



QDD4-400GB-SR4-BD-SKY

MSA Compliant 400GBase-BX SR4.2 PAM4 QSFP-DD Transceiver (MMF, 850nm to 902nm, 100m, MPO-12, DOM, CMIS 4.0)

Product Description

This MSA compliant QSFP-DD transceiver provides 400GBase-BX SR4.2 throughput up to 100m over multi-mode fiber (MMF) PAM4 using a wavelength of 850nm to 902nm via an MPO-12 connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

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

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V _{CC}	-0.5		3.6	V	1
Storage Temperature	T _{stg}	-40		85	°C	1
Storage Relative Humidity	RH	0		95	%	1, 2
Operating Case Temperature	T _c	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	V _{CC}	3.14	3.3	3.46	V	
Power Consumption	P			12	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	OMOuter	-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 OMOuter 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 (OMOuter) Per Lane (Maximum)				3	dBm	
Receiver Sensitivity (OMOuter) 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:

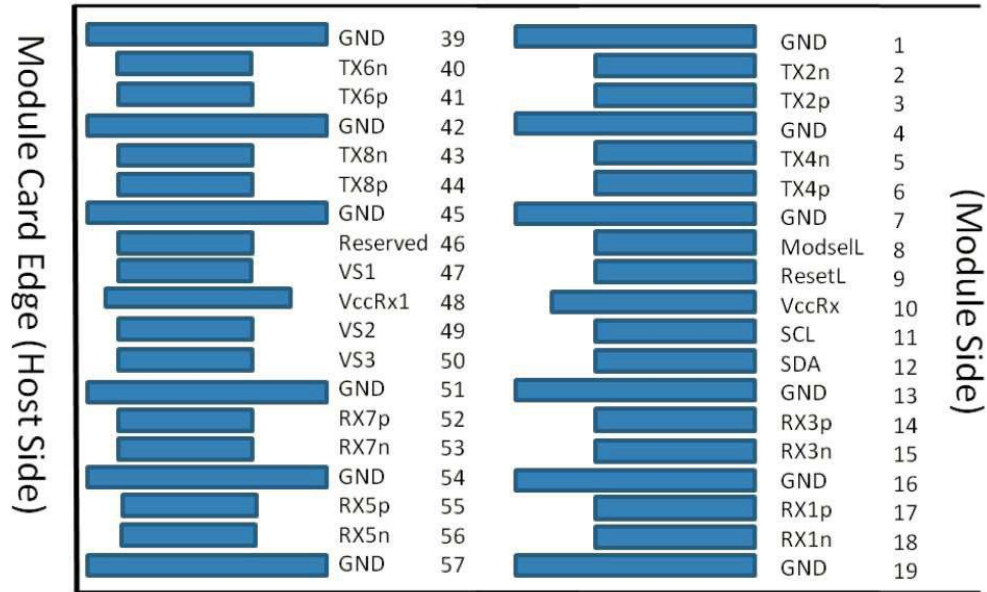
1. Average Optical Output.
2. TxRx pair type TR.
3. TxRx pair type RT.
4. Sensitivity where the BER=2.4E⁻⁴ measured with a PRBS 31Q test pattern @26.56GBaud.

