

400G OSFP SR4 Optical Transceiver

PN: VO-4CSR4CP-ANA

Product Overview

Vitex VO-4CSR4CP-ANA, the 400G-SR4 OSFP transceiver is a hot-pluggable, multimode optical module designed for high-density 400 Gigabit Ethernet applications. It adheres to the OSFP RHS form factor, utilizing a single MPO-12 APC receptacle. This transceiver supports transmission distances of up to 30 meters on OM3 multimode fiber and 50 meters on OM4 multimode fiber. Notably, it also possesses the capability to operate as a 200Gb/s NDR200 transceiver when paired with 2-fiber splitter ends, providing versatility in network configurations.

Features

- Hot-pluggable OSFP 400G SR4 multimode transceiver
- Compliant with OSFP RHS
- Compliant with CMIS Rev 4.0 or above revision
- 4-channels of 100G-PAM4 electrical and optical modulation
- Single MPO-12 APC receptacles
- Up to 30m reach on OM3 and 50m reach on OM4
- Operates as a 200Gb/s NDR200 transceiver with 2-fiber splitter ends
- Maximum power consumption 8.5W with 4 channels and 6.5W with 2 channels
- Single 3.3V power supply
- Case operating temperature: 0°C to 70°C
- Class 1 laser
- RoHS complaint

Ordering Information

Part Number	Description
VO-4CSR4CP-ANA	OSFP 400G SR4 Flat Top RHS, 50m MMF, 850nm, MPO12, C-temp

General Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Storage Temperature	TS	-40		85	°C	
Supply Voltage (Maximum)	VCC	-0.5		3.6	V	
Relative Humidity (non-condensing)	RH	5		95	%	
Control Input Voltage	VI	-0.3		VCC+0.5	V	
Operating Case Temperature	TOPR	0		70	°C	
Power Supply Voltage (Recommended)	VCC	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP			3600	mA	
Sustained peak current at hot plug	ICC_SP			3000	mA	
Maximum Power Dissipation(400G)	PD			8.5	W	
Maximum Power Dissipation(200G)	PD			6.5	W	
Maximum Power Dissipation, Low Power Mode	PDLP			1.5	W	
Signaling Rate per Lane	SRL		53.125		GBd	PAM4
Two Wire Serial Interface Clock Rate		100		400	kHz	
Power Supply Noise Tolerance (10Hz - 10MHz)				66	mV	
Rx Differential Data Output Load			100		Ohm	
Operating Distance (OM3)		2		30	m	
Operating Distance (OM4)		2		50	m	

Optical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Wavelength	λ_C	844	850	863	nm	
RMS spectral width	$\Delta\lambda_{rms}$			0.6	nm	
Average Launch Power, each lane	AOPL	-4.6		4.0	dBm	1
Outer Optical Modulation Amplitude (OMA _{outer}), each lane	TOMA	-2.6		3.5	dBm	2
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ			4.4	dB	
Average Launch Power of OFF Transmitter, each lane	TOFF			-30	dBm	
Extinction Ratio, each lane	ER	2.5		-	dB	
RIN OMA	RIN			-132	dB/Hz	
Optical Return Loss Tolerance	ORL			12	dB	
Transmitter Reflectance	TR			-26	dB	3

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength.
2. Even if max (TECQ, TDECQ) < 1.8dB, OMA_{outer} (min) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.

Optical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Wavelength	λ_C	842	850	863	nm	
Damage Threshold, average optical power, each lane	AOPD	5			dBm	
Average Receive Power, each lane	AOPR	-6.3		4.0	dBm	
Receive Power (OMA _{outer}), each lane	OMAR			3.5	dBm	
Receiver Reflectance	RR			-26	dB	
Receiver Sensitivity (OMA _{outer}), each lane	SOMA			-4.4	dBm	1
Stressed Receiver Sensitivity (OMA _{outer}), each lane	SRS			-1.8	dBm	2
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4	SECQ		4.4		dB	
OMA _{outer} of each aggressor lane	OMA _{outer}		3.5		dBm	

1. Receiver sensitivity (OMA_{outer}), each lane (max) is informative and is defined for a transmitter with a value of SECQ up to 3.4 dB.
2. Measured with conformance test signal at TP3 for the BER = 2.4×10^{-4}

