

QSFP-SFP-x

QSFP to SFP+ Adapter (QSA) Module

Features

- Trouble-free installation and network bring-up
- Compliant to industry standards: SFF-8436
- Compliant to industry standards: SFF-8432
- Precision process control for minimization of pair-to-pair skew
- 1 independent duplex channels operating at 10Gbps, also support for 5Gbps data rates
- All-metal housing for superior EMI performance
- 100ohm differential impedance system
- Low insertion loss
- Low crosstalk
- Secure latching mechanism
- RoHS compliant
- Compatible with RoHS
- Single +3.3V power supply
- Operating case temperature: -20 to 85°C

Applications

- Low EMI radiation Switches, servers and routers
- Telecommunication and wireless infrastructure
- Test and measurement equipment
- Networked storage systems
- Data Center networks
- Storage area networks

Product Description

The QSFP to SFP+ Adapter (QSA) Module offers 10Gigabit Ethernet connectivity for Quad Small Form-Factor Pluggable (QSFP)-only platforms. It allows smooth and cost-effective migration to 40 Gigabit Ethernet by providing an option to use lower-speed Enhanced Small Form-Factor Pluggable

(SFP+) modules in empty QSFP ports or when the other end of the network is running at lower speeds.

The QSA Module interoperates with all major optical modules and direct attached copper cable vendors. Its design assures minimum loss on the conversion path between the QSFP cage and the SFP+ receptacle. The high-speed data channel of the SFP+ receptacle is connected to lane 1 of the QSFP connector. The three remaining channels on the QSFP connector are not connected. With this adapter, customers have the flexibility to use any SFP+ module or cable to connect to a lower-speed port on the other end of the network. This flexibility allows a cost-effective transition to 40 Gigabit Ethernet by maximizing the use of high-density 40 Gigabit Ethernet QSFP platforms. This adapter supports all SFP+ optics and cable reaches. Compatible switch models and SFP+ modules. A list of SFP+ modules that can be plugged into the QSA module is provided in Table 1

It is qualified for 10GbE SFP+ and 1GbE SFP transceivers meeting the Small Form Factor Pluggable (SFP) Transceiver Multi-source Agreement (MSA). The QSA module provides a solution for integrating systems using different vendors' equipment, is vendor agnostic and provides a direct path to the SFP port unit's memory.

Table 1.

Item	Product Name	Product Description
1	10G SFP+ SR	10GBASE-SR SFP+ Module for Multimode Fiber
2	10G SFP+ LR	10GBASE-LR SFP+ Module for Single-Mode Fiber
3	10G SFP+ ER	10GBASE-ER SFP+ Module for Single-Mode Fiber
4	10G SFP+ ZR	DWDM SFP+ Modules for Single-Mode Fiber
5	10G SFP+ DAC	SFP+ Twinax Copper Cables (1-m to 10-m lengths)
6	10G SFP+ AOC	SFP+ Active Optical Cable Assembly

Recommended Operation Condition

Parameter	Symbol	Min	Max	Unit
Operating Case Temperature	Topc	-20	85	degC
Storage Temperature	Tst	-40	85	degC
Relative Humidity (non-condensation)	RS	-	85	%
Supply Voltage	VCC3	3.15	3.45	V

Power consumption	Pout		0.3	W
Characteristic Impedance	Im	90	110	Ohm
Data Rate		1	25	Gbps

QSFP Host board Connector Pinout

Figure 1: MSA compliant Connector

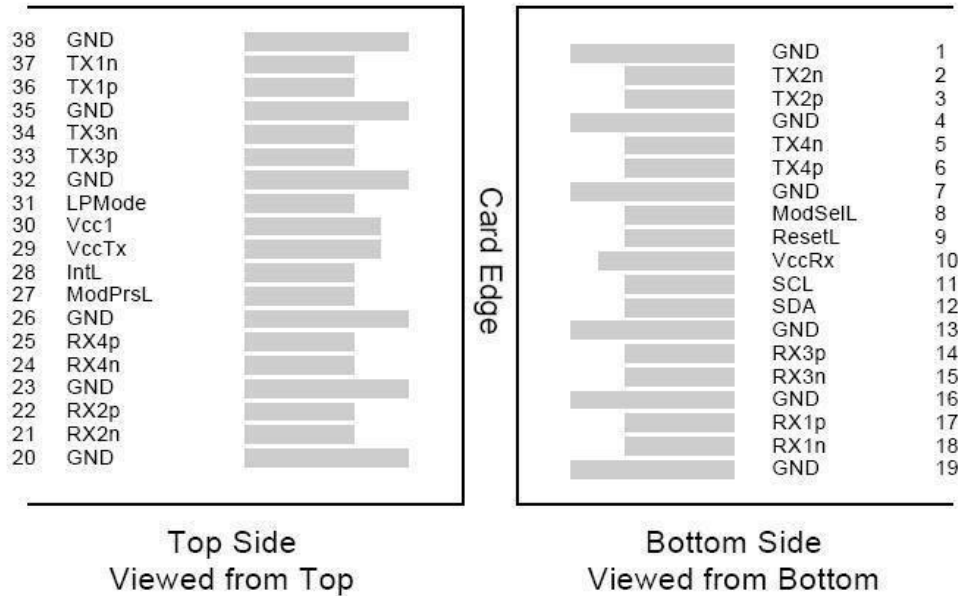


Figure 2: Pin Definitions

Pin	Logic	Symbol	Name/Description	Note
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

Note:

1. GND is the symbol for signal and supply (power) common for QSFP modules. All are common within the QSFP

module and all module voltages are referenced to this potential otherwise noted. Connect these directly to the host board signal common ground plane

2. cc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below.

