

Product Specification

40G QSFP+ to 10G SFP+ Converter Module

P/N: CVR-QSFP-SFP



Features

- Single +3.3V power supply
- PIN receivers
- Operating case temperature: -20 to 85°C
- Max power dissipation <1.5W
- 1 independent duplex channels operating at 10Gbps, also support for 2.5Gbps, 5Gbps data rates
- Secure latching mechanism
- All-metal housing for superior EMI performance
- Secure latching mechanism

Compliance

- Compliant to SFP MSA and QSFP MSA
- Compliant to Electrical MSA SFF-8636 and SFF8431
- Compliant to Mechanical MSA SFF-8665 and SFF8432
- IEEE 802.3bj
- RoHS

Applications

- Switches with QSFP+ ports
- Router with QSFP+ Ports
- QSFP+ to SFP+ Conversion
- Data center network expansion

Description

The CVR-QSFP-SFP Adapter Module is a versatile solution designed to enable seamless connectivity between Quad Small Form-Factor Pluggable (QSFP) and Small Form-Factor Pluggable (SFP+) interfaces. It provides an efficient and cost-effective way to integrate lower-speed SFP+ modules or cables into QSFP ports, making it ideal for networks transitioning to higher speeds or operating with mixed-speed configurations.

This adapter module converts a QSFP port into an SFP+ port, offering flexibility to connect to lower-speed network endpoints. By leveraging existing SFP+ transceivers or cables, users can maximize the utility of high-density QSFP platforms while maintaining compatibility with 10 Gigabit Ethernet infrastructure. This ensures a smooth and economical migration path to 40 Gigabit Ethernet without requiring a complete overhaul of network components.

The CVR-QSFP-SFP Adapter Module supports a wide range of SFP+ optics and cable reaches, ensuring compatibility with various network setups. It is designed to work with multiple switch models and SFP+ transceivers, providing a reliable and scalable solution for diverse networking environments. This adapter is an essential tool for optimizing network performance and reducing costs during speed transitions.

Product performance Specifications

1. Basic Product Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit
Storage Temperature	T _s	-40	-	+85	°C
Supply Voltage	V _{CC}	-0.5	-	4.5	V
Relative Humidity	RH	5	-	85	%
Operating Case Temperature	T _C	-20	-	85	°C
Power Supply Voltage	V _{CC}	3.13	3.3	3.47	V
Power Supply Current	I _{CC}			280	mA
Power Dissipation	PD	-	-	1.5	W
Data Rate	DR	1		10	Gbps

