

800G QSFP-DD 2DR4+ Optical Transceiver

PN: VD-8CDR4CP-EA

Product Overview

Vitex VD-8CDR4CP-EA is designed for 800G network applications, with a maximum transmission distance of 2km. It is a fully integrated optical transceiver modulated using 4-level pulse amplitude modulation (PAM4) format that transmits and receives optical signals with an aggregated data rate of 850Gbps over 8 lanes 1310nm each running at 106.25Gbps. They are compliant with the QSFP-DD MSA and 100GBASE-FR1 optical specifications.

Features

- Compliant with IEEE Std 802.3cu 100GBASE-FR1
- Compliant with QSFP-DD MSA
- 5nm DSP for low power dissipation: <14W
- Compliant with CMIS5.0 Management interface specifications
- Dual MPO-12 receptacles
- Cooled 1310nm EML laser
- 8*53.125GBd PAM4 electrical interface
- Transmission distance up to 2km SMF
- Single +3.3V power supply
- Commercial operating temperature: 0°C to +70°C
- RoHS Compliant

Applications

- 2x400G-DR4+
- 8x100GBASE-FR1 Ethernet
- Data Center

Ordering Information

Part Number	Description
VD-8CDR4CP-EA	800G QSFP-DD 2DR4+, 2km SMF, 1310nm, Dual MPO12, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	
Storage Temperature	T _s	-40		85	°C	
Relative Humidity	RH	0		85	%	
Supply Voltage (Maximum)	V _{CC}	-0.5		3.6	V	
Operating Case Temperature	T _c	0	25	70	°C	
Supply Voltage (Recommended)	V _{CC}	3.135	3.3	3.465	V	
Data Rate			53.125		GBd	
Modulation Format	PAM4					

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Lane wavelengths	λ	1304.5		1317.5	nm	1
Side-mode suppression ratio	SMSR	30		-	dB	2
Average launch power, each lane	P	-3.1		4	dBm	3
Transmitter and dispersion penalty eye closure for PAM4, each lane	TDECQ			3.4	dB	4
Outer Optical Modulation Amplitude, each lane for TDECQ<1.4dB for 1.4dB≤TDECQ≤3.4dB	OMA _{outer}	-0.1		4.2	dBm	3
		-1.5+TDECQ		4.2	dBm	3
Extinction Ratio	ER	3.5			dB	4
Average launch power of OFF transmitter	P _{off}			-15	dBm	
Optical Return Loss Tolerance	ORLT			17.1	dB	
Transmitter reflectance				-26	dB	

1. 13nm width.
2. Modulated.
3. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
4. 53.125GBd PAM4.

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Lane wavelengths	λ	1304.5		1317.5	nm	1
Receiver Sensitivity each lane (OMA outer), for $\text{TECQ} < 1.4\text{dB}$ for $1.4 \leq \text{TECQ} \leq 3.4\text{dB}$				-4.5	dBm	2
				-5.9+TECQ	dBm	2
Receiver Overload, each lane (Pavg)	POL	4			dBm	3
Damage Threshold, each lane		5			dBm	
Receive power, each lane (OMAouter)	OMA			4.2	dBm	
Receiver Reflectance				-26	dB	
LOS De-Assert	LOSD			-10	dBm	4
LOS Assert	LOSA	-16			dBm	4
LOS Hysteresis		0.5			dB	

1. Measured with PRBS31Q test pattern, 53.125GBd, PAM4, BER < 2.4E-4.
2. Measured with PRBS31Q test pattern, 26.5625GBd, PAM4, BER < 2.4E-4.
3. Per Channel
4. Average Power

