



QBDTUMCS1003000

MSA 100GBase-ZR+ Coherent QSFP-DD Transceiver (SMF, 1528.77nm to 1567.13nm, Open ZR+, LC, DOM)

Product Description

This MSA Compliant QSFP-DD transceiver provides 100GBase-ZR+ throughput up to Open ZR+ over single-mode fiber (SMF) using a wavelength of 1528.77nm to 1567.13nm via an LC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow 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:

- QSFP-DD MSA compliant
- Supports 100Gbps Payload (Open ZR+)
- Hot pluggable QSFP-DD footprint (Type 2A)
- Tunable C-band Transmitter and Coherent Receivers
- O-FEC (15%) with 11.6dB Net Coding Gain
- Duplex LC Connector
- CAUI-4 (4x 25.78125Gbps NRZ) Serial Electrical Interface, RS-FEC (544/528)/No FEC
- 100GAUI-2 (2x 26.5625GBd PAM4) Serial Electrical Interface, RS-FEC (544/514)
- RoHS Compliant and Lead-free
- Operating Temperature 0 to 70 Celsius



Applications:

- 100GBase 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
Power Supply Voltage	Vcc	3.218	3.3	3.465	V	
Storage Temperature	Tstg	-40		85	°C	
Case Operating Temperature	Tc	0		70	°C	
Relative Humidity (Non-Condensing)	RH			85	%	
Optical Receiver Overload				4	dBm	1
Supported Host Signal Types			103.125		Gbps	2
Line Baud Rate			30.07		GBd	3

Notes:

1. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers before ensuring that proper optical attenuation is used.
2. As per IEEE 802.3-2012.
3. 100G DP-QPSK, O-FEC.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.218	3.3	3.465	V	
Power Supply Current	Icc			6	A	
Power Consumption	PD			16.5	W	
Power Consumption	PD			1.5	W	1

Notes:

1. Low-power mode.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Average Output Power	P _o	-6	-4.5	-2	dBm	1, 2
Laser Linewidth				300	kHz	
Transmitter VOA Dynamic Range		10			dB	3
Output Power Stability		-1		1	dB	
In-Band OSNR		35			dB/0.1nm	
Out-of-Band OSNR		35			dB/0.1nm	
Frequency Range		191.275		196.125	THz	4
Centre Frequency		$\nu_T - 1.5$	ν_T	$\nu_T + 1.5$	GHz	5
Channel Spacing		6.25			GHz	
Centre Wavelength Range	T λ	1528.58		1567.34	nm	
Centre Wavelength	T λ	$\lambda_T - 15$	λ_T	$\lambda_T + 15$	pm	
Receiver						
Receiver Operating Wavelength	R λ	1528.58		1567.34	nm	
Receiver Sensitivity	S			-32	dBm	6
Receiver Overload	P _{OL}	4			dBm	7
Receiver Input Power Range		-20		4	dBm	8
Extended Receiver Input Power Range		-25		4	dBm	9
Acquisition Range		-3.6		3.6	GHz	10
Upstream Tx Linewidth				1000	kHz	
OSNR Tolerance			14	15.5	dB	11
Crosstalk Tolerance				17	dB	12
Chromatic Dispersion Tolerance				5000	ps/nm	13

Notes:

1. Output power coupled into a 9/125 μ m single-mode fiber.
2. The output power is adjustable in steps of 0.1dB within the specified wavelength range.
3. With Tx VOA attenuation is set to minimum.
4. Per ITU-T G.694.1 DWDM grid definition.
5. Applies also to LO.
6. Minimum input power needed to achieve post-FEC BER $\leq 10^{-15}$, 100G DP-QPSK, and OSNR>35dB.
7. The optical input to the receiver should not exceed this value. Transmitters must never be directly connected to receivers before ensuring that proper optical attenuation is used.
8. An input power in this range guarantees optimum OSNR performance.
9. With ≤ 1 dB OSNR tolerance degradation.
10. Frequency offset between received carrier and LO.
11. At optimum input power range.