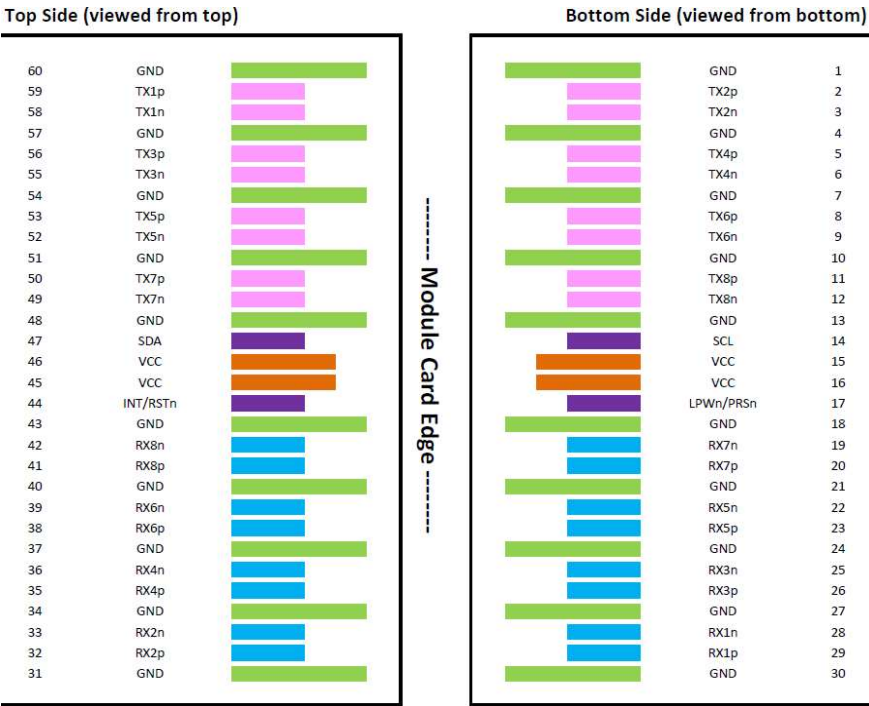
Electrical – Transmitter

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Differential pk-pk input Voltage tolerance (TP1a)		750			mV	
Differential termination mismatch				10	%	
Single-ended voltage tolerance range		-0.4		3.3	V	
DC common-mode voltage		-350		2850	mV	

Electrical – Receiver

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
AC common-mode output Voltage (RMS)				25	mV	
Differential output Voltage (Long mode)				845	mV	
Differential output Voltage (Short mode)				600	mV	
Near-end Eye height, differential		70			mV	
Far-end Eye height, differential		30			mV	
Far end pre-cursor ratio		-4.5		2.5	%	
Differential Termination Mismatch				10	%	
Transition Time (min, 20% to 80%)		9.5			ps	
DC common mode Voltage		-350		2850	mV	

Electrical Connector Layout



Electrical Pin Definition

PIN #	Logic	Symbol	Description	Direction	Plug Seq.	Notes
1		GND	Ground		1	
2	CML-I	TX2p	Transmitter Data Non-Inverted	Input from Host	3	
3	CML-I	TX2n	Transmitter Data Inverted	Input from Host	3	
4		GND	Ground		1	
5	CML-I	TX4p	Transmitter Data Non-Inverted	Input from Host	3	
6	CML-I	TX4n	Transmitter Data Inverted	Input from Host	3	
7		GND	Ground		1	
8	CML-I	TX6p	Transmitter Data Non-Inverted	Input from Host	3	Not used
9	CML-I	TX6n	Transmitter Data Inverted	Input from Host	3	Not used
10		GND	Ground		1	
11	CML-I	TX8p	Transmitter Data Non-Inverted	Input from Host	3	Not used
12	CML-I	TX8n	Transmitter Data Inverted	Input from Host	3	Not used
13		GND	Ground		1	

