

QDD4-400GB-SR4-BD-C-PRO

Cisco® Compatible TAA Compliant 400GBase-BX SR4.2 PAM4 QSFP-DD Transceiver (MMF, 850nm to 902nm, 100m, DOM, CMIS 4.0, 0 to 70C, MPO-12)

Features

- 8x50 Gbps MMF optical interface
- 850nm/908nm VCSEL 850nm/908nm PD Array

Technology

- Supports 4x100G breakout function
- Multi-mode fiber
- CMIS V4.0 compliance
- MPO-12 connector
- Hot Pluggable
- Commercial Temperature 0 to 70 Celsius
- RoHS Compliant and lead-free
- Excellent ESD Protection



Applications:

- 400GBase Ethernet
- Access and Enterprise

Product Description

This Cisco® QSFP-DD transceiver provides 400GBase-BX SR4.2 throughput up to 100m over multi-mode fiber (MMF) using a wavelength of 850nm to 902nm via an MPO-12 connector. It is guaranteed to be 100% compatible with the equivalent Cisco® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Proline's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products.



Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		3.6	V	1
Storage Temperature	Tstg	-40		85	°C	1
Storage Relative Humidity	RH	0		95	%	1, 2
Operating Case Temperature	Tc	0	25	70	°C	
Operating Relative Humidity	RH	0		85	%	1, 2
Signaling Speed Per Channel	S		26.56		GB	

Notes:

1. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
2. Non-condensing condition.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Power Consumption	P		11		W	
Module Supply Current	I _N		3500		mA	
Transmitter						
Tx_Data Differential Input Voltage	V _{IN}			900	mV	
Tx_Data Differential Input Impedance	Z _{IN}		100		Ω	
Receiver						
Rx_Data Differential Output Voltage	V _{OUT}			900	mV	
Rx_Data Differential Output Impedance	Z _{OUT}		100		Ω	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Rate Per Lane	SR		26.56		GBd	
Signaling Speed Accuracy	SSA	-100		100	ppm	
Modulation Format		PAM4				
Average Launch Power Per Lane	POUT	-6.5		4	dBm	1
Outer Optical Modulation Amplitude Per Lane	OMAouter	-4.5		3	dBm	
Optical Output with Tx Off	POFF			-30	dBm	
Extinction Ratio	ER	3			dB	
$\lambda 1$ Center Wavelength (Range)	λ	840		868	nm	2
$\lambda 2$ Center Wavelength (Range)	λ	900		918	nm	3
RMS Spectral Width ($\lambda 1$)	$\Delta\lambda$			0.65	nm	
RMS Spectral Width ($\lambda 2$)	$\Delta\lambda$			0.65	nm	
Transmitter and Dispersion Eye Closure (TDECQ) Per Lane	TDECQ			4.5	dB	
Launch Power in OMAouter Minus TDECQ Per Lane (Minimum)		-5.9			dB	
Optical Return Loss Tolerance (Maximum)	ORLT			12	dB	
Receiver						
Signaling Rate Per Lane	SR		26.56		GBd	
Signaling Speed Accuracy		-100		100	ppm	
Modulation Format		PAM4				
Average Power at Receive Input Per Lane	PIN	-8.5		4	dBm	
Receive Power (OMAouter) Per Lane (Maximum)				3	dBm	
Receiver Sensitivity (OMAouter) Per Lane	S			Max. (-6.6, SECQ-8)	dBm	4
$\lambda 1$ Center Wavelength (Range)	λ	840		868	nm	2
$\lambda 2$ Center Wavelength (Range)	λ	900		918	nm	3
Rx_LOS - Assert	LOSA	-24.6			dBm	
Rx_LOS - De-Assert	LOSD			-8.6	dBm	
Rx_LOS - Hysteresis	LOSH	0.5			dB	

Notes:

