OSFP-800G-2FR4-C

Arista Networks® Compatible TAA 800GBase-2xFR4 PAM4 OSFP Transceiver (SMF, 1310nm, 2km, 2xLC, DOM, CMIS 5.0)

Features:

- Supports Both Ethernet and InfiniBand NDR
- 2x400GAUI-4 C2M Electrical Interface
- 2x400GBASE-FR4 Optical Interface
- Support 850Gbps Aggregate Bit Rate
- InfiniBand NDR Electrical and Optical Interface
- Type 2 Housing with Dual LC Connector
- Class 1 Laser Certified
- I2C Management Interface Compliant to CMIS Rev5.0
- Hot-Pluggable OSFP Form Factor
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free

Applications:

- 2x400GBase Ethernet

Product Description

This Arista Networks® OSFP transceiver provides 800GBase-2xFR4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via a 2xLC connector. It is guaranteed to be 100% compatible with the equivalent Arista Networks® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

Rev. 012325

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	-0.5		3.6	V	
Storage Temperature	Tstg	-40		85	ºC	
Operating Case Temperature	Tc	0		70	ºC	1
Relative Humidity (Non-Condensing)	RH	5		95	%	
Maximum Power Dissipation	PDISS			16.5	W	
Maximum Power Dissipation (Low-Power Mode)	PDLP			2	W	
Signaling Speed Per Lane	DRL		53.125		GBd	
Operating Distance		2		2000	m	

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage		Vcc	3.135	3.3	3.465	V	
Data Input Voltage Differential		IVdip-VdinI			1	V	
Control Input Voltage Differential		Vi	-0.3		Vcc+0.5	V	
Control Output Current		Io	-20		20	mA	
Instantaneous Peak Current at Hot Plug		Icc_IP			6600	mA	
Sustained Peak Current at Hot Plug		Icc_SP			5494.5	mA	
Control Input Voltage - High		VIH	Vcc*0.7		Vcc+0.3	V	
Control Input Voltage - Low		VIL	-0.3		Vcc*0.3	V	
2-Wire Serial Interface Clock Rate					400	kHz	
Power Supply Noise (1kHz to 1MHz Pk-Pk)					66	mVp-p	
Transmitter							
Differential Pk-Pk Input Voltage Tolerance (TP1a)			750			mV	
Pk-Pk AC Common-Mode Voltage Tolerance	Low-Frequency (VCMLF)				32	mV	
	Full-Band (VCMFB)				80		
Differential-Mode to Common-Mode Return Loss		RLcd		802.3ck 120G-2		dB	
Effective Return Loss		ERL	8.5			dB	
Differential Termination Mismatch					10	%	
Single-Ended Voltage Tolerance Range			-0.4		3.3	V	
DC Common-Mode Voltage Tolerance			-0.35		2.85	V	
Receiver							
Pk-Pk AC Common-Mode Voltage	Low-Frequency (VCMLF)				32	mV	
	Full-Band (VCMFB)				80		

Differential Pk-Pk Output Voltage	Short-Mode				600	mV	
	Long-Mode				845		
Eye Height		EH	15			mV	
Vertical Eye Closure		VEC			12	dB	
Common-Mode to Differential-Mode Return Loss		RLDc		802.3ck 120G-1		dB	
Effective Return Loss		ERL	8.5			dB	
Differential Termination Mismatch					10	%	
Transition Time			8.5			ps	
DC Common-Mode Voltage Tolerance			-0.35		2.85	V	
Low-Speed Control and Sense Signals							
Module Output SCL and SDA		V$_{OL}$	0		0.4	V	
Module Input SCL and SDA		V$_{IL}$	-0.3		Vcc*0.3	V	
		V$_{IH}$	Vcc*0.7		Vcc+0.5	V	
InitMode, ResetL, and ModSelL		V$_{IL}$	-0.3		0.8	V	
		V$_{IH}$	2		Vcc+0.3	V	
IntL		V$_{OL}$	0		0.4	V	
		V$_{OH}$	Vcc-0.5		Vcc+0.3	V	

Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter							
Wavelength L0, L4		λC0, λC4	1264.5	1271	1277.5	nm	
Wavelength L1, L5		λC1, λC5	1284.5	1291	1297.5	nm	
Wavelength L2, L6		λC2, λC6	1304.5	1311	1317.5	nm	
Wavelength L3, L7		λC3, λC7	1324.5	1331	1337.5	nm	
Side-Mode Suppression Ratio		SMSR	30			dB	
Total Average Launch Power		AOP$_T$			10.4	dBm	
Average Launch Power Per Lane		AOP$_L$	-3.2		4.4	dBm	1
Outer Optical Modulation Amplitude (OMAouter) Per Lane	TDECQ<1.4dB	TOMA	-0.2		3.7	dBm	
	1.4dB≤TDECQ≤3.4dB		-1.6+TDECQ				
Difference in Launch Power Between Any Two Lanes (OMAouter)		AOP$_d$			3.9	dB	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ) Per Lane		TDECQ			3.4	dB	
Transmitter Eye Closure for PAM4 (TECQ) Per Lane		TECQ			3.4	dB	
| TDECQ – TECQ |					2.5	dB	
Overshoot/Undershoot					22	%	

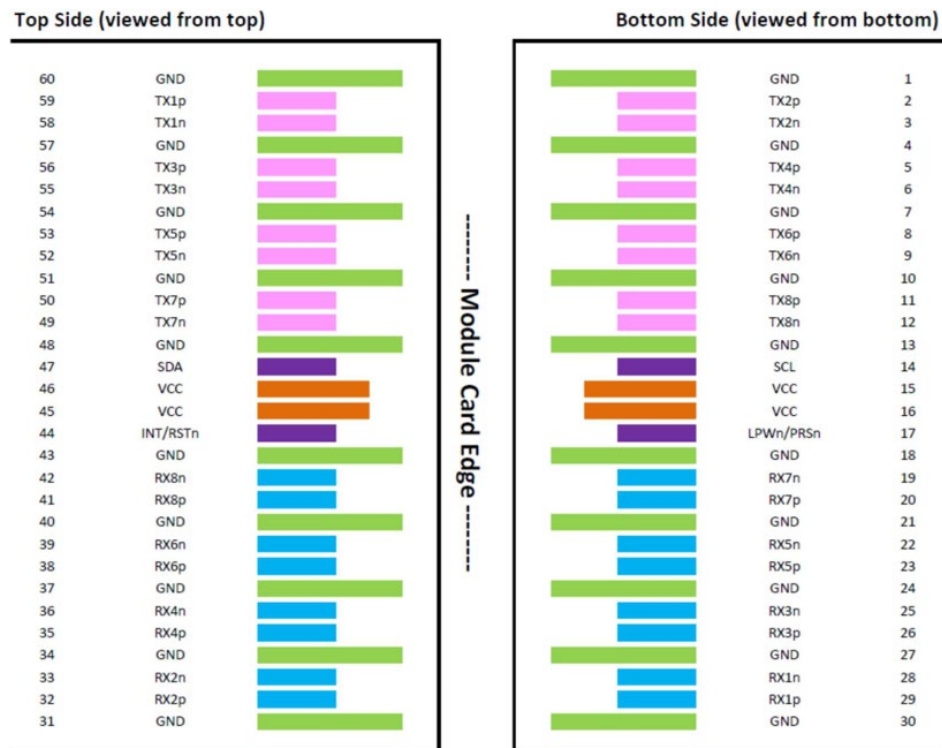|						
Transmitter Power Excursion				1.8	dBm	
Average Launch Power of Off Transmitter Per Lane	Toff			-16	dBm	
Extinction Ratio	ER	3.5			dB	
Transmitter Transition Time (Maximum)	Tr			17	ps	
$RIN_{17.1}OMA$ (Maximum)	RIN			-136	dB/Hz	
Optical Return Loss Tolerance	ORL			17.1	dB	
Transmitter Reflectance	T_R			-26	dB	2
Receiver						
Wavelength L0, L4	λC0, λC4	1264.5	1271	1277.5	nm	
Wavelength L1, L5	λC1, λC5	1284.5	1291	1297.5	nm	
Wavelength L2, L6	λC2, λC6	1304.5	1311	1317.5	nm	
Wavelength L3, L7	λC3, λC7	1324.5	1331	1337.5	nm	
Damage Threshold Per Lane	AOP_D	5.4			dBm	
Average Receive Power Per Lane	AOP_R	-7.2		4.4	dBm	
Receive Power (OMAouter) Per Lane	OMA_R			3.7	dBm	
Difference in Receive Power Between Any Two Lanes (OMAouter) Maximum	AOP_g			4.1	dB	
Receiver Reflectance	RR			-26	dB	
Receiver Sensitivity (OMAouter) Per Lane	**TECQ<1.4dB**	SOMA			-4.6	dBm	
	1.4dB≤TECQ≤3.4dB				-6+TECQ	
Stressed Receiver Sensitivity (OMAouter) Per Lane	SRS			-2.6	dBm	3
Stressed Eye Closure for PAM4 (SECQ) Per Lane Under Test			3.4		dB	
OMAouter of Each Aggressor Lane			1.4		dBm	