VO-4CSR4CP-ANA Product Specification



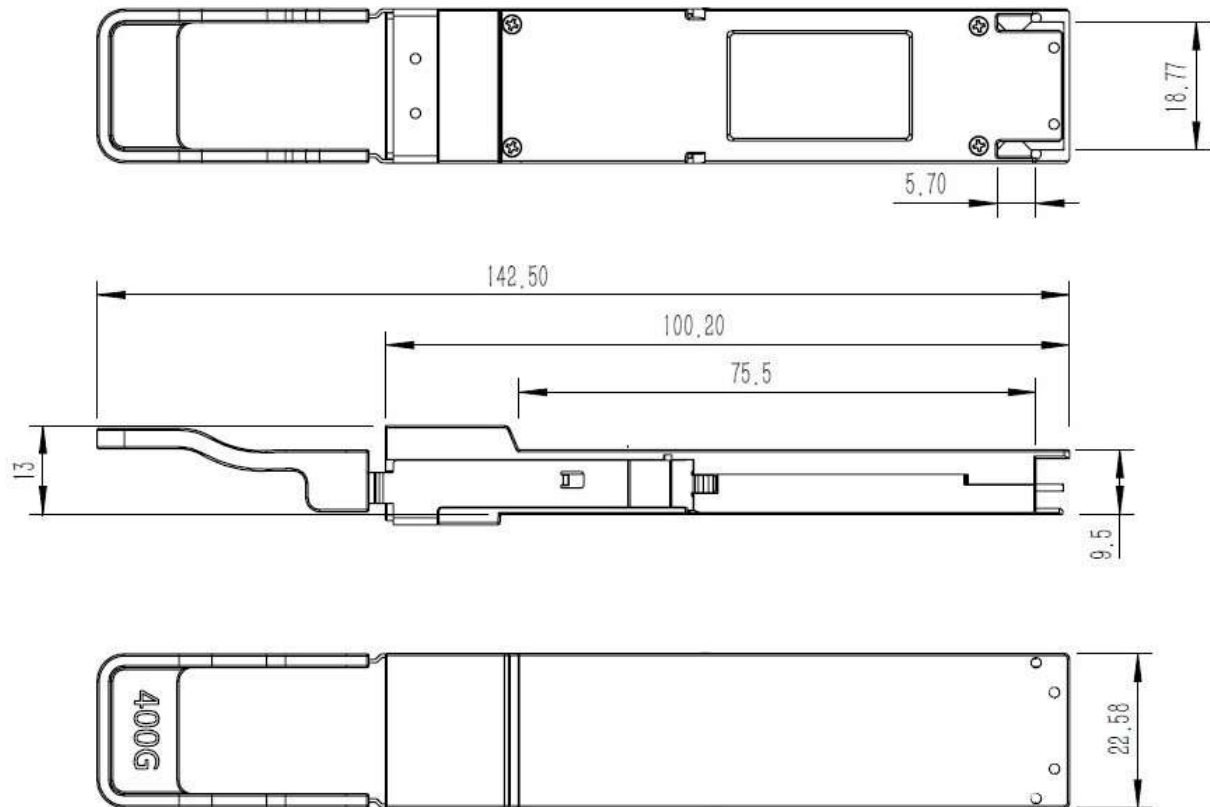
14	LVC MOS-I/O	SCL	2-wire Serial interface clock	Bi-directional	3	
15		VCC	+3.3V Power	Power from Host	2	
16		VCC	+3.3V Power	Power from Host	2	
17	Multi-Level	LPWn/PRSn	Low-Power Mode / Module Present	Bi-directional	3	
18		GND	Ground		1	
19	CML-O	RX7n	Receiver Data Inverted	Output to Host	3	Not used
20	CML-O	RX7p	Receiver Data Non-Inverted	Output to Host	3	Not used
21		GND	Ground		1	
22	CML-O	RX5n	Receiver Data Inverted	Output to Host	3	Not used
23	CML-O	RX5p	Receiver Data Non-Inverted	Output to Host	3	Not used
24		GND	Ground		1	
25	CML-O	RX3n	Receiver Data Inverted	Output to Host	3	
26	CML-O	RX3p	Receiver Data Non-Inverted	Output to Host	3	
27		GND	Ground		1	
28	CML-O	RX1n	Receiver Data Inverted	Output to Host	3	
29	CML-O	RX1p	Receiver Data Non-Inverted	Output to Host	3	
30		GND	Ground		1	
31		GND	Ground		1	
32	CML-O	RX2p	Receiver Data Non-Inverted	Output to Host	3	
33	CML-O	RX2n	Receiver Data Inverted	Output to Host	3	
34		GND	Ground		1	
35	CML-O	RX4p	Receiver Data Non-Inverted	Output to Host	3	
36	CML-O	RX4n	Receiver Data Inverted	Output to Host	3	
37		GND	Ground		1	
38	CML-O	RX6p	Receiver Data Non-Inverted	Output to Host	3	Not used
39	CML-O	RX6n	Receiver Data Inverted	Output to Host	3	Not used
40		GND	Ground		1	
41	CML-O	RX8p	Receiver Data Non-Inverted	Output to Host	3	Not used
42	CML-O	RX8n	Receiver Data Inverted	Output to Host	3	Not used
43		GND	Ground		1	
44	Multi-Level	INT/RSTn	Module Interrupt / Module Reset	Bi-directional	3	
45		VCC	+3.3V Power	Power from Host	2	
46		VCC	+3.3V Power	Power from Host	2	
47	LVC MOS-I/O	SDA	2-wire Serial interface data	Bi-directional	3	
48		GND	Ground		1	
49	CML-I	TX7n	Transmitter Data Inverted	Input from Host	3	Not used
50	CML-I	TX7p	Transmitter Data Non-Inverted	Input from Host	3	Not used
51		GND	Ground		1	
52	CML-I	TX5n	Transmitter Data Inverted	Input from Host	3	Not used
53	CML-I	TX5p	Transmitter Data Non-Inverted	Input from Host	3	Not used

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54		GND	Ground		1	
55	CML-I	TX3n	Transmitter Data Inverted	Input from Host	3	
56	CML-I	TX3p	Transmitter Data Non-Inverted	Input from Host	3	
57		GND	Ground		1	
58	CML-I	TX1n	Transmitter Data Inverted	Input from Host	3	
59	CML-I	TX1p	Transmitter Data Non-Inverted	Input from Host	3	
60		GND	Ground		1	

Mechanical Dimension



Revision History

Date	Rev	Description
08/26/2021	1.0	Release version
02/18/2025	2.0	New branding guidelines

For more information

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