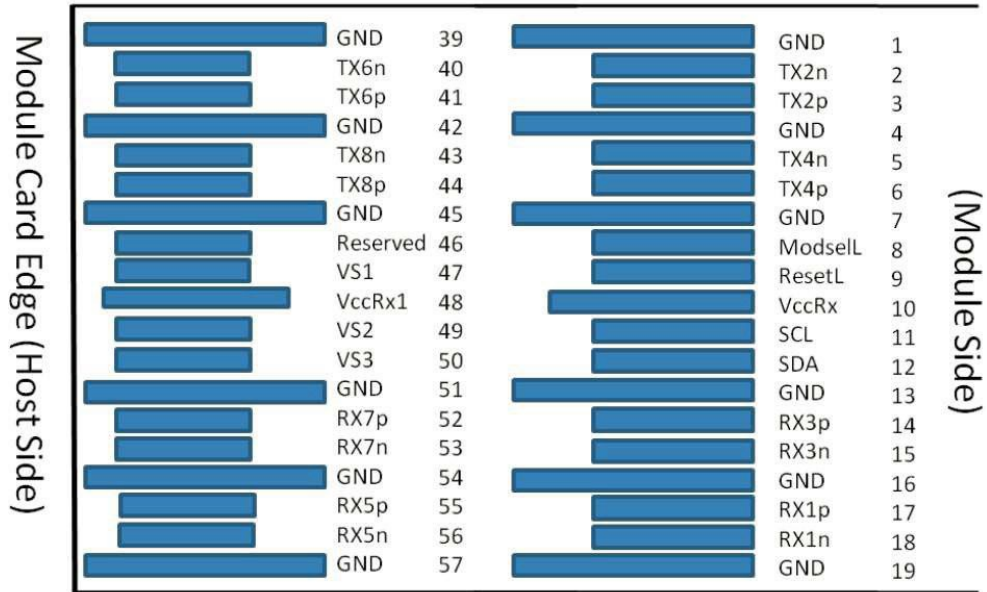
1. Average Optical Output.
2. TxRx pair type TR.
3. TxRx pair type RT.
4. Sensitivity where the BER=2.4E⁻⁴ measured with a PRBS 31Q test pattern @26.56GBaud.

Pin Descriptions

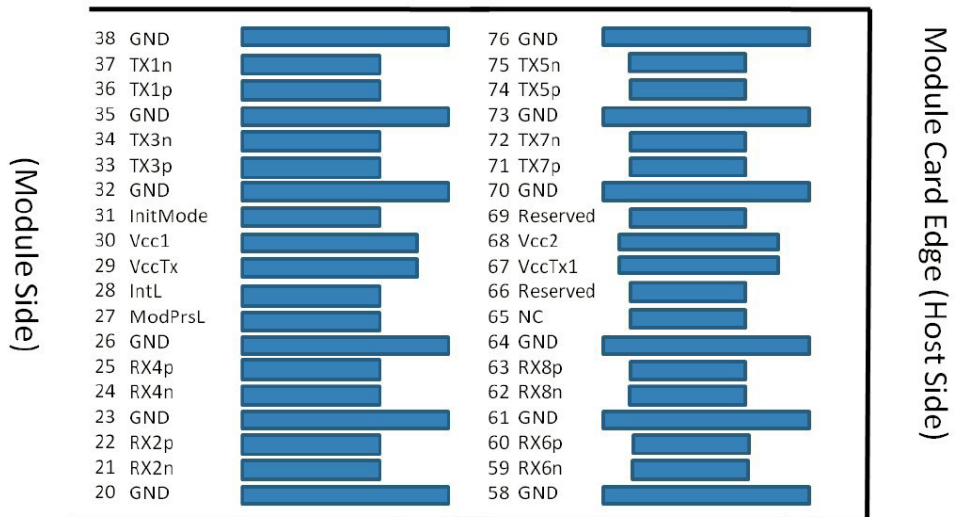
Pin	Logic	Symbol	Name/Descriptions
1		GND	Module Ground.
2	CML-I	Tx2-	Transmitter Inverted Data Input.
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.
4		GND	Module Ground.
5	CML-I	Tx4-	Transmitter Inverted Data Input.
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.
7		GND	Module Ground.
8	LVTTTL-I	ModSelL	Module Select.
9	LVTTTL-I	ResetL	Module Reset.
10		VccRx	+3.3V Power Supply Receiver.
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.
13		GND	Module Ground.
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.
15	CML-O	Rx3-	Receiver Inverted Data Output.
16		GND	Module Ground.
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.
18	CML-O	Rx1-	Receiver Inverted Data Output.
19		GND	Module Ground.
20		GND	Module Ground.
21	CML-O	Rx2-	Receiver Inverted Data Output.
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.
23		GND	Module Ground.
24	CML-O	Rx4-	Receiver Inverted Data Output.
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.
26		GND	Module Ground.
27	LVTTTL-O	ModPrsL	Module Present.
28	LVTTTL-O	IntL	Interrupt.
29		VccTx	+3.3V Power Supply Transmitter.
30		Vcc1	+3.3V Power Supply.
31	LVTTTL-I	InitMode	Initialization Mode.
32		GND	Module Ground.
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.
34	CML-I	Tx3-	Transmitter Inverted Data Input.
35		GND	Module Ground.
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.
37	CML-I	Tx1-	Transmitter Inverted Data Input.
38		GND	Module Ground.
39		GND	Module Ground.

