100G QSFP28 CWDM4 Optical Transceiver
PN: VQ-1CCW4CS-AA

Product Overview

Vitex VQ-1CCW4CS-AA is designed for 2km optical communication applications over fiber cables. The 100G QSFP28 CWDM4 transceiver supports 103.1 Gbps. They are compliant with the QSFP28 MSA and IEEE 802.3ba standards.

Features

- Compliant with IEEE Std 802.3ba, 100G Ethernet
- Compliant with QSFP28 MSA
- Duplex LC connector
- 4x25Gb/s CWDM Transmitter
- 4 channels PIN photo detector
- Single +3.3V power supply
- Class 1 laser safety certified
- Commercial operating temperature: 0 °C to +70 °C
- Up to 2km on SMF
- RoHS Compliant

Applications

- Data Center
- 100G CWDM4 Ethernet

Ordering Information

Part Number	Description
VQ-1CCW4CS-AA	100G QSFP28 CWDM4, 2 km SMF, 1310nm, Duplex-LC, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	
Storage Temperature	T_S	-40		85	℃	
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	℃	
Data Rate PER Channel			25.78125		Gb/s	

1. Tested with a PRBS31Q test pattern for 53.125 GBd operation.
2. Distances are based on FC-PI-6 Rev. 3.1 and IEEE 802.3 standards, with FEC.

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Launch Optical Power per lane	Po	-6.5		+2.5	dBm	1
Total Launch Optical Power	Po			+8.5	dBm	1
Center Wavelength Range	L1	1264.5	1271	1277.5	nm	
	L2	1284.5	1291	1297.5	nm	
	L3	1304.5	1311	1317.5	nm	
	L4	1324.5	1331	1337.5	nm	
Extinction Ratio	EX	3.5			dB	2
Spectral width(-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Return Loss Tolerance	ORLT			20	dB	
Pout @TX-Disable Asserted	P_{off}			-30	dBm	1
Eye Mask {X1, X2, X3, Y1, Y2, Y3}	{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					

1. The optical power is launched into SMF.
2. Measured with a PRBS 2^{31}-1 test pattern @25.78125Gbps.

Optical - Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Center Wavelength	L1	1264.5	1271	1277.5	nm	
	L2	1284.5	1291	1297.5	nm	
	L3	1304.5	1311	1317.5	nm	
	L4	1324.5	1331	1337.5	nm	
Receiver Sensitivity (OMA) per channel	S			-10.0	dBm	1
Overload (each channel)	P_{OL}	2.5			dBm	1
Damage Threshold (each channel)	P_{damage}	3.5			dBm	
Optical Return Loss	ORL	26			dB	
LOS De-Assert	LOSD			-11.5	dBm	
LOS Assert	LOSA	-24			dBm	
LOS Hysteresis		0.5			dB	

1. Measured with PRBS 2^{31}-1 test pattern, 25.78125Gb/s,BER<5E-5.

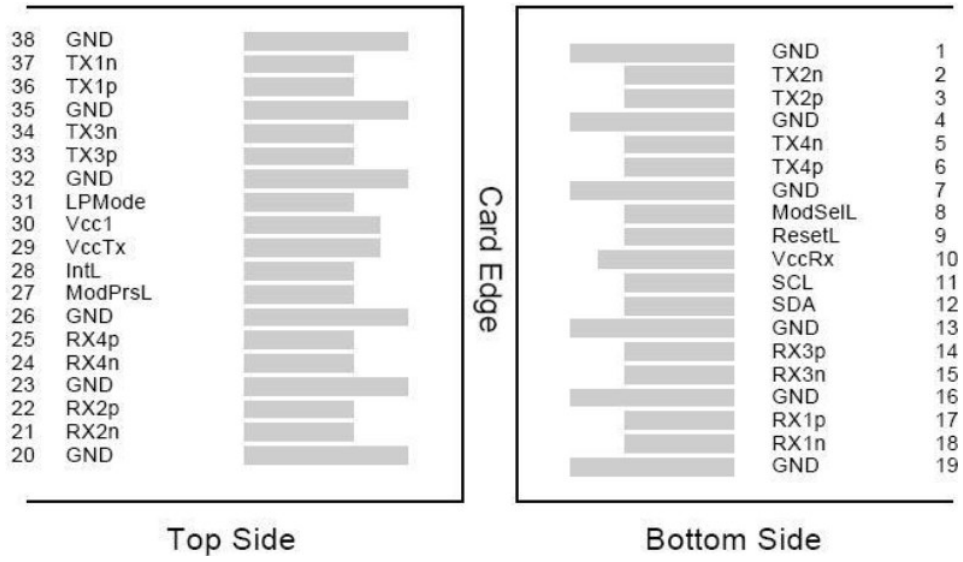
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Module Supply Current	I_{CC}			1100	mA	
Power Dissipation	P_D			3500	mW	
Single-ended Input Voltage Tolerance		-0.3		4.0	V	
Input Differential Impedance	Z_{IN}		100		Ω	
Differential Data Input Swing	$V_{IN,P-P}$	190		700	mV_{P-P}	
AC Common Mode Input Voltage Tolerance	15			mV		
Differential Input Voltage Swing Threshold	50			mVpp		