Notes:

1. Average launch power, per lane (minimum) is informative and not the principal indicator of signal strength.
2. Transmitter reflectance is defined looking into the transmitter.
3. Measured with conformance test signal at TP3 for the BER=2.4×10^{-4}.

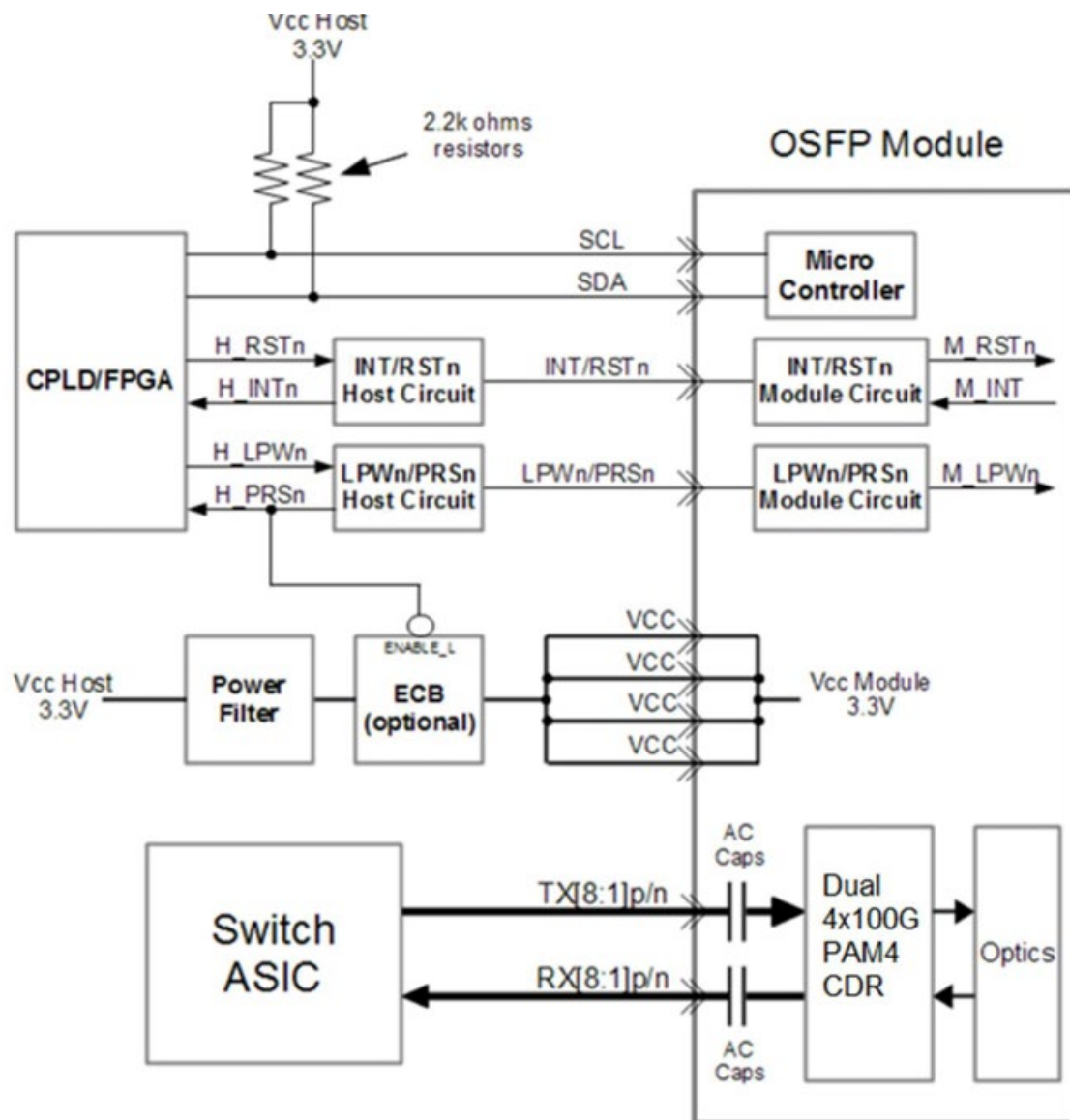## Pin Descriptions

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground.	
2	CML-I	Tx2+	Transmitter Data Non-Inverted.	
3	CML-I	Tx2-	Transmitter Data Inverted.	
4		GND	Module Ground.	
5	CML-I	Tx4+	Transmitter Data Non-Inverted.	
6	CML-I	Tx4-	Transmitter Data Inverted.	
7		GND	Module Ground.	
8	CML-I	Tx6+	Transmitter Data Non-Inverted.	
9	CML-I	Tx6-	Transmitter Data Inverted.	
10		GND	Module Ground.	
11	CML-I	Tx8+	Transmitter Data Non-Inverted.	
12	CML-I	Tx8-	Transmitter Data Inverted.	
13		GND	Module Ground.	
14	LVCMOS-I/O	SCL	2-Wire Serial Interface Clock.	
15		Vcc	+3.3V Power.	
16		Vcc	+3.3V Power.	
17	Multi-Level	LPWn/PRSn	Low-Power Mode/Module Present.	
18		GND	Module Ground.	
19	CML-O	Rx7-	Receiver Data Inverted.	
20	CML-O	Rx7+	Receiver Data Non-Inverted.	
21		GND	Module Ground.	
22	CML-O	Rx5-	Receiver Data Inverted.	
23	CML-O	Rx5+	Receiver Data Non-Inverted.	
24		GND	Module Ground.	
25	CML-O	Rx3-	Receiver Data Inverted.	
