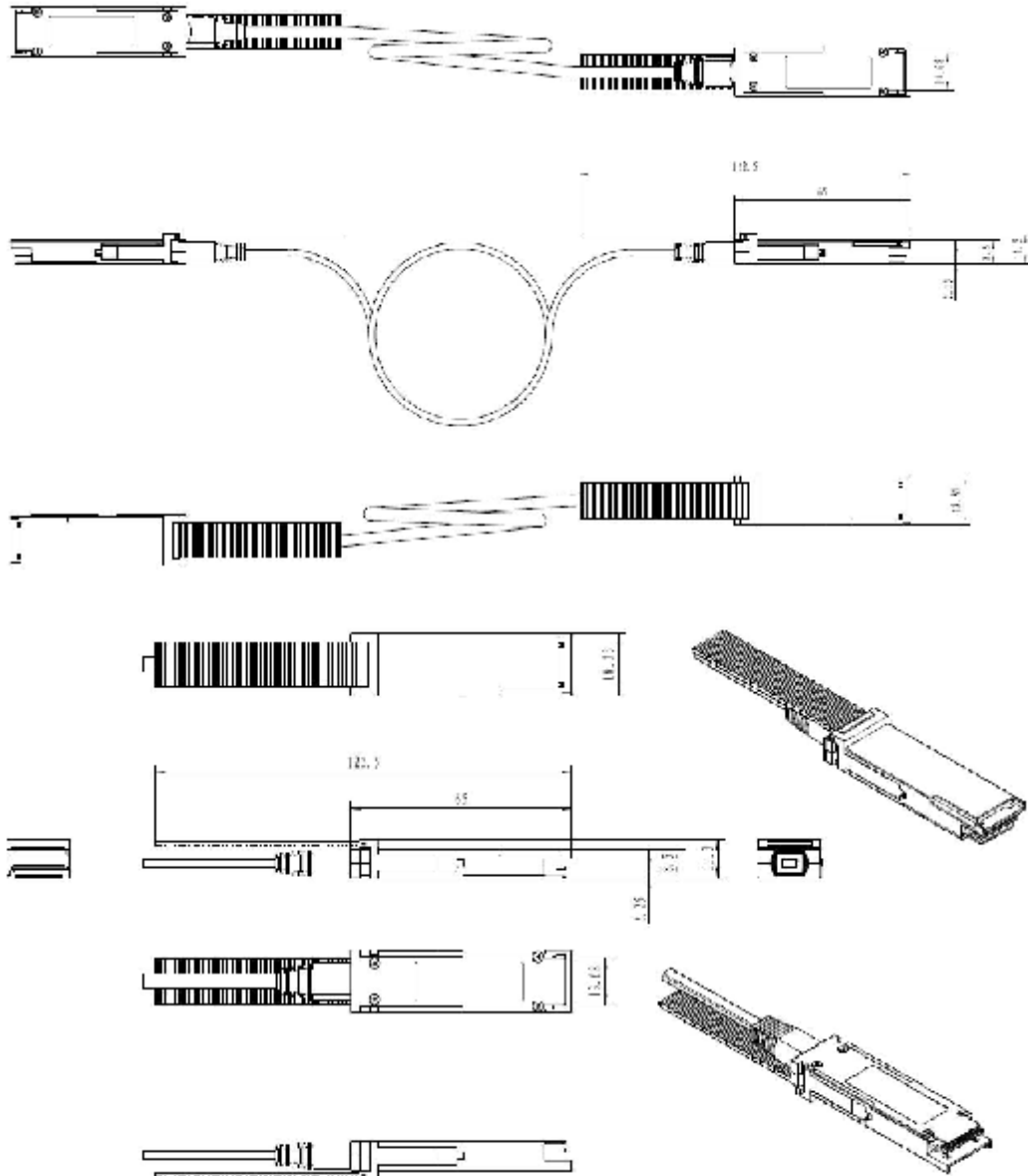
Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		VccRx	+3.3V Power Supply Receiver	2	2
11	LVC MOS- I/O	SCL	2-wire serial interface clock	3	
12	LVC MOS- 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		VccTx	+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
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Notes

- 1.GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ 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 are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figures 3 and 4. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP+ Module in any combination. The connector pins are each rated for a maximum current of 500mA.

Mechanical Specifications



Ordering information

Part Number	Data Rate	AOC Length ^{*(note2)}	Temp	DDMI
BSD-QSFP-40G-AOC1M	40Gbps	1-100m	0 to +70°C	Yes

Notes

1: Standard version.

2: Length measured OM3 fiber. XX denotes the AOC length with unit meter. For example, 01 denotes 1m, 02 denote 2m ... 99 denote 99m and 1H denotes 100m.

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by BSD Networks before they become applicable to any particular order or contract. In accordance with the BSD Networks policy of continuous improvement specifications may change without notice. The publication of information in this data sheet does not imply freedom from patent or other protective rights of BSD Networks or others. Further details are available from any BSD Networks sales representative.

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