Vcc Rx, Vcc1 and Vcc Tx may be internally

connected within the QSFP transceiver module in any combination. The connector pins are each

rated for a maximum current of 500mA.

SFP Host board Connector Pinout

Figure 3: MSA compliant Connector

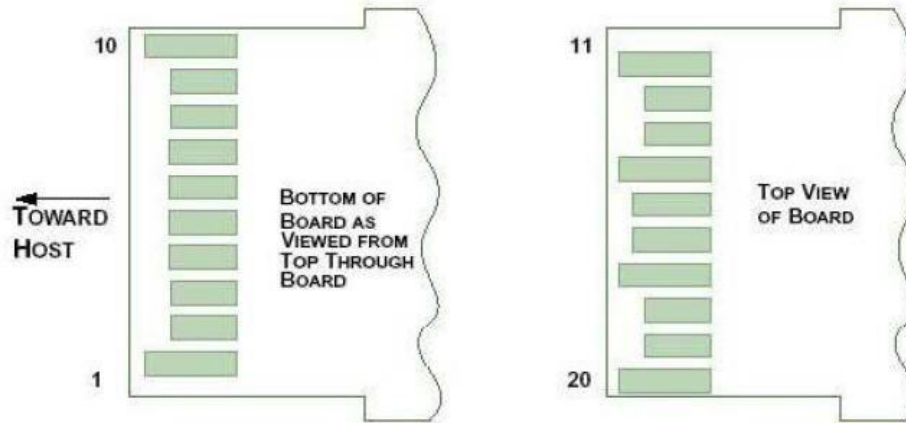













Figure 4: Pin Definitions

Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	Tx_Fault	Transmitter Fault	2
3	LVTTL-I	Tx_Disable	Transmitter Disable	3
4	LVTTL-I/O	SDA	MOD-DEF2 2-wire serial interface data line	4
5	LVTTL-I/O	SCL	MOD-DEF1 2-wire serial interface clock line	4
6		Mod_Abs	Module Absent	5
7	LVTTL-I	RS0	Rate Select Zero	
8	LVTTL-O	Rx_LOS	Module Receiver Loss of Signal	2
9	LVTTL-I	RS1	Rate Select One	
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 3.3V Supply	
16		VccT	Module Transmitter 3.3V 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

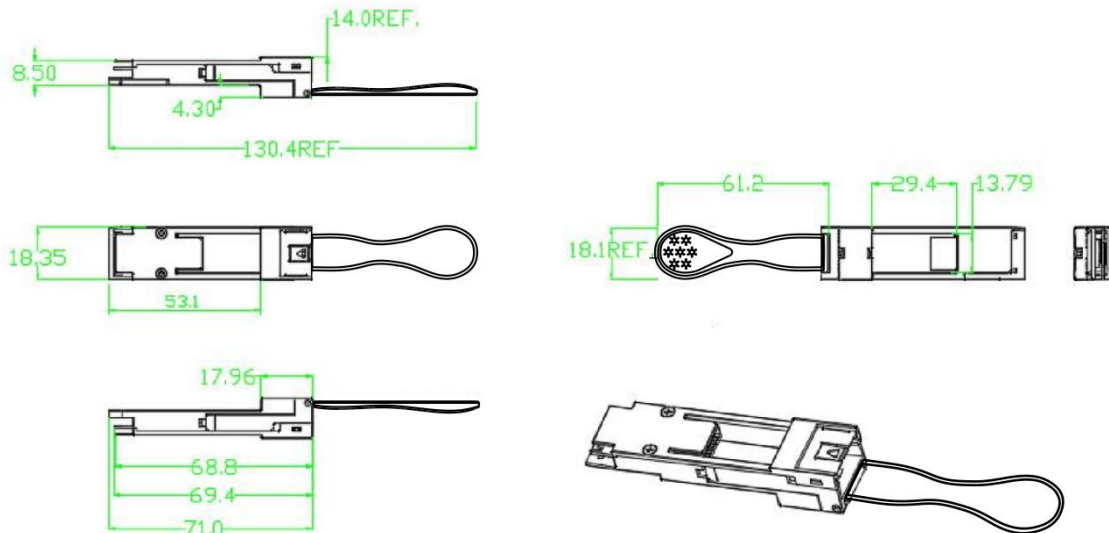
Notes:

1. The module signal grounds, VeeR and VeeT, shall be isolated from the module case.
2. This is an open collector/drain output and shall be pulled up with 4.7-10k to Vcc_Host on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module has voltage exceeding module VccT/R + 0.5 V.
3. This is an open collector/drain input and shall be pulled up with 4.7-10k to VccT in the module.
4. See 2-wire electrical specifications.
5. This shall be pulled up with 4.7-10k to Vcc_Host on the host board.

Pin Mapping

	QSFP Signal			SFP Signal
37	TX1N		19	TD-
36	TX1P		18	TD+
17	RX1P		13	RD+
18	RX1N		12	RD-
27	MODPRSL		6	ModAbs
28	INTL		8	LOS
			2	TX_FAULT
8	RESETL		3	TX_DIS
31	LPMODE		7	RS0
			9	RS1
11	SCL		5	SCL
12	SDA		4	SDA
10	RCCR		15	VCCR
29	VCCT			
31	VCC			

Mechanical Dimensions



Ordering information

Part Number	Product Description
QSFP-SFP-1	QSFP to SFP+ Adapter (QSA) Module, I2C read port information comes from SFP port module
QSFP-SFP-2	QSFP to SFP+ Adapter (QSA) Module, I2C read port information from QSA adapter, support DDMI

For More Information

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