26	CML-O	Rx3+	Receiver Data Non-Inverted.	
27		GND	Module Ground.	
28	CML-O	Rx1-	Receiver Data Inverted.	
29	CML-O	Rx1+	Receiver Data Non-Inverted.	
30		GND	Module Ground.	
31		GND	Module Ground.	
32	CML-O	Rx2+	Receiver Data Non-Inverted.	
33	CML-O	Rx2-	Receiver Data Inverted.	
34		GND	Module Ground.	
35	CML-O	Rx4+	Receiver Data Non-Inverted.	
36	CML-O	Rx4-	Receiver Data Inverted.	
37		GND	Module Ground.	
38	CML-O	Rx6+	Receiver Data Non-Inverted.	
39	CML-O	Rx6-	Receiver Data Inverted.	

40		GND	Module Ground.	
41	CML-O	Rx8+	Receiver Data Non-Inverted.	
42	CML-O	Rx8-	Receiver Data Inverted.	
43		GND	Module Ground.	
44	Multi-Level	INT/RSTn	Module Interrupt/Module Reset.	
45		Vcc	+3.3V Power.	
46		Vcc	+3.3V Power.	
47	LVCMOS-I/O	SDA	2-Wire Serial Interface Data.	
48		GND	Module Ground.	
49	CML-I	Tx7-	Transmitter Data Inverted.	
50	CML-I	Tx7+	Transmitter Data Non-Inverted.	
51		GND	Module Ground.	
52	CML-I	Tx5-	Transmitter Data Inverted.	
53	CML-I	Tx5+	Transmitter Data Non-Inverted.	
54		GND	Module Ground.	
55	CML-I	Tx3-	Transmitter Data Inverted.	
56	CML-I	Tx3+	Transmitter Data Non-Inverted.	
57		GND	Module Ground.	
58	CML-I	Tx1-	Transmitter Data Inverted.	
59	CML-I	Tx1+	Transmitter Data Non-Inverted.	
60		GND	Module Ground.	