40	CML-I	Tx6-	Transmitter Inverted Data Input.
41	CML-I	Tx6+	Transmitter Non-Inverted Data Input.
42		GND	Module Ground.
43	CML-I	Tx8-	Transmitter Inverted Data Input.
44	CML-I	Tx8+	Transmitter Non-Inverted Data Input.
45		GND	Module Ground.
46		Reserved	
47		VS1	Module Vendor-Specific 1.
48		VccRx1	+3.3V Power Supply.
49		VS2	Module Vendor-Specific 2.
50		VS3	Module Vendor-Specific 3.
51		GND	Module Ground.
52	CML-O	Rx7+	Receiver Non-Inverted Data Output.
53	CML-O	Rx7-	Receiver Inverted Data Output.
54		GND	Module Ground.
55	CML-O	Rx5+	Receiver Non-Inverted Data Output.
56	CML-O	Rx5-	Receiver Inverted Data Output.
57		GND	Module Ground.
58		GND	Module Ground.
59	CML-O	Rx6-	Receiver Inverted Data Output.
60	CML-O	Rx6+	Receiver Non-Inverted Data Output.
61		GND	Module Ground.
62	CML-O	Rx8-	Receiver Inverted Data Output.
63	CML-O	Rx8+	Receiver Non-Inverted Data Output.
64		GND	Module Ground.
65		NC	Not Connected.
66		Reserved	
67		VccTx1	+3.3V Power Supply.
68		Vcc2	+3.3V Power Supply.
69		Reserved	
70		GND	Module Ground.
71	CML-I	Tx7+	Transmitter Non-Inverted Data Input.
72	CML-I	Tx7-	Transmitter Inverted Data Input.
73		GND	Module Ground.
74	CML-I	Tx5+	Transmitter Non-Inverted Data Input.
75	CML-I	Tx5-	Transmitter Inverted Data Input.
76		GND	Module Ground.