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Single-ended Output Voltage		-0.3		4.0	V	
Output Differential Impedance	Z_O	90	100	110	Ω	
Differential Data Output Swing	$V_{OUT,P-P}$	300		850	mV_{P-P}	
AC Common Mode Output Voltage				7.5	mV	

Electrical Connector Layout



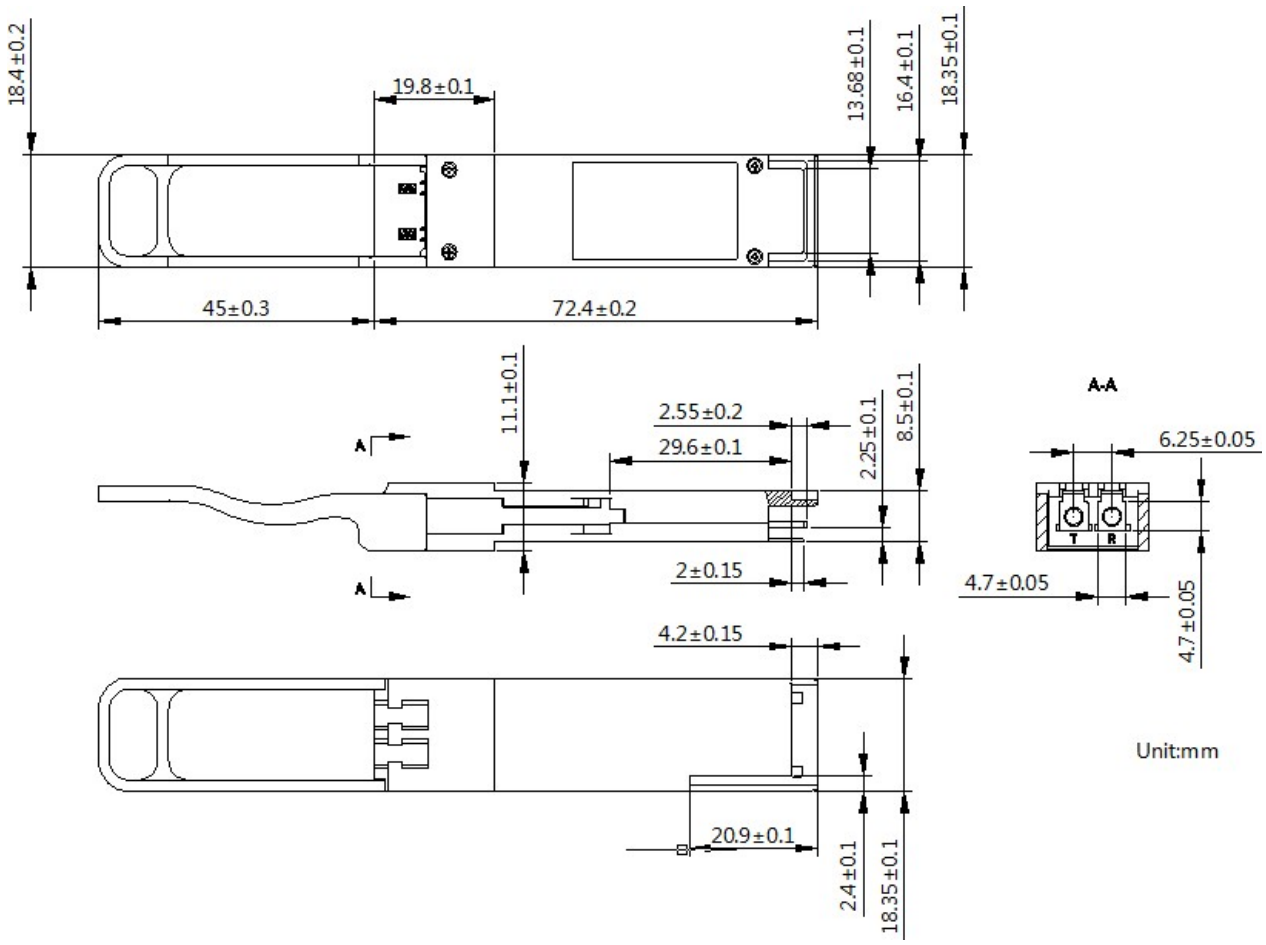
Electrical Pin Definition

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	Vcc1	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 4.7KΩ to 10KΩ pull-up resistor to VccHost.

Mechanical Dimension



Revision History

Date	Rev	Description
06/10/2019	1.0	Release version
02/11/2025	2.0	New branding guidelines

For more information

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