Electrical Pad Layout

Recommended Host Board Schematic

Mechanical Specifications

12.95 ±0.15

30   16

6.25 ±0.1

22.58 ±0.1

116.25 ±0.15

7.35 ±0.1

139 ±0.5

1.55 ±0.05

105.6 ±0.3

12

24.5

Hot Spot Location
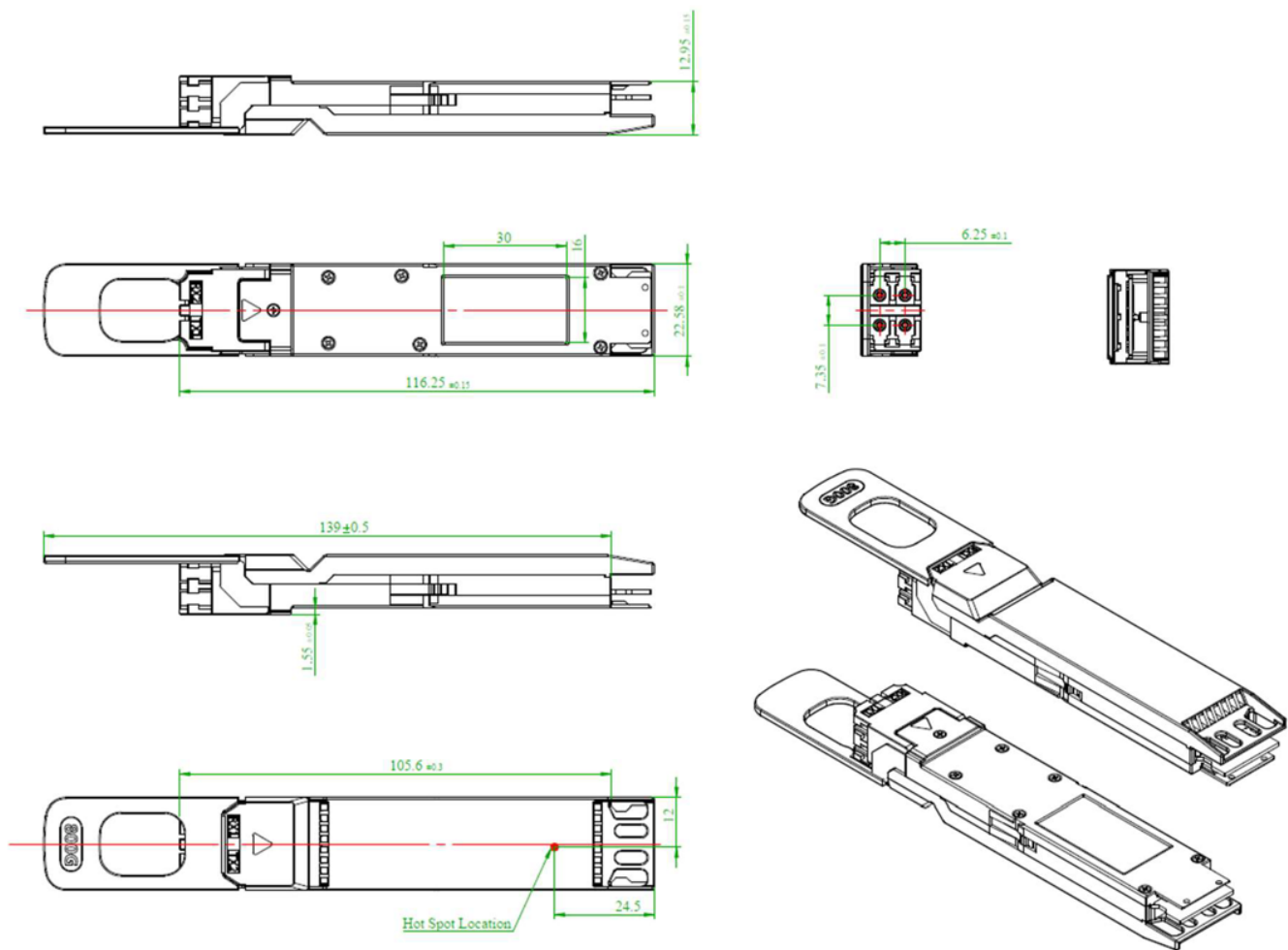
About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

Contact Information
ProLabs US

Email: sales@prolabs.com
Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com
Telephone: +44 1285 719 600