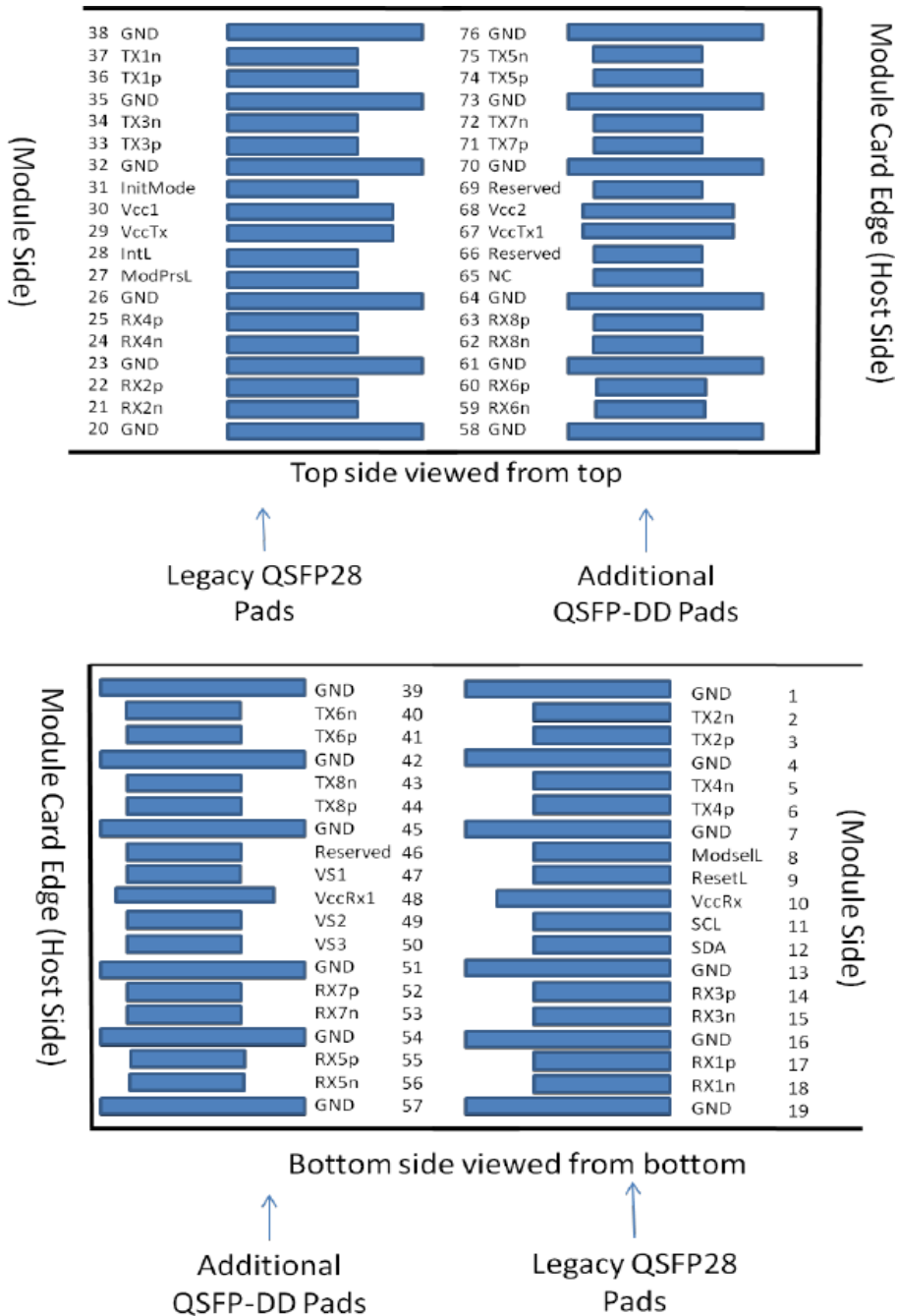
12. Ratio of accumulated crosstalk channels to signal power.
13. Less than 0.5dB receiver sensitivity penalty compared to OSNR>35dB.

Pin Descriptions

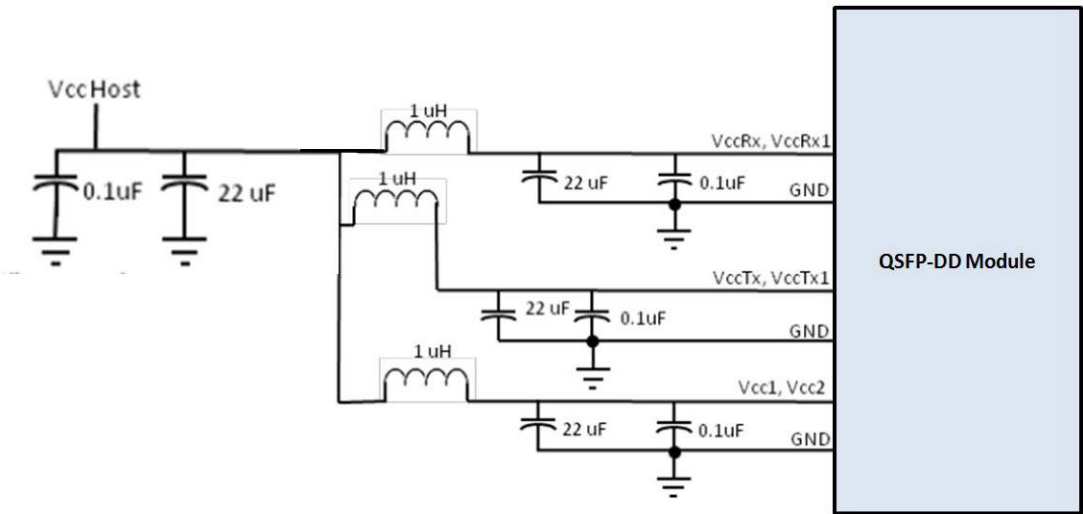
Pin	Logic	Symbol	Name/Description	Plug Sequence
1		GND	Module Ground.	1B
2	CML-I	Tx2-	Transmitter Inverted Data Input.	3B
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	3B
4		GND	Module Ground.	1B
5	CML-I	Tx4-	Transmitter Inverted Data Input.	3B
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	3B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

