

100G QSFP28 CWDM4 Optical Transceiver

Part Number - VQ-1CCW4CS-AA

VQ-1CCW4CS-AA is a high performance QSFP28 transceiver module for 100 Gigabit Ethernet data links over single mode fiber.

Features

- Uncooled 4x25Gb/s CWDM4 transmitter
- Compliant with 100G CWDM4 MSA Specification
- QSFP28 MSA compliant
- Up to 2km on Single Mode Fiber
- Duplex LC connector
- Power dissipation < 3.5W
- Built-in digital diagnostic functions
- RoHS Compliant
- Operating temperature range: 0°C to 70°C

Applications

- Data Center Interconnect
- 100G Ethernet
- Infiniband QDR and DDR interconnects

Ordering Information

Part Number	Description
VQ-1CCW4CS-AA	100G QSFP28 CWDM4 LC Connectors, up to 2km on SMF, with DOM function.

Product Overview

Vitex **VQ-1CCW4CS-AA** transceivers are designed for use in 100Gb/s links up to 2km Single Mode Fiber. The QSFP28 module supports applications for Ethernet Switches and IP Routers optical interfaces. Digital Optical Monitoring interfaces are provided via the SFP+ standards compliant I2C interface.

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Signaling Rate each Channel			25.78125		Gb/s	1
Bit Error Rate	BER			10 ⁻¹²		
Operating Temperature	TC	0		70	°C	2
Storage Temperature	TSTO	-40		85	°C	3
Input Voltage	VCC	3.14	3.3	3.46	V	

1. Case temperature
2. Ambient temperature

Optical – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Signaling rate, each lane (range)			25.78125		Gb/s	
Total Average Launch Power	PT			8.5	dBm	
Average Launch Power(Each Lane)	PTX	-6.5		2.5	dBm	1
Optical Center Wavelength	λ 0	1264.5	1271	1277.5	nm	
	λ 1	1284.5	1291	1297.5	nm	
	λ 2	1304.5	1311	1317.5	nm	
	λ 3	1324.5	1331	1337.5	nm	
Optical Modulation Amplitude(Each Lane)	OMA	-4		2.5	dB	
Extinction Ratio	ER	3.5			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Transmitter Dispersion Penalty	TDP			3	dB	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter reflectance				-12	dB	
Launch Power of OFF Transmitter(per lane)	POUT_OFF			-30	dBm	

1. Average

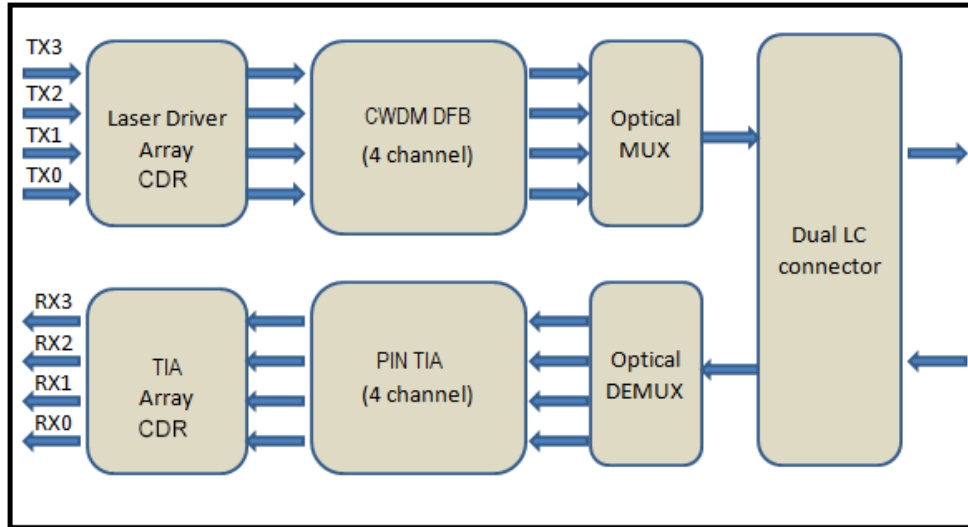
Optical- Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Signaling rate, each lane (range)			25.78125		Gb/s	
Optical Center Wavelength	$\lambda 0$	1264.5	1271	1277.5	nm	
	$\lambda 1$	1284.5	1291	1297.5	nm	
	$\lambda 2$	1304.5	1311	1317.5	nm	
	$\lambda 3$	1324.5	1331	1337.5	nm	
Optical Average Input Power(each lane)	P _{RX}	-11.5		2.5	dBm	
Optical Modulation Amplitude(each Lane)				2.5	dB	
Damage Threshold	P	3.5			dBm	
Receiver Sensitivity (OMA), Each Lane	RX_SEN1			-10	dBm	
Receiver Reflectance	TRRX			-26	dB	
LOS Assert	LOSA		TBD		dBm	
LOS De-Assert	LOSD		TBD		dBm	
LOS Hysteresis	LOSH		TBD		dB	

