

100G QSFP28 SR4/OTU4 Optical Transceiver

PN: VQ-1CSR4CP-FA

Product Overview

Vitex VQ-1CSR4CP-FA is designed for 100m optical communication applications over multimode fiber cables. The 100G QSFP28 SR4 transceiver supports 103.1 Gbps or 111.8 Gbps up to 70m using OM3 or 100m using OM4 MMF. They are compliant with the QSFP28 MSA and IEEE 802.3bm 100GBASE-SR4 standards.

Features

- Compliant with IEEE Std 802.3bm, 100G BASE SR4 Ethernet, OTU4
- Compliant with QSFP28 MSA
- Management interface specifications per SFF-8636
- Single MPO connector receptacle
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Up to 103.1 Gbps and 111.8 Gbps data rates
- Single +3.3V power supply
- Class 1 laser safety certified
- Commercial operating temperature: 0 °C to +70 °C
- Up to 70m on OM3 MMF and 100m on OM4 MMF
- RoHS Compliant

Applications

- Data Center
- 100G BASE-SR4 Ethernet
- OTU4

Ordering Information

Part Number	Description
VQ-1CSR4CP-FA	100G QSFP28 SR4/OTU4, 100m MMF, 850nm, MPO-12, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	T_s	-40		85	$^{\circ}\text{C}$	
Relative Humidity	RH	5		95	%	
Supply Voltage (Maximum)	V_{CC}	-0.5		4.0	V	
Supply Voltage (Recommended)	V_{CC}	3.135	3.3	3.465	V	
Operating Case Temperature (Commercial)	TC	0	25	70	$^{\circ}\text{C}$	
Data Rate PER Channel			25.78125	27.95	Gb/s	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Launch Optical Power	P_o	-8.4		+2.4	dBm	1
Center Wavelength Range	λ_c	840	850	860	nm	
Extinction Ratio	EX	2			dB	2
Power Budget		8.2			dB	
Spectral width (RMS)	$\Delta\lambda$			0.6	nm	
Transmitter and Dispersion Penalty	TDP			4.3	dB	
Optical Return Loss Tolerance	ORLT			12	dB	
Eye Diagram	IEEE Std 802.3bm compatible					

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS 2³¹-1 test pattern @25.78125Gbps.

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Center Wavelength	λ_c	840	850	860	nm	
Average Receiver Sensitivity (P_{avg})	S			-10.3	dBm	1
Average Receiver Sensitivity (P_{avg})	S			-9	dBm	2
Receiver Overload (P_{avg})	P_{OL}	2.5			dBm	
Damage Threshold	P_{OL}	3.4			dBm	
Optical Reflectance	ORL			-12	dB	
LOS De-Assert	LOS_D			-11	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis		0.5		5	dB	

1. Measured with PRBS 2³¹-1 test pattern, 25.78125Gb/s, BER<5E-5.
2. Measured with PRBS 2³¹-1 test pattern, 27.95Gb/s, BER<E-6

