

200G QSFP FR4 Optical Transceiver

PN: VQ-2CFR4CS-ANA

Product Overview

Vitex's 200G QSFP56 FR4 optical transceiver delivers high-speed, long-reach data transmission with a compact, hot-pluggable design. Compliant with IEEE 802.3bs 200GBASE-FR4, it supports a 4x53.125Gb/s electrical interface (200GAUI-4) and operates over single-mode fiber for distances up to 2km. With a low power consumption of 5.5W and a single +3.3V power supply, it ensures efficient performance in high-density networking environments.

Features

- Hot-pluggable QSFP56 form factor
- Compliant IEEE802.3bs 200GBASE-FR4
- 4x53.125Gb/s electrical interface (200GAUI-4)
- Single +3.3V power supply
- Case temperature range: 0 - 70°C
- Maximum power consumption 5.5W
- Up to 2km reach on single mode fiber
- LC duplex connector
- RoHS complaint

Ordering Information

Part Number	Description
VQ-2CFR4CS-ANA	200G QSFP56 FR4, 2km SMF, 1310nm CWDM, EML, Duplex-LC, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	
Storage Temperature	T _S	-40		85	°C	
Power Supply Voltage (Maximum)	V _{CC}	-0.3		3.6	V	
Control Input Voltage	V _I	-0.3		3.465	V	
Relative Humidity (non-condensing)	RH	15		85	%	
Maximum Power Consumption	P _{max}			5.5	W	
Operating Case Temperature	T _{OPR}	0	-	70	°C	
Power Supply Voltage (Recommended)	V _{CC}	3.135	3.3	3.465	V	
Signaling Rate per Lane	SRL	-	26.5625	-	Gbd	PAM4

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Wavelength L0	λ _{C0}	1264.5	1271	1277.5	nm	
Wavelength L1	λ _{C1}	1284.5	1291	1297.5	nm	
Wavelength L2	λ _{C2}	1304.5	1311	1317.5	nm	
Wavelength L3	λ _{C3}	1324.5	1331	1337.5	nm	
Side-mode suppression ratio	SMSR	30			dB	
Average Launch Power, each lane	AOP _L	-4.2		4.7	dBm	1
Difference in launch power between any two lanes (OMA _{outer})	DP			4	dB	
Outer Optical Modulation Amplitude (OMA _{outer}), each lane	TOMA	-1.2		4.5	dBm	2
Launch power in OMA _{outer} minus TDECQ					dBm	
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane	TDECQ			3.3	dB	
Average Launch Power of OFF Transmitter, each lane	TOFF			-30	dBm	
Extinction ratio, each lane	ER	3.5			dB	
RIN _{17,1OMA}	RIN			-132	dB/Hz	
Optical Return Loss Tolerance	ORL			17.1	dB	
Transmitter Reflectance	T _R			-26	dB	3

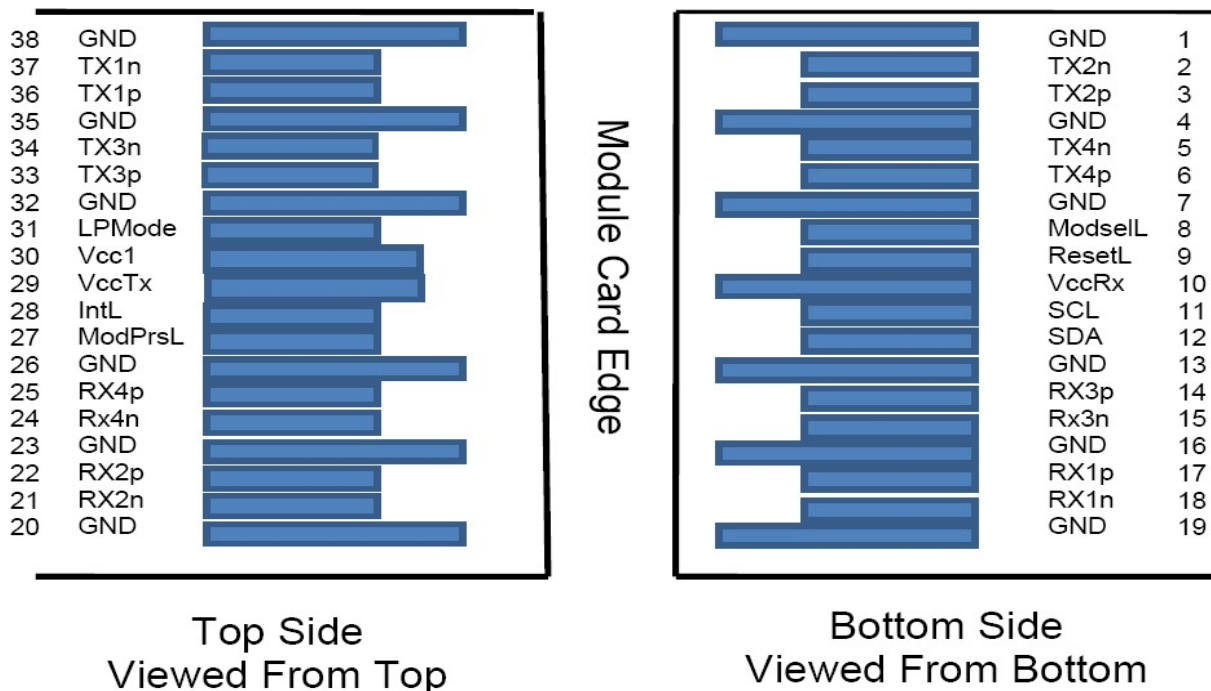
1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength
2. Even if the TDECQ < 1.4 dB for an extinction ratio of ≥4.5 dB or TDECQ < 1.3 dB for an extinction ratio of < 4.5 dB, the OMA_{outer} (min) must exceed this value
3. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Wavelength L0	$\lambda C0$	1264.5	1271	1277.5	nm	
Wavelength L1	$\lambda C1$	1284.5	1291	1297.5	nm	
Wavelength L2	$\lambda C2$	1304.5	1311	1317.5	nm	
Wavelength L3	$\lambda C3$	1324.5	1331	1337.5	nm	
Damage Threshold, each lane	AOPD	5.7			dBm	1
Average Receive Power, each lane	AOPR	-8.2		4.7	dBm	2
Difference in receiving power between any two lanes (OMA _{outer})	DR			4.1	dB	
Receiver Reflectance	RR			-26	dB	
Receiver Sensitivity (OMA _{outer}), each lane	SOMA			-6.5	dBm	3
Stressed Receiver Sensitivity (OMA _{outer}), each lane	SRS			-3.6	dBm	
LOS De-Assert	LOSD			-9	dBm	
LOS Assert	LOSA	-22		-12	dBm	
LOS Hysteresis		0.5			dB	
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4 (SECQ)			3.4		dB	
OMA _{outer} of each aggressor lane			1.4		dBm	

1. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level
2. Average receive power, each lane (min) is informative and not the principal indicator of signal strength.
3. Receiver sensitivity (OMA_{outer}), each lane (max) is informative and is defined for a transmitter with SECQ up to 1.4 dB.

Electrical Connector Layout



Electrical Pin Definition

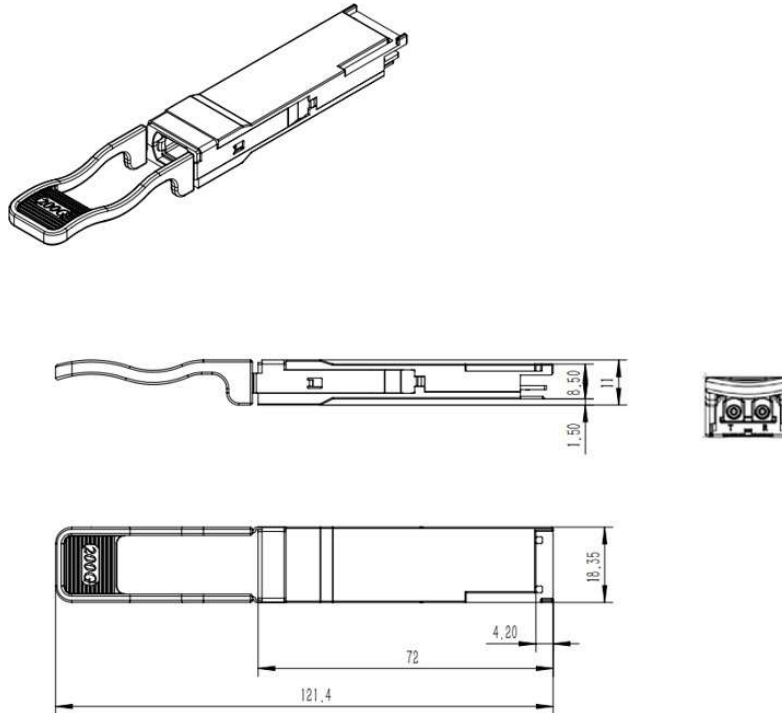
PIN #	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		Vcc Rx	+3.3V Power Supply Receiver	2	2
11	LVC MOS-I/O	SCL	2-wire serial interface clock	3	
12	LVC MOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		Vcc Tx	+3.3V Power supply transmitter	2	2
30		VccI	+3.3V Power supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	

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37	CML-I	TxIn	Transmitter Inverted Data Input	3	
38		GND	Ground	1	1

1. GND is the symbol for signal and supply (power) common for the QSFP56 module. All are common within the QSFP56 module, and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. Vcc Rx, VccI and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering is shown in the below Figures. Vcc Rx VccI and Vcc Tx may be internally connected within the QSFP56 Module in any combination. The connector pins are each rated for a maximum current of 500 mA.

Mechanical Dimension



Revision History

Date	Rev	Description
07/26/2020	1.0	Release version
02/18/2025	2.0	New branding guidelines

For more information

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