37	CML-I	Tx1-	Transmitter Inverted Data Input.	3B
38		GND	Module Ground.	1B
39		GND	Module Ground.	1A
40	CML-I	Tx6-	Transmitter Inverted Data Input.	3A
41	CML-I	Tx6+	Transmitter Non-Inverted Data Input.	3A
42		GND	Module Ground.	1A
43	CML-I	Tx8-	Transmitter Inverted Data Input.	3A
44	CML-I	Tx8+	Transmitter Non-Inverted Data Input.	3A
45		GND	Module Ground.	1A
46		Reserved	For Future Use.	3A
47		VS1	Module Vendor-Specific 1.	3A
48		VccRx1	+3.3V Receiver Power Supply.	2A
49		VS2	Module Vendor-Specific 2.	3A
50		VS3	Module Vendor-Specific 3.	3A
51		GND	Module Ground.	1A
52	CML-O	Rx7+	Receiver Non-Inverted Data Output.	3A
53	CML-O	Rx7-	Receiver Inverted Data Output.	3A
54		GND	Module Ground.	1A
55	CML-O	Rx5+	Receiver Non-Inverted Data Output.	3A
56	CML-O	Rx5-	Receiver Inverted Data Output.	3A
57		GND	Module Ground.	1A
58		GND	Module Ground.	1A
59	CML-O	Rx6-	Receiver Inverted Data Output.	3A
60	CML-O	Rx6+	Receiver Non-Inverted Data Output.	3A
61		GND	Module Ground.	1A
62	CML-O	Rx8-	Receiver Inverted Data Output.	3A
63	CML-O	Rx8+	Receiver Non-Inverted Data Output.	3A
67		GND	Module Ground.	1A
68		NC	Not Connected.	3A
69		Reserved	For Future Use.	3A
70		VccTx1	+3.3V Transmitter Power Supply.	2A
71		Vcc2	+3.3V Power Supply.	2A
72		Reserved	For Future Use.	3A
73		GND	Module Ground.	1A
74	CML-I	Tx7+	Transmitter Non-Inverted Data Input.	3A
75	CML-I	Tx7-	Transmitter Inverted Data Input.	3A
76		GND	Module Ground.	1A

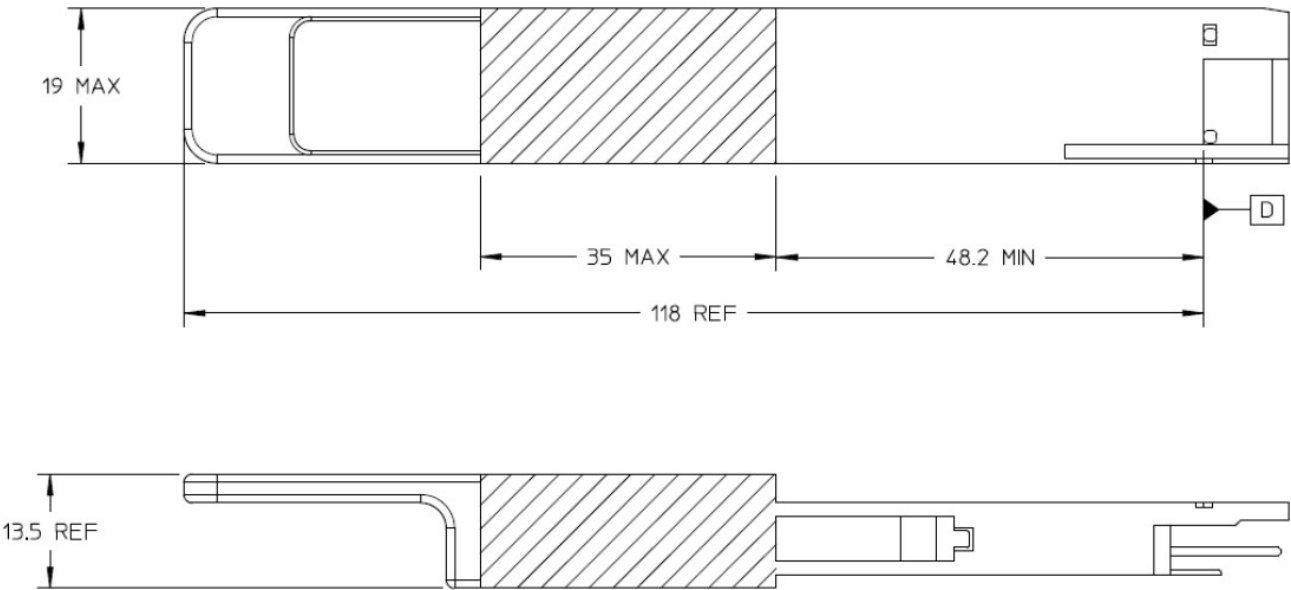
Electrical Pad Layout



Recommended Power Supply Filter



Mechanical Specifications



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.