QSFP Recommended Host Board Power Supply Circuit

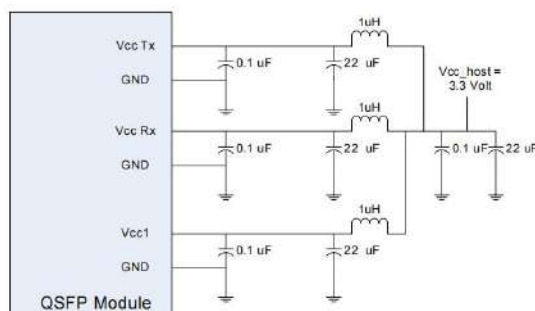


Figure 1:QSFP Recommended Host Board Power Supply Circuit

QSFP Recommended Interface Circuit

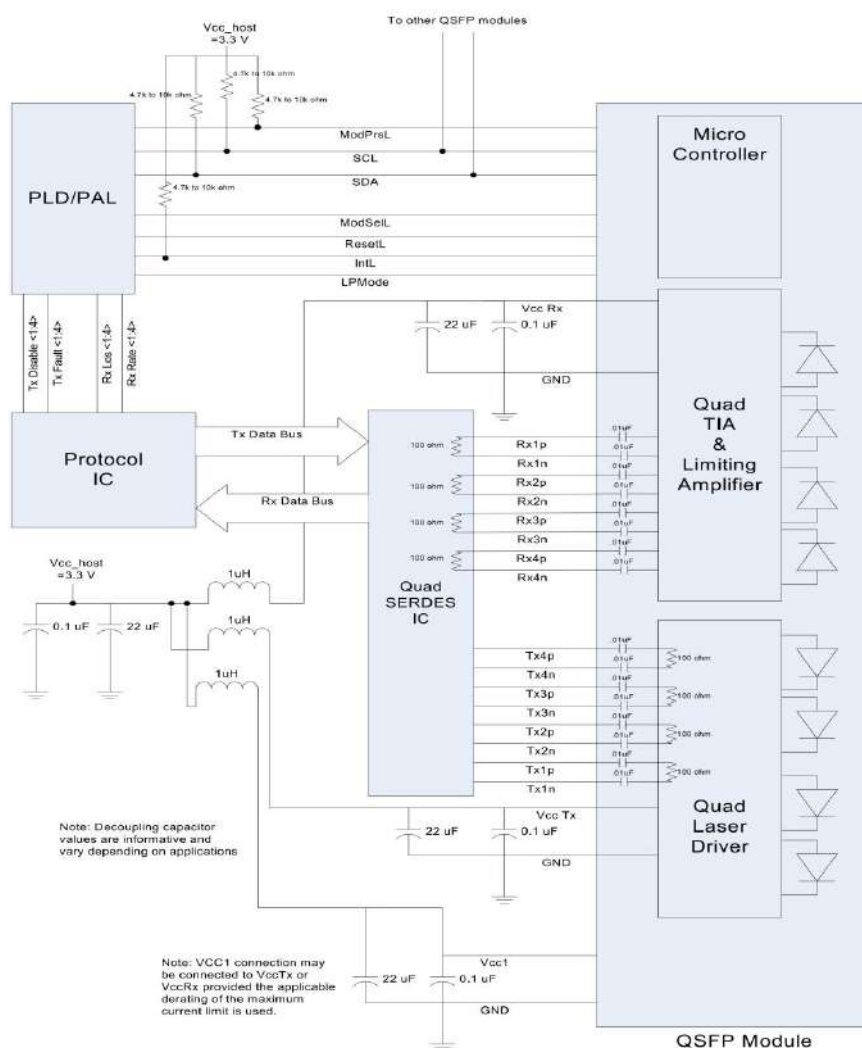


Figure 2:QSFP Recommended Interface Circuit

SFP Recommended Host Board Power Supply Circuit

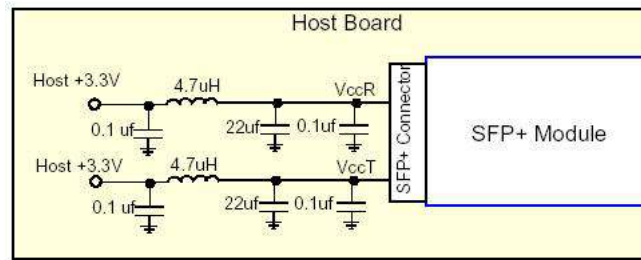


Figure 3:SFP Recommended Host Board Power Supply Circuit

SFP Recommended Interface Circuit

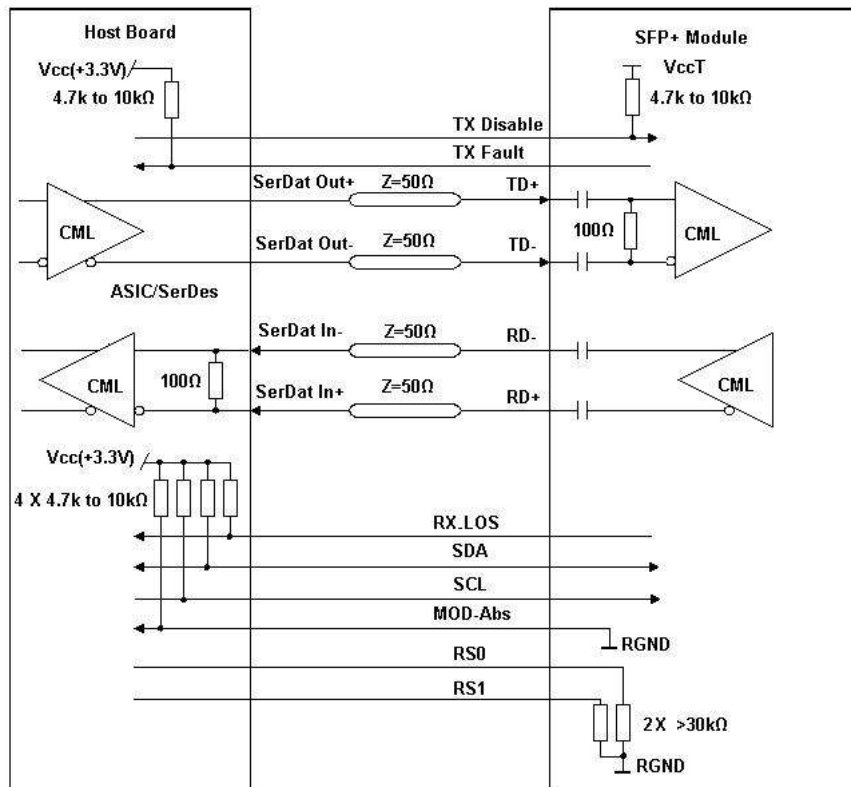


Figure 4:SFP Recommended Interface Circuit

QSFP Pin-out Definition

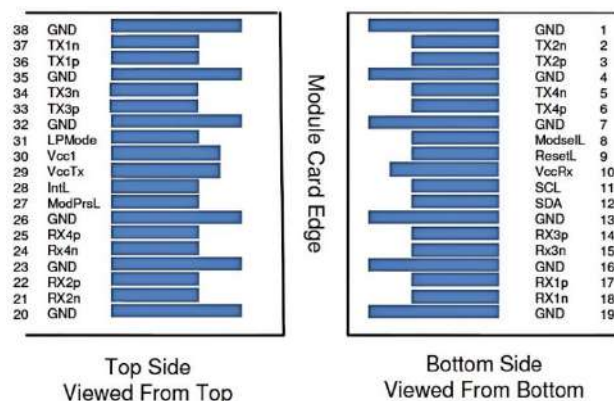


Figure 5: QSFP Pin view

QSFP Pin Function Definitions

Pin	Logic	Symbol	Description	Note
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	4
9	LVTTL-I	ReSelL	Module Select	4
10		Vcc Rx	+3.3V Power Supply Receiver	2
11	LVC MOS-I/O	SCL	2-wire serial interface clock	4
12	LVC MOS-I/O	SDA	2-wire serial interface data	4
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3
15	CML-O	Rx3n	Receiver Inverted Data Output	3
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3
18	CML-O	Rx1n	Receiver Inverted Data Output	3
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3

25	CML-O	Rx4p	Receiver Non-Inverted Data Output Ground	3
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	4
28	LVTTL-O	IntL	Interrupt	4
29		Vcc Tx	+3.3V Power supply transmitter	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMode	Low Power Mode	4
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3
34	CML-I	Tx3n	Transmitter Inverted Data Input	3
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3
37	CML-I	Tx1n	Transmitter Inverted Data Input	3
38		GND	Ground	1

Note1: 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.

Note2: 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. Recommended host board power supply filtering is shown in Host board power supply circuit. 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 500 mA.

Note3: High-speed signal interfaces require differential pairs (e.g. TX1+/TX1-) with tightly matched impedances (typically 100Ω).

Note4: The management and control signals are based on LVTTL level logic and are used for functions such as module selection and reset.