Electrical – Transmitter

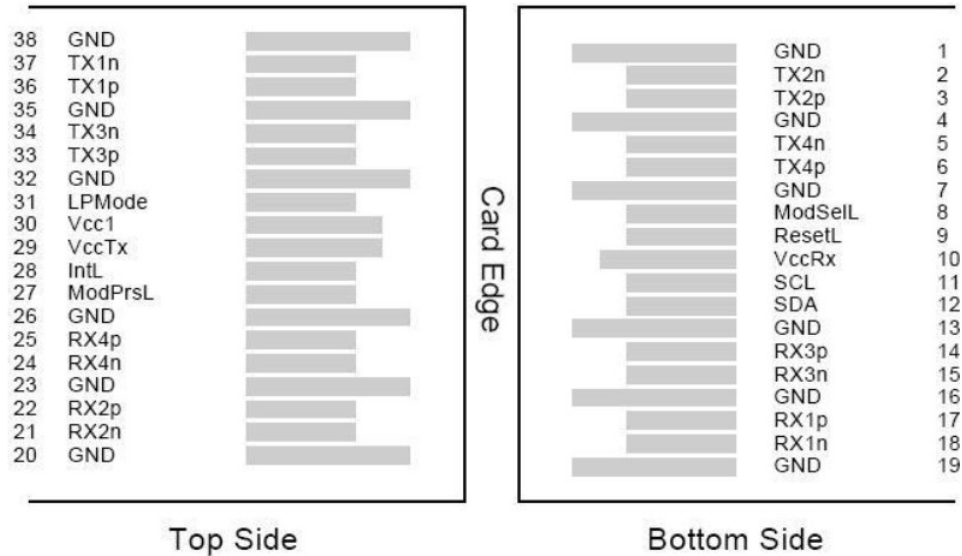
Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Module Supply Current	I _{CC}			750	mA	
Power Dissipation	P _D			2.5	W	
Input Differential Impedance	Z _{IN}		100		Ω	
Differential Data Input Swing	V _{IN, P-P}	180		900	mV _{P-P}	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Output Differential Impedance	Z _O		100		Ω	
Differential Data Output Swing	V _{OUT, P-P}	300		850	mV _{P-P}	1
Transition Time (20% to 80%)	T _{r, Tf}	12			ps	

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

Electrical Connector Layout

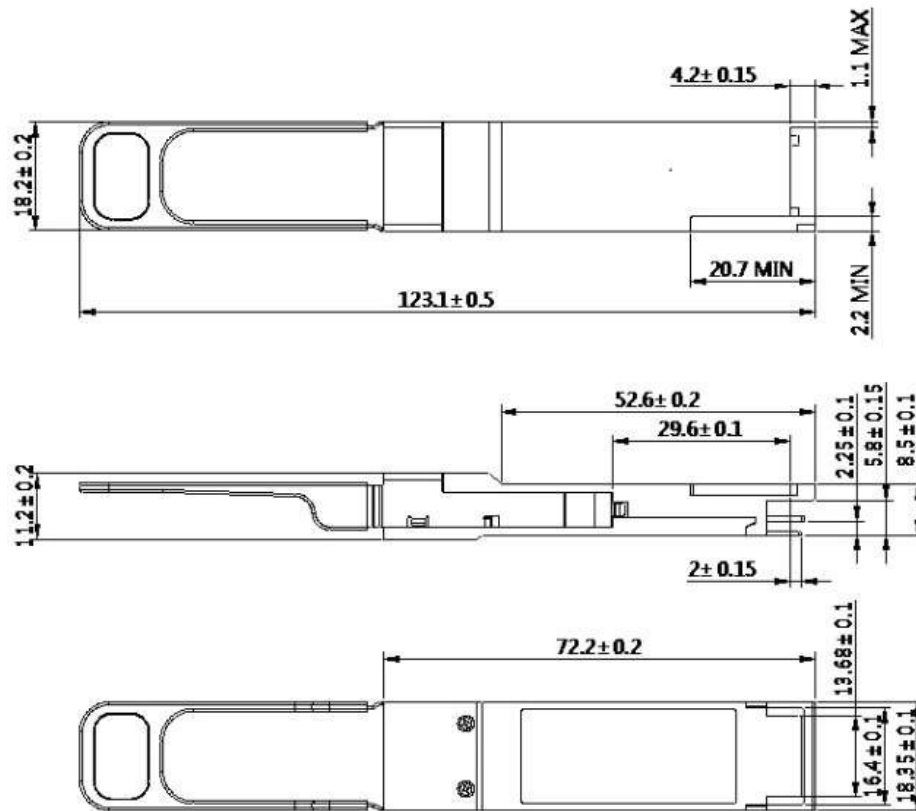


Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data Input	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data Input	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	
30	VccI	3.3V power supply	
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Input	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Input	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

1. The module signal grounds are isolated from the module case.
2. This is open collector/drain output that on the host board requires a 4.7K Ω to 10K Ω pull-up resistor to VccHost.

Mechanical Dimension



Revision History

Date	Rev	Description
06/10/2016	1.0	Release version
02/28/2022	1.1	Updated data rate, added OTU4 application
02/11/2025	2.0	New branding guidelines

For more information

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