Electrical Pin-Out Details

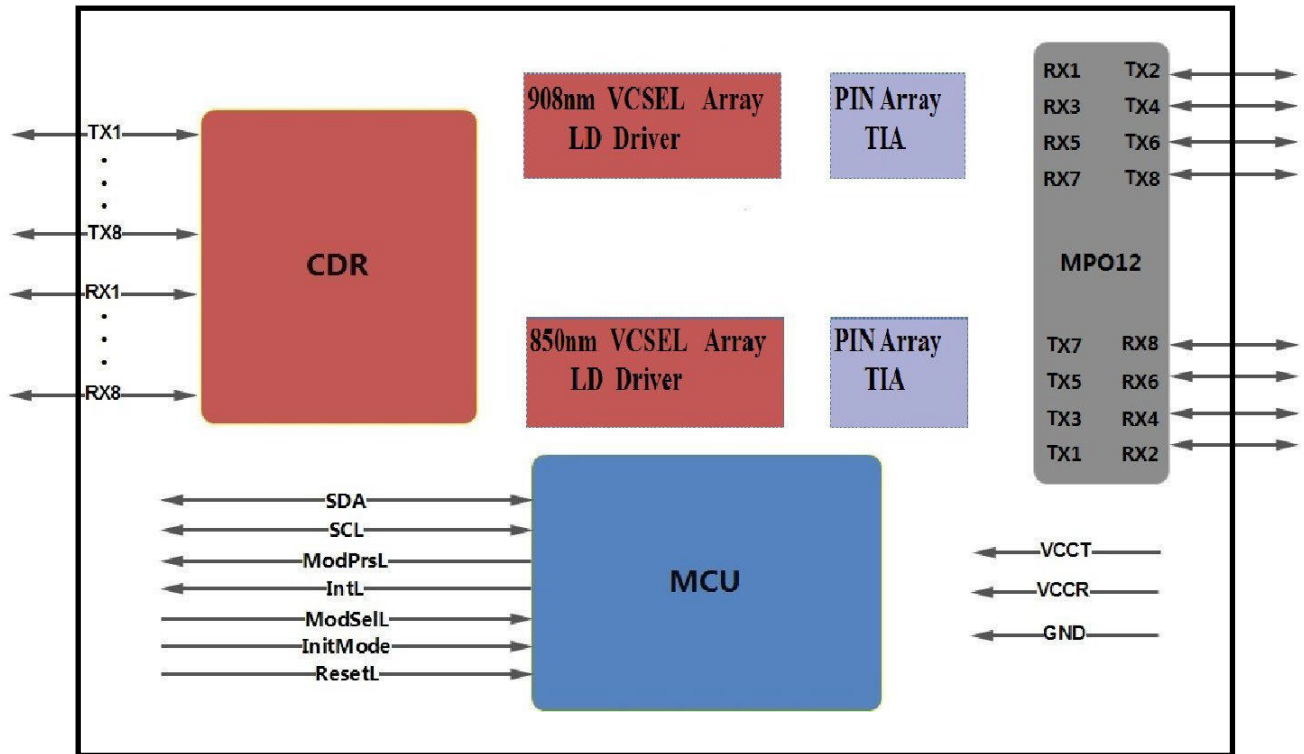


Bottom side viewed from bottom

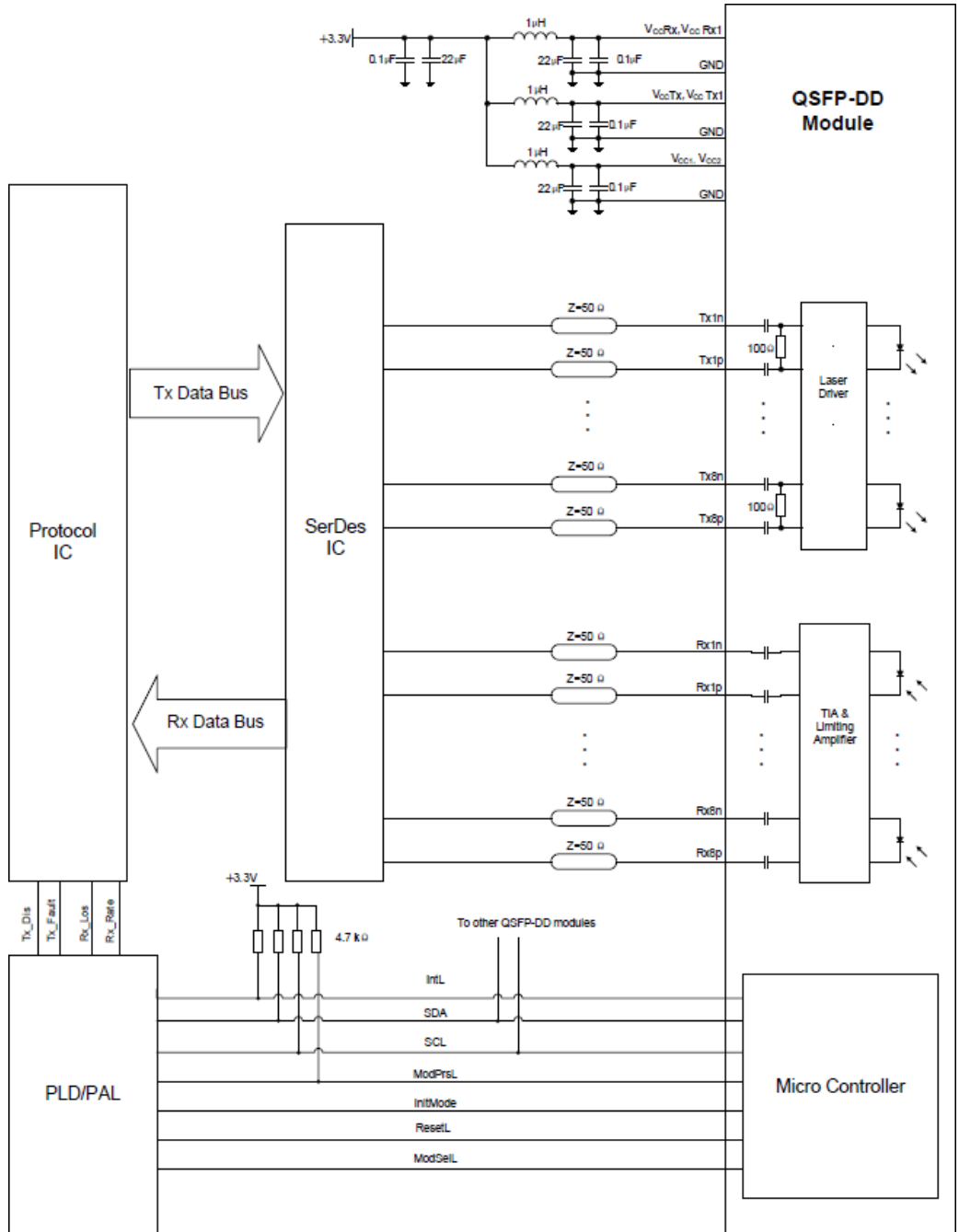


Top side viewed from top

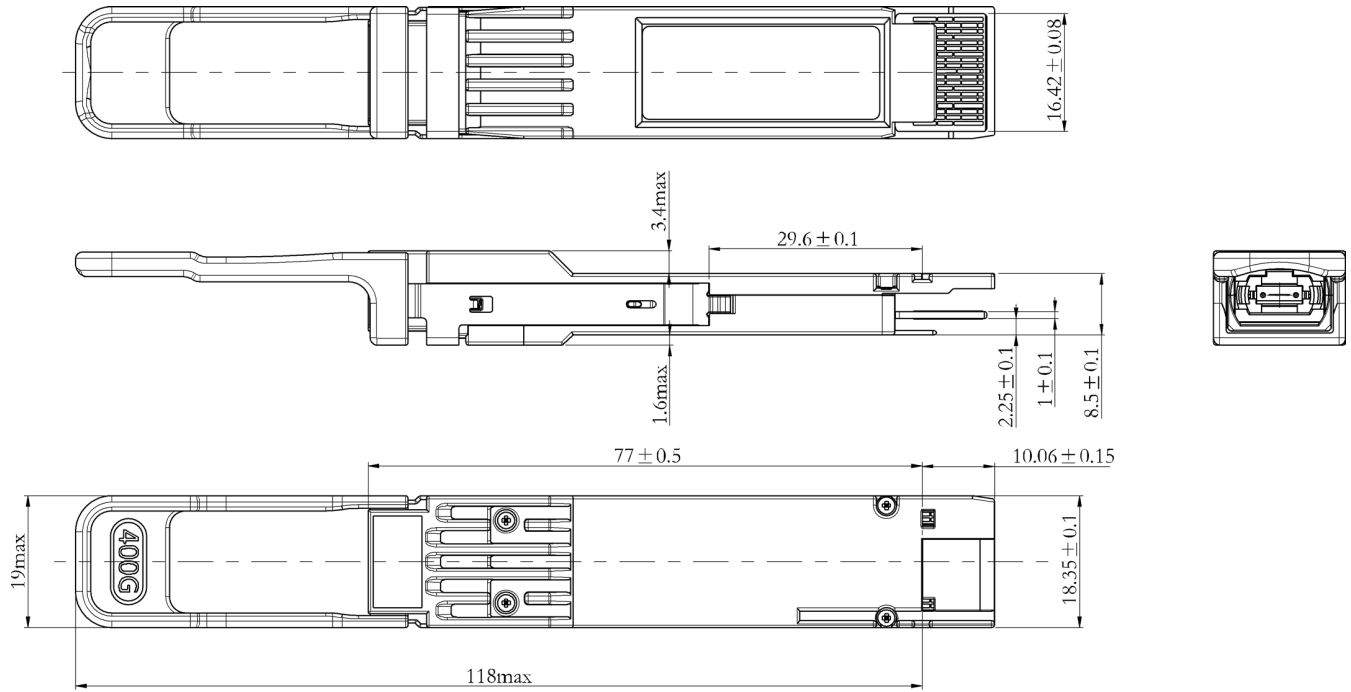
Transceiver Block Diagram



Electrical Interface



Mechanical Specifications



NOTES:

- 1.TOLERANCE: +/-0.1MM.
- 2.OTHERS ACCORDING WITH QFP-DD MSA OR CUSTOMER SPEC.
- 3.LIGHT PORT ACCORDING WITH FIBER CONNECTOR SPEC.

About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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