Pin Descriptions

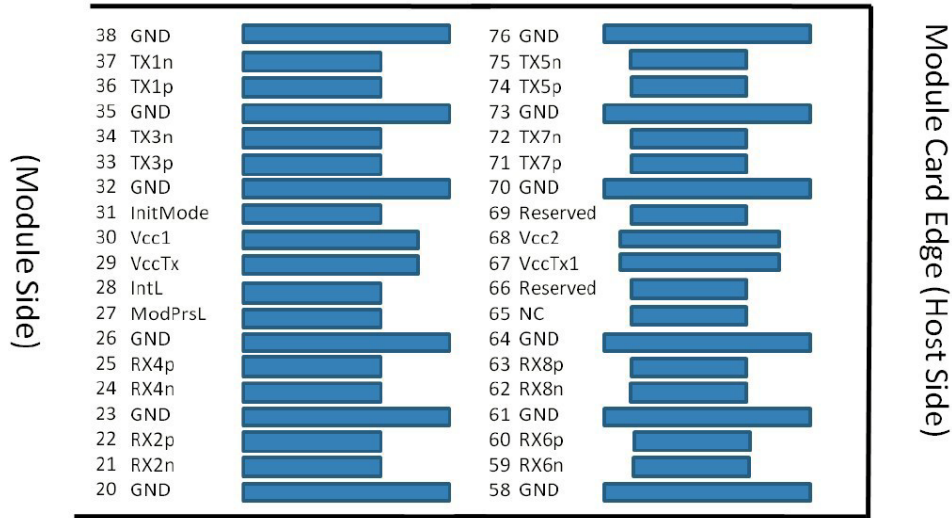
Pin	Logic	Symbol	Name/Descriptions
1		GND	Module Ground.
2	CML-I	Tx2-	Transmitter Inverted Data Input.
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.
4		GND	Module Ground.
5	CML-I	Tx4-	Transmitter Inverted Data Input.
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.
7		GND	Module Ground.
8	LVTTL-I	ModSelL	Module Select.
9	LVTTL-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	LVTTL-O	ModPrsL	Module Present.
28	LVTTL-O	IntL	Interrupt.
29		VccTx	+3.3V Power Supply Transmitter.
30		Vcc1	+3.3V Power Supply.
31	LVTTL-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