Electrical – Transmitter

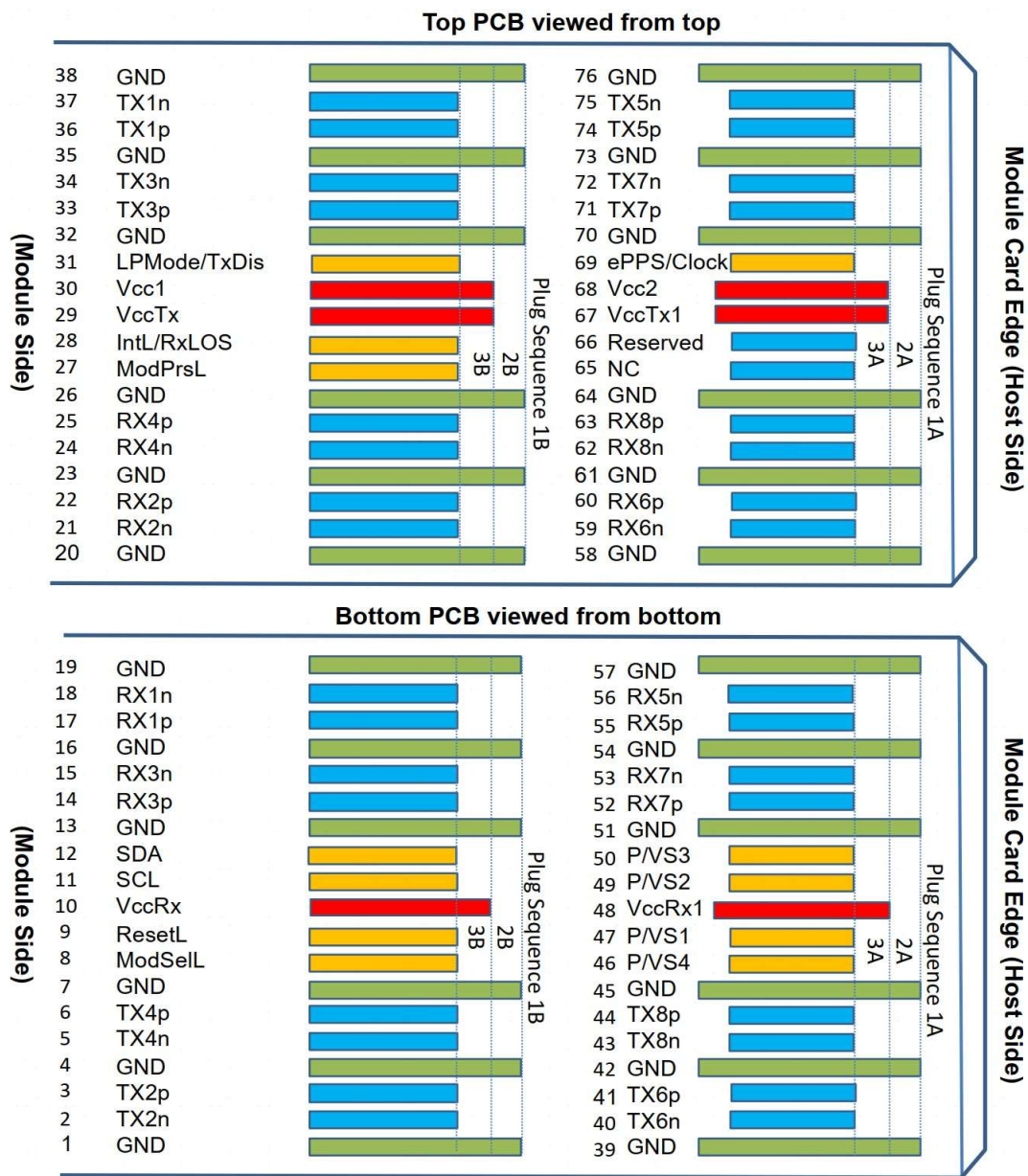
Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Module Supply Current	Icc			4.46	A	
Power Dissipation	PD			14	W	
Input Differential Impedance	ZIN		100		Ω	
Differential Data Input Swing	VIN, P-P			750	mVP-P	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Output Differential Impedance	ZO		100		Ω	
Differential Data Output Swing	VOU, P-P			845	mVP-P	1

1. Internally AC coupled but requires an external 100 Ω differential load termination.

Electrical Connector Layout



Electrical Pin Definition

PIN #	Symbol	Description	Remarks
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	

