40G QSFP to 4×SFP+ Breakout Active Optical Cable

Part Number: V40-Q4SyyyC-AA

V40-Q4SyyyC-AA is a high performance QSFP+ breakout AOC for 40Gigabit Ethernet data links.

Features

- Up to 10.3125 Gbps
- Single 3.3 V power supply
- Low power consumption
- Up to 10 m
- Hot pluggable
- RoHS compliant
- Operating case temperature range: 0°C to 70°C

Applications

- 4×10G Ethernet
- Proprietary high-speed interconnections

Ordering Information

Part Number	Link Length	Data Rate	Laser	Detector	Fiber Type	Temperature
V40-Q4SyyyC-AA	up to 10m	40G	850nm VCSEL	850nm PIN array	MMF	0 – 70°C
yyy=003	3m					
yyy=005	5m					
yyy=010	10m					
yyy=yyy*	yyym					

* Customized length is available upon request

Product Overview

Vitex **V40-Q4SyyyC-AA** is a 40G QSFP+ breakout AOC used for 40G Ethernet links for up to 10m. These AOCs take full advantage of the high transmission bandwidth, low power consumption and long reach.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T_{STO}	-20	70	°C
Supply Voltage	V_{IN}	0	4.0	V

Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature		T_{OP}	0		70	°C
Power Supply Voltage		V_{CC}	3.13	3.3	3.47	V
Power Supply Current	SFP+	I_{CC}		150		mA
	QSFP+			150		
Power Consumption	SFP+				0.5	W
	QSFP+				0.7	

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Transmitter					
Data Rate (per channel)	BR	-	10.3125	10.3125	Gb/s
Input Differential Impedance	R_{IN}	-	100	-	Ω
Differential Data Input Swing	V_{INP-P}	-	-	900	mV
Input Logic High		2.3	-	V_{cc}	V
Input Logic Low		-	-	0.8	V
Output Logic High		2.6	-	V_{cc}	V
Output Logic Low		-	-	0.8	V
Receiver					
Data Rate per channel	BR	-	10.3125	10.3125	Gb/s
Output Differential Impedance	R_{OUT}	-	100	-	Ω

Differential Data Output Swing	V_{OUTP-P}	-	-	800	mV
Output Logic High		2.0	-	V_{cc}	V
Output Logic Low		-	-	0.8	V
Raw Bit Error Ratio (@PRBS 2^{31}-1)		-	-	10^{-12}	-

Electrical Connector Layout – SFP+ terminal

Electrical Pin Definition

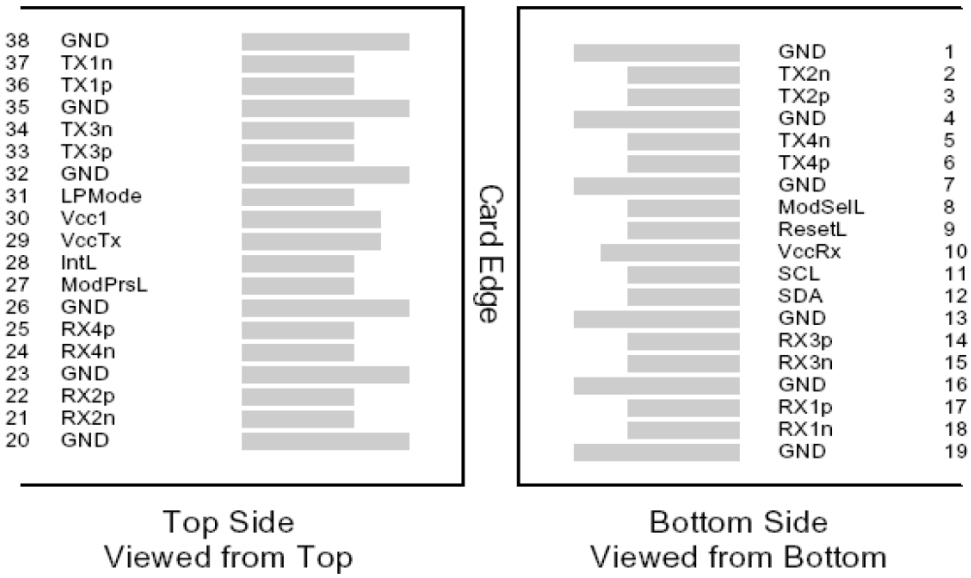
Pin	Name	Description	Note
1	VeeT	Module Transmitter Ground	1
2	Tx_Fault	Module Transmitter Fault	2
3	Tx_Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock	4
6	Mod_ABS	Module Absent, grounded within the module	
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	5
8	Rx_LOS	Receiver Loss of Signal Indication	2
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	5
10	VeeR	Module Receiver Ground	1
11	VeeR	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	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	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	VeeT	Module Transmitter Ground	1