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Power Consumption	P			3.5	W	
Supply Current	I _{CC}			1200	A	

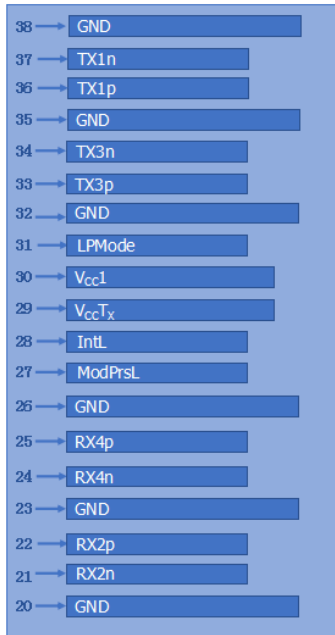
Transceiver Block Diagram



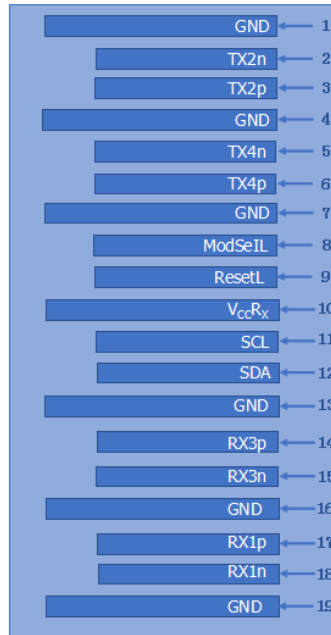
Functional Description

This product converts the 4-channel 25Gb/s electrical input data into CWDM optical signals (light), by a driven 4-wavelength distributed Feedback Laser array. The light is combined by the MUX parts as a 100Gb/s data, propagating out of the transmitter module from the SMF. The receiver module accepts the 100Gb/s CWDM optical signals input, and de-multiplexes it into 4 individual 25Gb/s channels with different wavelength. Each wavelength light is collected by a discrete photo diode, and then outputted as electric data after amplified by a TIA.

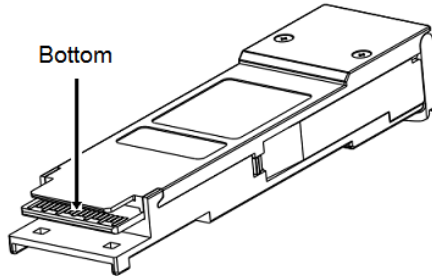
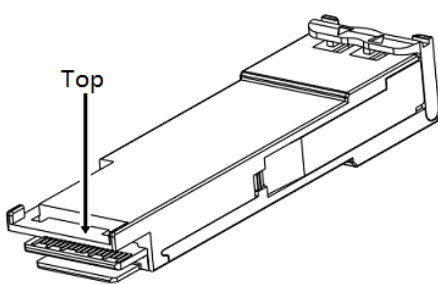
Electrical Connector Layout