SFP Pin-out Definition

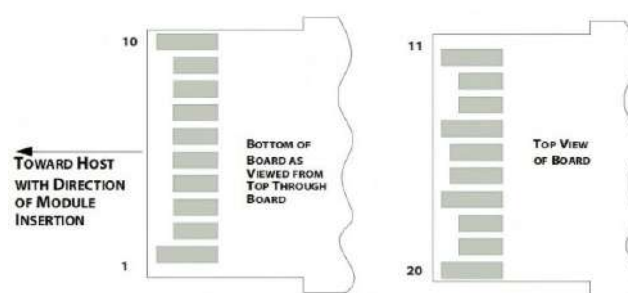


Figure 6: SFP Pin view

SFP Pin Function Definitions

Pin	Logic	Symbol	Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2

3	LVTTL-I	TX_Disable	Transmitter Disable; Turns off transmitter laser output	3
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line (Same as MOD-DEF2 as defined in the INF-8074i)	4
5	LVTTL-I/O	SCL	2-wire Serial Interface Clock (Same as MOD-DEF1 as defined in the INF-8074i)	4
6		MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	5
7	LVTTL-I	RS0	Adaptive multi-rate operation	6
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication (In FC designated as RX_LOS, in SONET designated as LOS, and in Ethernet designated at Signal Detect)	2
9	LVTTL-I	RS1	Adaptive multi-rate operation	6
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Non-Inverted Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Transmitter 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Note1: The module signal ground pins, VeeR and VeeT, shall be isolated from the module case.

Note2: This pin is an open collector/drain output pin and shall be pulled up with 4.7kΩ-10kΩ to Host_Vcc on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module $V_{ccT}/R + 0.5V$.

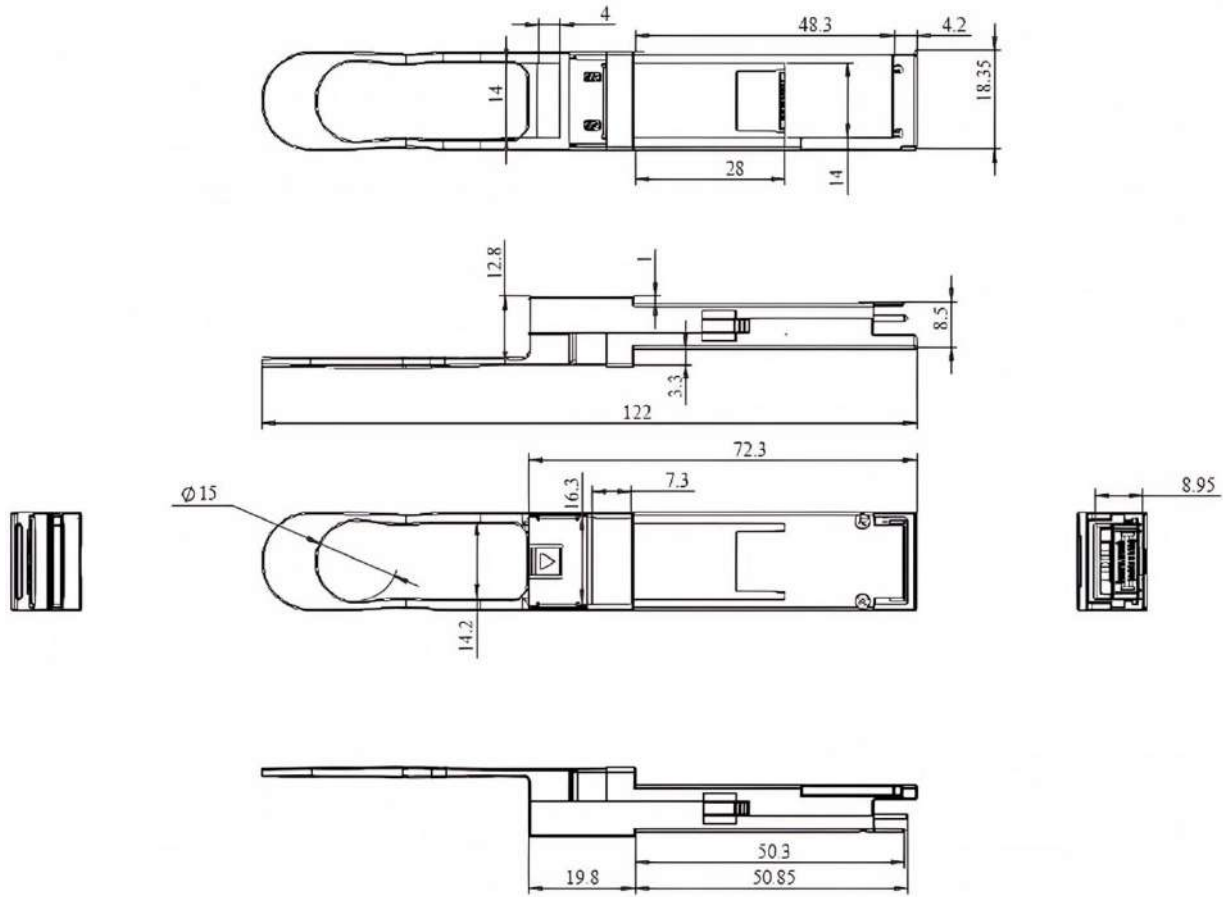
Note3: This pin is an open collector/drain input pin and shall be pulled up with 4.7kΩ-10kΩ to VccT in the module.