Note :

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. The TTL level TX Fault is an open collector/drain output, which should be pulled up with a 4.7 – 10kΩ resistor on the host board to VccT. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V. When sensing an improper power level in the laser driver, the SFP sets this signal high and turns off the laser. TX-FAULT can be reset with the TX-DISABLE line.
3. TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 – 10kΩ resistor. The states are: Low (0 – 0.8V): Transmitter on / (>0.8, < 2.0V): Undefined / High (>2.0): Transmitter Disabled / Open: Transmitter Disabled. Make TX-DISABLE high (TTL logic "1") to turn off the laser output. The laser will turn on when TX-DISABLE is low (TTL logic "0").
4. These are the module definition pins. They should be pulled up with a 4.7 – 10kΩ resistor on the host board to supply less than VccT+0.3V or VccR+0.3V.
5. Not used.

Electrical Connector Layout – QSFP+ terminal



Electrical Pin Definition – QSFP+ Terminal

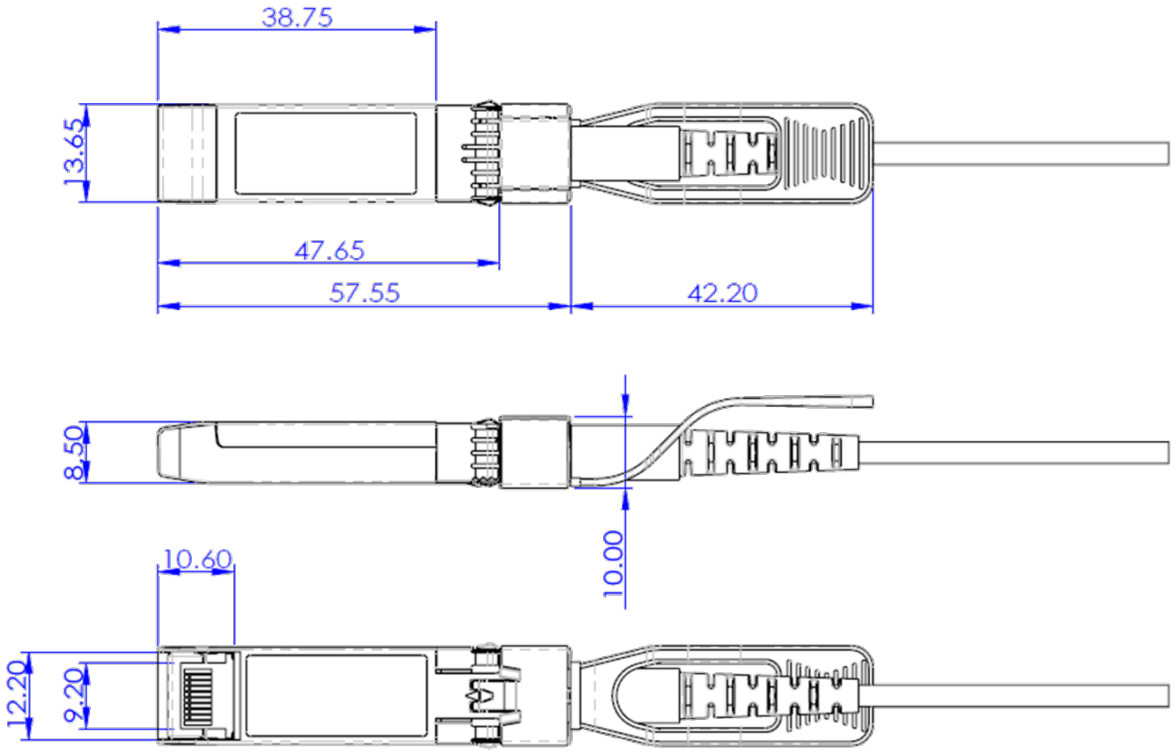
Pin	Name	Description	Note
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSel	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	3.3V Power supply receiver	2
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	ModPrs	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	3.3V Power supply transmitter	2
30	Vcc 1	3.3V Power Supply	2
31	LPMode	Low Power Mode	3
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