Top of Board



Bottom of Board



Electrical Pin Definition

PIN #	Symbol	Description	Remarks
1	GND	Ground	5
2	Tx2n	Transmitter Inverted Data Input, LAN2	
3	Tx2p	Transmitter Non-Inverted Data Input, LAN2	
4	GND	Ground	5
5	Tx4n	Transmitter Inverted Data Input, LAN4	
6	Tx4p	Transmitter Non-Inverted Data Input, LAN4	
7	GND	Ground	5
8	ModSelL	Module select pin, the module responds to two-wire serial communication when low level	1
9	ResetL	Module Reset	2
10	V _{cc} ^R X	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	5
14	Rx3p	Receiver Non-Inverted Data Output, LAN3	
15	Rx3n	Receiver Inverted Data Output, LAN3	
16	GND	Ground	5
17	Rx1p	Receiver Non-Inverted Data Output, LAN1	
18	Rx1n	Receiver Inverted Data Output, LAN1	
19	GND	Ground	5
20	GND	Ground	5
21	Rx2n	Receiver Inverted Data Output, LAN2	
22	Rx2p	Receiver Non-Inverted Data Output, LAN2	
23	GND	Ground	5
24	Rx4n	Receiver Inverted Data Output, LAN4	
25	Rx4p	Receiver Non-Inverted Data Output, LAN4	
26	GND	Ground	5
27	ModPrsL	The module is inserted into the indicate pin and grounded in the module.	3
28	IntL	Interrupt	4
29	V _{cc} ^T X	+3.3V Power Supply transmitter	
30	V _{cc} 1	+3.3V Power Supply	
31	LPMoDe	Low Power Mode	5
32	GND	Ground	5
33	Tx3p	Transmitter Non-Inverted Data Input, LAN3	
34	Tx3n	Transmitter Inverted Data Input, LAN3	
35	GND	Ground	5
36	Tx1p	Transmitter Non-Inverted Data Input, LAN1	
37	Tx1n	Transmitter Inverted Data Input, LAN1	
38	GND	Ground	5

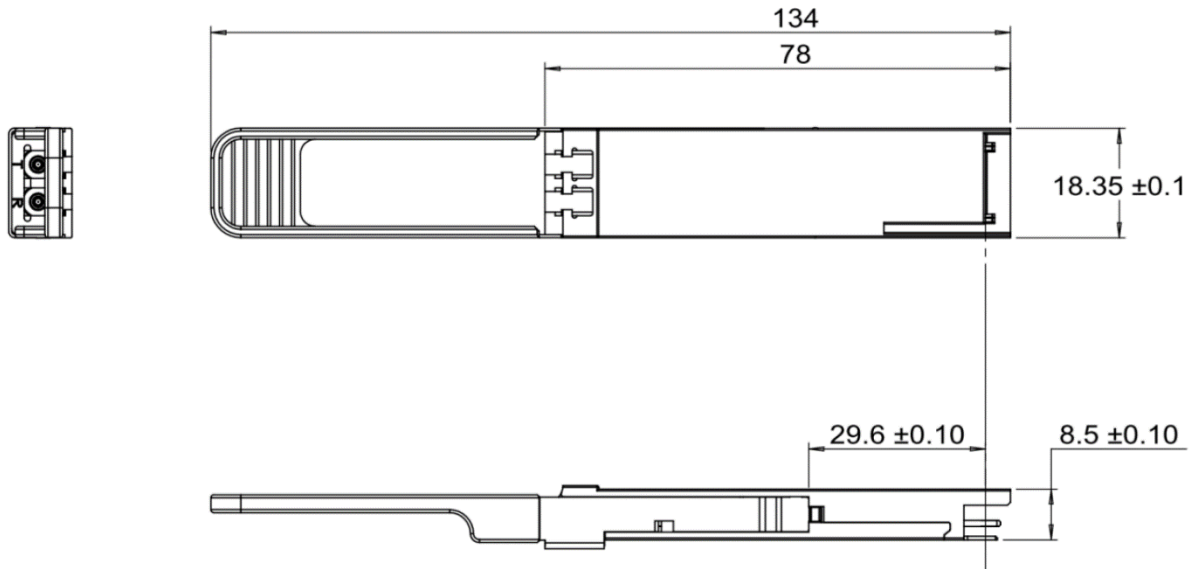
Notes:

1. ModSelL is the input pin. The module responds to 2-wire serial communication commands when it is held low by the host. ModSelL allows multiple QSFP modules to be used on a single 2-wire interface bus. If ModSelL is High, the module will not respond to any 2-wire interface communication from the host. ModSelL has internal pull-up resistors in the module
2. The module restart pin, when the low level on the ResetL pin lasts longer than the minimum pulse length, resets the module and restores all user modules to their default state. When performing reset device, the host should ignore all status bits. Until the module reset interrupt is completed, please note that during hot plugging, the module will issue this information to complete the reset interrupt without resetting
3. This pin is active high, indicating that the module is running under a low power module.
4. IntL is the output pin, which is the open collector output and must be pulled up to Vcc on the motherboard. When it is low, it indicates that the module may malfunction. The host uses a 2-wire serial interface to identify the interrupt source
5. Circuit ground is internally isolated from chassis ground.

References

1. IEEE standard 802.3ba. IEEE Standard Department.
2. QSFP28 4X PLUGGABLE TRANSCEIVER –SFF-8665

Mechanical Dimensions



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED

UNIT: mm

Contact Information

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