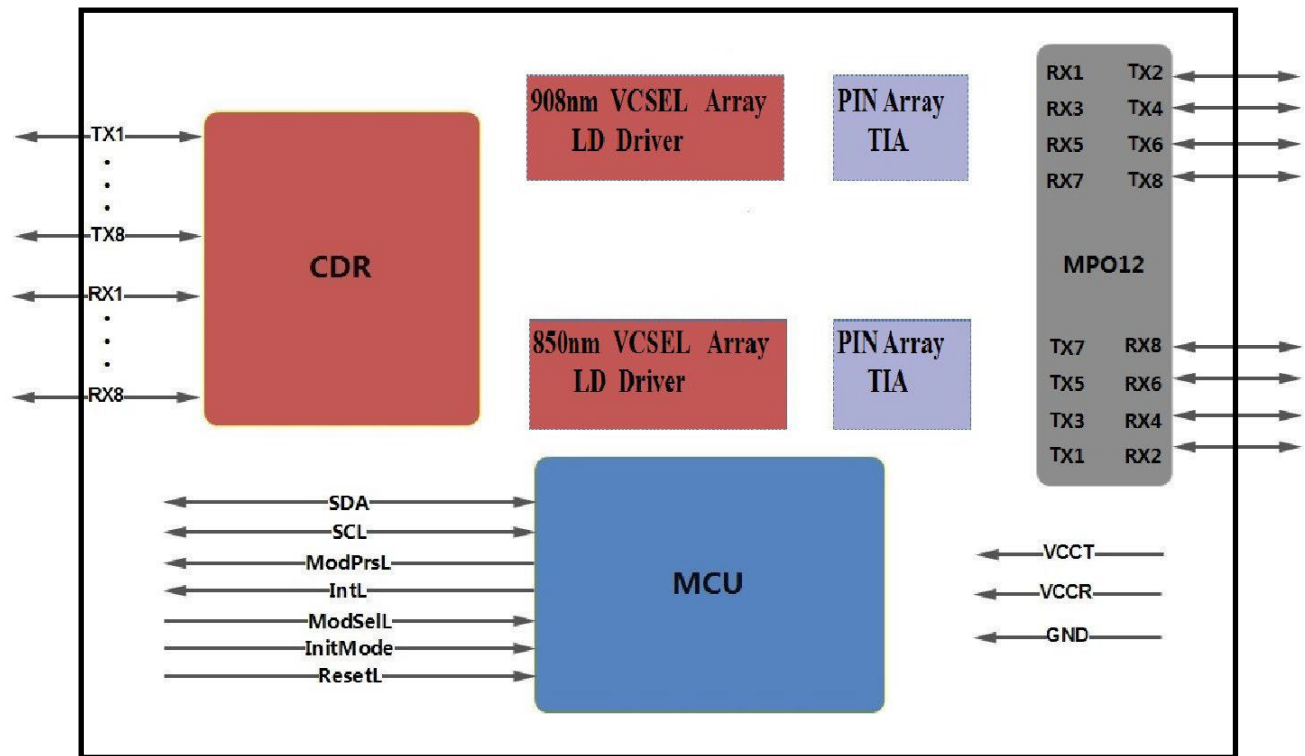


Bottom side viewed from bottom

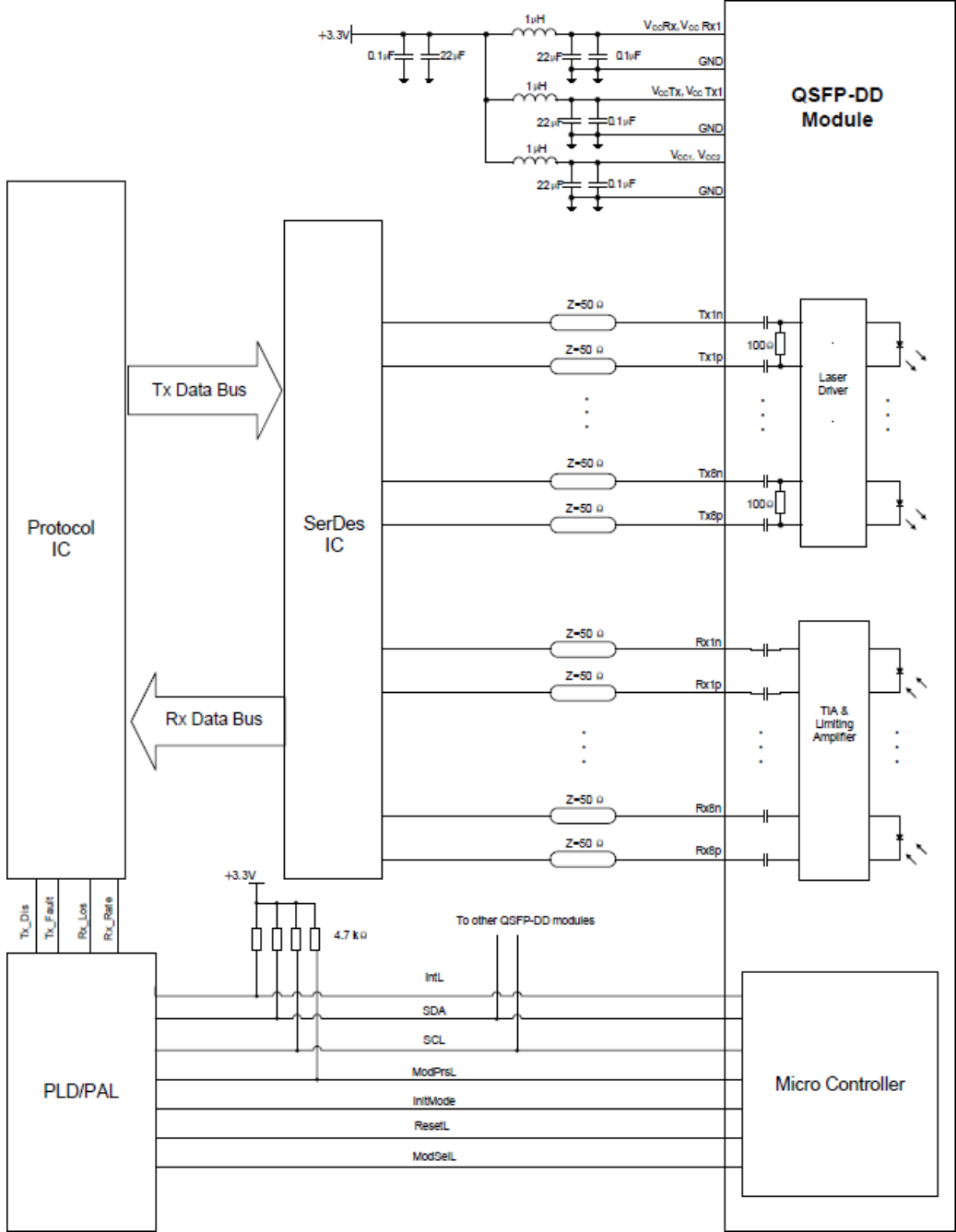


Top side viewed from top

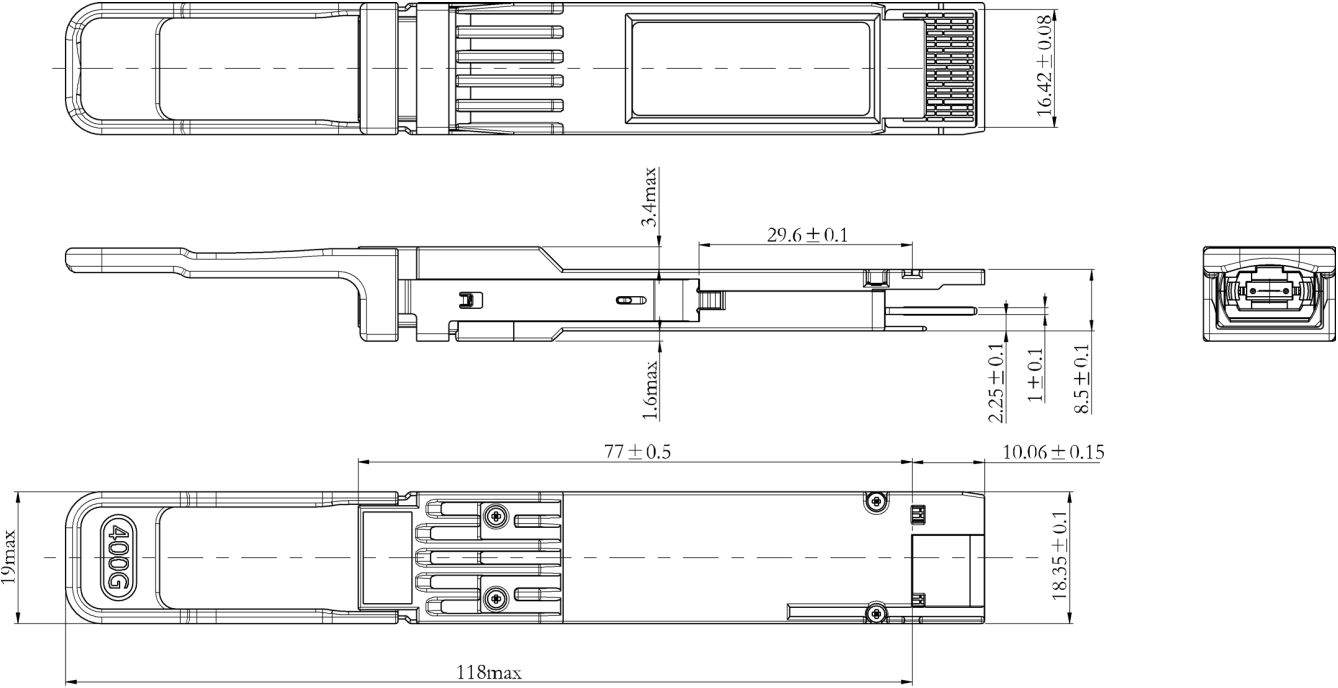
Transceiver Block Diagram



Electrical Interface



Mechanical Specifications



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

About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