Note4: See SFF-8431 4.2 2-wire Electrical Specifications.

Note5: This pin shall be pulled up with 4.7kΩ-10kΩ to Host_Vcc on the host board.

Note6: Connect with 30kΩ load pulled down to GND in the module.

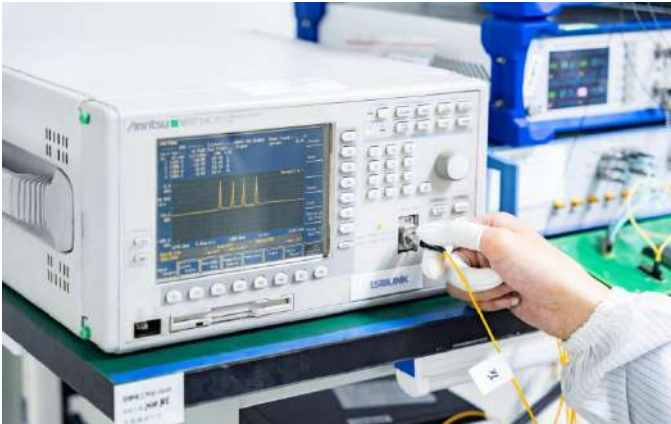
Mechanical Dimension



Test Center

1. Performance Testing

Every fiber optic transceiver is thoroughly tested by the LSOLINK Assurance Program, which is equipped with the world's most advanced analytical equipment to ensure that our transceivers meet the industry's international public protocol standards while still functioning flawlessly in your facility.



Optical Spectrum Inspection

Using the industry's leading optical spectrum analyser to check in real time that the parameters of the optical transceiver's laser comply with industry standards.

- **Peak:** Peak wavelength and peak level
- **2nd Peak:** Side-mode wavelength and level
- **Mean Wl:** Center wavelength
- **Total Power:** Total power of spectrum
- **SMSR:** Side-Mode Suppression Ratio



Optical Signal Quality Inspection

Using highly efficient sampling oscilloscopes and BERT testers, equipped with an automated test platform to accurately test the signal quality of the transceiver, test records are kept for up to 5 years to ensure the traceability of each transceiver.

- **Eye Mask Margin(NRZ)**
- **TDECQ(PAM4):**transmitter dispersion eye closure
- **OMA:** Optical modulation amplitude
- **BER:** Bit error rate
- **ER:** Extinction Ratio



Flow Pressure Test

Using multi-protocol network traffic analyser with various brands of switches to test the transceiver's ability to transmit at full speed.

- **Bandwidth:** Actual transceiver bandwidth on the port
- **Packet Loss**
- **Packet Errors:**CRC Errors/PCS Errors/Symbol Errors
- **LinkDown Counts**
- **latency**

Above is part of our test bed network equipment. For more information, Please click [download](#) for optical transceiver performance test report.

2. Quality Control

We adopt advanced quality management solutions. Each transceiver is self-inspected, including: 20x microscope inspection, 200x microscope inspection, and QC process inspection.



visual inspection



Microscopic inspection: 20X



Microscopic inspection: 200X



Reliability Verification



Optical endface inspection



OQC Inspection


Order Information

Part Number	Description
CVR-QSFP-SFP	40G QSFP+ to SFP+ Converter
CVR-Q28-S28	100G QSFP28 to SFP28 Converter

Further Information

 | Lighting the Path to Global Links

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Disclaimer

1. We are committed to continuous product improvement and feature upgrades, and the contents contained in this manual are subject to change without notice.
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