Note :

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.

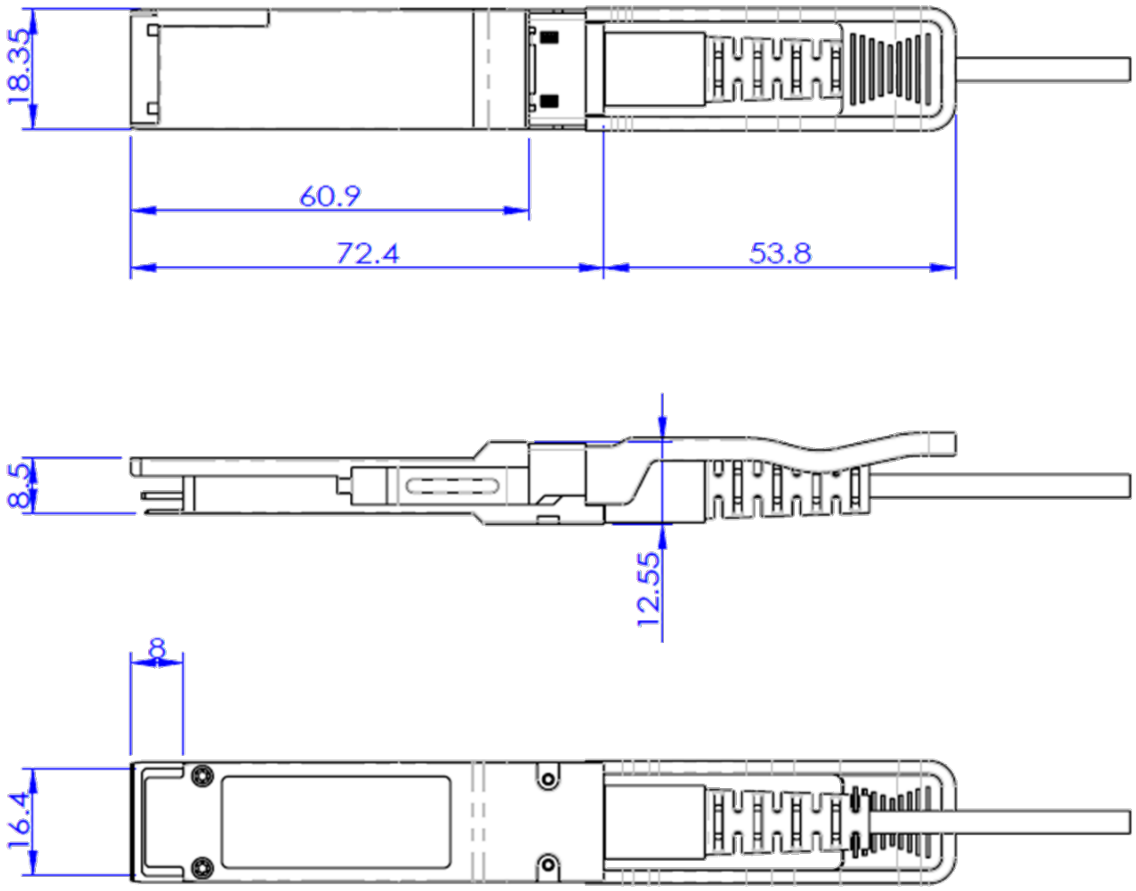
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500 mA.
3. Not used.

