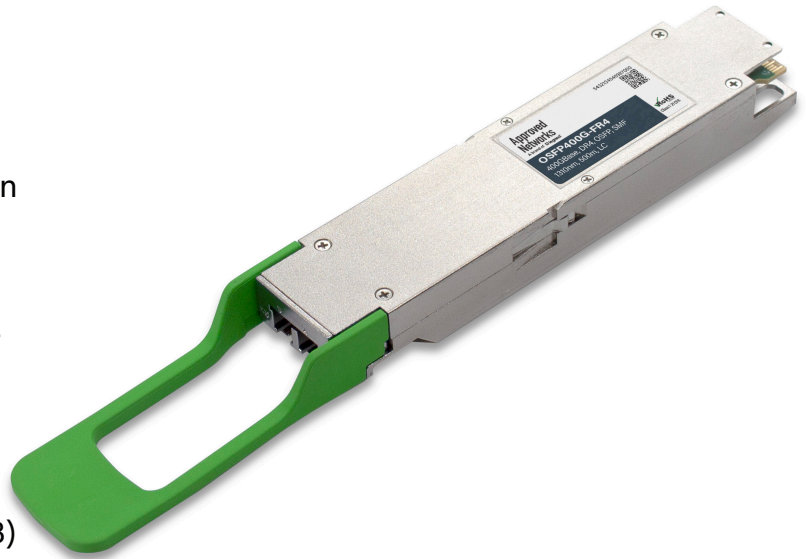


Features

- OSFP MSA compliant
- 2 sets of 4 CWDM lanes MUX/DEMUX design
- Compliant to IEEE 802.3bs Specification
- Up to 2km transmission on single mode fiber (SMF) with FEC
- Operating case temperature: 20°C to 60°C
- 8x53.125Gb/s electrical interface (400GAUI-8)
- Data Rate 53.125Gbps (PAM4) per channel.
- Maximum power consumption 12W
- CS duplex connectors
- RoHS compliant



Applications

- Data Center Interconnect
- 400G Ethernet
- Infiniband interconnects
- Enterprise networking

1. Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	TS	-40	85	°C	
Operating Case Temperature	TOP	20	60	°C	
Power Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensation)	RH	0	85	%	

2. Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Case Temperature	TOP	20		60	°C	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Data Rate, each Lane			26.5625		GBd	PAM4

Data Rate Accuracy		-100		100	ppm	
Pre-FEC Bit Error Ratio				2.3×10^{-4}		
Post-FEC Bit Error Ratio				1×10^{-12}		1
Link Distance with G.652	D	2		2000	m	2

Notes:

1. FEC provided by host system.
2. FEC required on host system to support maximum distance.

3. Electrical Characteristics

Parameter	Test Point	Min	Typ	Max	Units	Notes
Power Consumption				12	W	
Supply Current	Icc			3.64	A	
Transmitter (Each Lane)						
Signaling Rate, each Lane	TP1	26.5625 ± 100 ppm			GBd	
Differential pk-pk Input Voltage Tolerance	TP1a	900			mVpp	1
Differential Termination Mismatch	TP1			10	%	
Differential Input Return Loss	TP1	IEEE 802.3-2015 Equation (83E-5)			dB	
Differential to Common Mode Input Return Loss	TP1	IEEE 802.3-2015 Equation (83E-6)			dB	
Module Stressed Input Test	TP1a	See IEEE 802.3bs 120E.3.4.1				2
Single-ended Voltage Tolerance Range (Min)	TP1a	-0.4 to 3.3			V	
DC Common Mode Input Voltage	TP1	-350		2850	mV	3
Receiver (Each Lane)						
Signaling Rate, each lane	TP4	26.5625 ± 100 ppm			GBd	
Differential Peak-to-Peak Output Voltage	TP4			900	mVpp	
AC Common Mode Output Voltage, RMS	TP4			17.5	mV	
Differential Termination Mismatch	TP4			10	%	
Differential Output Return Loss	TP4	IEEE 802.3-2015 Equation (83E-2)				
Common to Differential Mode Conversion Return Loss	TP4	IEEE 802.3-2015 Equation (83E-3)				
Transition Time, 20% to 80%	TP4	9.5			ps	
Near-end Eye Symmetry Mask Width (ESMW)	TP4		0.265		UI	

Near-end Eye Height, Differential	TP4	70			mV	
Far-end Eye Symmetry Mask Width (ESMW)	TP4		0.2		UI	
Far-end Eye Height, Differential	TP4	30			mV	
Far-end Pre-cursor ISI Ratio	TP4	-4.5		2.5	%	
Common Mode Output Voltage (Vcm)	TP4	-350		2850	mV	3

Notes:

1. With the exception to IEEE 802.3bs 120E.3.1.2 that the pattern is PRBS31Q or scrambled idle.
2. Meets BER specified in IEEE 802.3bs 120E.11.
3. DC common mode voltage generated by the host. Specification includes effects of ground offset voltage

4. Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Notes
Wavelength Assignment	L0	1264.5	1271	1277.5	nm	ITU-T CWDM4
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	
Transmitter						
Data Rate, each Lane		26.5625 ± 100 ppm			GBd	
Modulation Format		PAM4			—	
Side Mode Suppression Ratio	SMSR	30			dB	Modulated
Total Average Launch Power	PT			10.7	dBm	
Average Launch Power, each Lane	PAVG	-4.2		4.7	dBm	1
Outer Optical Modulation Amplitude (OMA _{OUTER}), each Lane	POMA	-1.2		4.5	dBm	2
Launch Power in OMA _{OUTER} minus TDECQ, each lane		-2.6			dB	For ER ≥ 4.5dB
		-2.5			dB	For ER < 4.5dB
Transmitter and Dispersion Eye Clouser for PAM4, each Lane	TDECQ			3.3	dB	
Extinction Ratio	ER	3.5			dB	
Difference in Launch Power between any Two Lanes (OMA _{OUTER})				4	dB	
RIN16.5OMA	RIN			-132	dB/Hz	
Optical Return Loss Tolerance	TOL			16.5	dB	

Transmitter Reflectance	RT			-26	dB	3
Average Launch Power of OFF Transmitter, each Lane	Poff			-30	dBm	
Receiver						
Data Rate, each Lane		26.5625 ± 100 ppm			GBd	
Modulation Format		PAM4			—	
Damage Threshold, each Lane	THd	5.7			dBm	4
Average Receive Power, each Lane		-8.2		4.7	dBm	5
Receive Power (OMA _{OUTER}), each Lane				4.5	dBm	
Receiver Sensitivity (OMA _{OUTER}), each Lane	SEN			-6	dBm	6
Stressed Receiver Sensitivity (OMA _{OUTER}), each Lane	SRS			-3.6	dBm	7
Difference in Receive Power between any Two Lanes (OMA _{OUTER})				4.1	dB	
Receiver Reflectance	RR			-26	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-assert	LOSD			-16	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Stressed Conditions for Stress Receiver Sensitivity (Note 8)						
Stressed Eye Closure for PAM4 (SECQ), Lane under Test			3.3		dB	
OMA _{outer} of each Aggressor Lane			0.5		dBm	

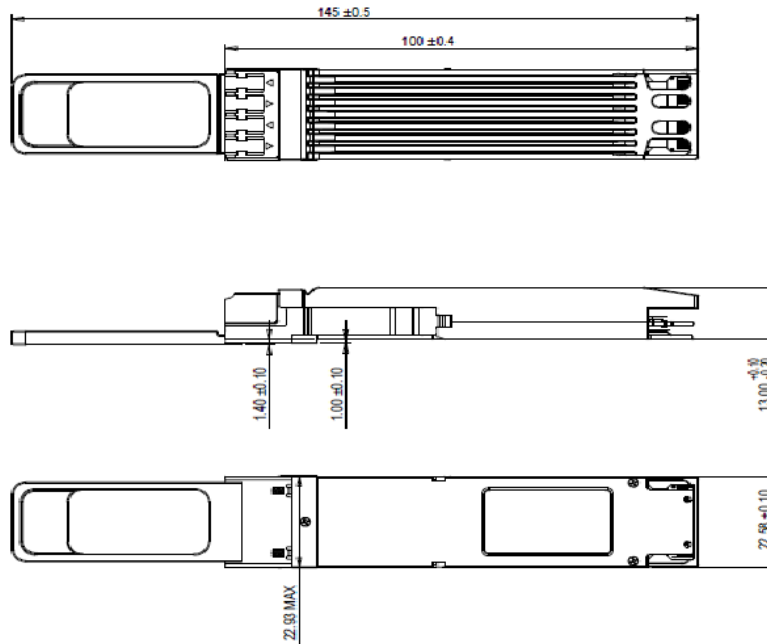
Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
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 the minimum value specified here.
3. Transmitter reflectance is defined looking into the transmitter.
4. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
5. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
6. Receiver Sensitivity OMA_{outer}, each lane (max) is informative and is defined for a transmitter with SECQ of 0.9 dB and

for the BER of 2.4×10^{-4} .

7. Measured with conformance test signal at receiver input for the BER of 2.4×10^{-4} .
8. These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

OEM	Part Number	OEM	Part Number
Arista	OSFP-400G-FR4-A	MSA	AN-OSFP400G-FR4

7. Contact Information

Tel: 800.590.9535

Web: <http://www.approvednetworks.com>