VD-8CDR4CP-EA Product Specification



7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	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	ModPrsL	Module Present	
28	IntL/RxLOS	Interrupt/optional RxLOS	
29	VccTx	3.3V power supply transmitter	2
30	VccI	3.3V power supply	2
31	LPMode/TxDis	Low Power mode/optional TX Disable	
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
39	GND	Ground	1
40	Tx6n	Transmitter Inverted Data Input	
41	Tx6p	Transmitter Non-Inverted Data Input	
42	GND	Ground	1
43	Tx8n	Transmitter Inverted Data Input	
44	Tx8p	Transmitter Non-Inverted Data Input	
45	GND	Ground	1
46	P/VS4	Programmable/Module Vendor Specific 4	4
47	P/VS1	Programmable/Module Vendor Specific 1	4
48	VccRx1	3.3V Power Supply	2
49	P/VS2	Programmable/Module Vendor Specific 2	4
50	P/VS3	Programmable/Module Vendor Specific 3	4
51	GND	Ground	1
52	Rx7p	Receiver Non-Inverted Data Output	
53	Rx7n	Receiver Inverted Data Output	

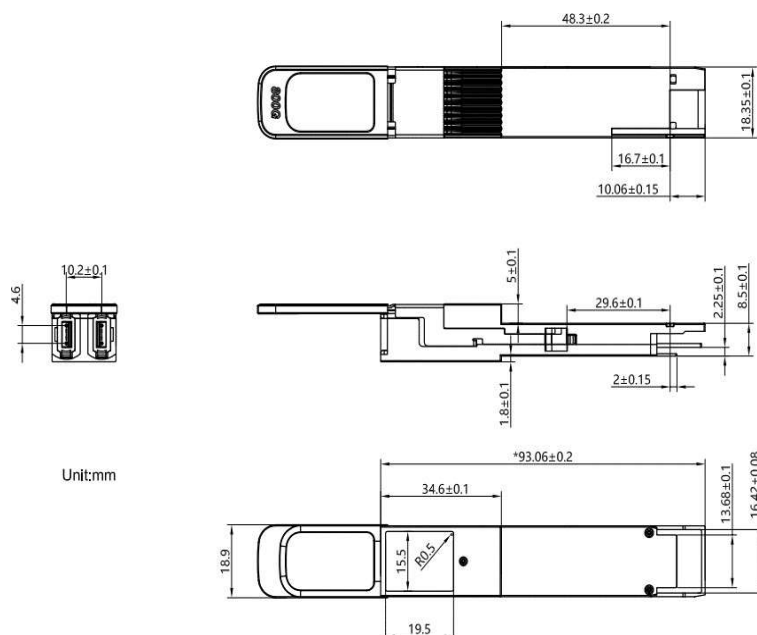
VD-8CDR4CP-EA Product Specification



54	GND	Ground	1
55	Rx5p	Receiver Non-Inverted Data Output	
56	Rx5n	Receiver Inverted Data Output	
57	GND	Ground	1
58	GND	Ground	1
59	Rx6n	Receiver Inverted Data Output	
60	Rx6p	Receiver Non-Inverted Data Output	
61	GND	Ground	1
62	Rx8n	Receiver Inverted Data Output	
63	Rx8p	Receiver Non-Inverted Data Output	
64	GND	Ground	1
65	NC	No Connect	3
66	Reserved	For Future Use	3
67	VccTx1	3.3V power supply	2
68	Vcc2	3.3V power supply	2
69	ePPS/Clock	IPPS PTP clock or reference clock input	5
70	GND	Ground	1
71	Tx7p	Transmitter Non-Inverted Data Input	
72	Tx7n	Transmitter Inverted Data Input	
73	GND	Ground	1
74	Tx5p	Transmitter Non-Inverted Data Input	
75	Tx5n	Transmitter Inverted Data Input	
76	GND	Ground	1

1. Open-Drain with pull-up resistor on host.
2. See pin description of OSFP MSA for required circuit.

Mechanical Dimension





Revision History

Date	Rev	Description
04/09/2023	1.0	Release version
02/13/2025	2.0	New branding guidelines

For more information

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