Mechanical Dimensions – SFP+ Terminal



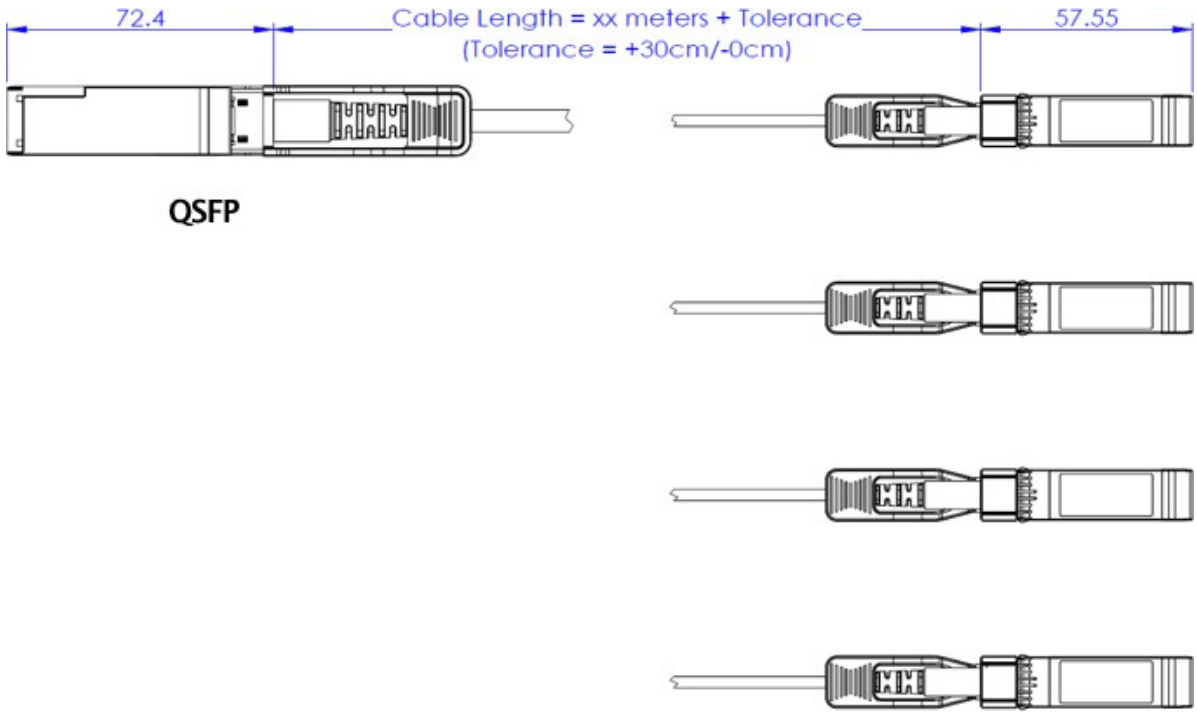
ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Mechanical Dimensions – QSFP+ Terminal



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Mechanical Dimensions – QSFP+ Breakout



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Active Optical Cable

Parameter	Value	Unit	Note
Cable Diameter	Ø2.2 ± 0.15	mm	
Minimum Bend Radius	50	mm	
Length Tolerance	+300 / -0	mm	
Cable Jacket	PVC, Orange (Aqua color is available upon request)		

Revision History

Date	Rev	Description
7/28/2020	1.0	Initial release
5/10/2022	1.1	PN update from LBX-AB040Cyyy to V40-Q4SyyyC-AA

Contact Information

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