



QSFPDD-ER4

400GBASE, QSFP-DD, ER4, SMF TRANSCEIVER
1295, 1300, 1304, 1309nm, 40km REACH, DUPLEX LC CONNECTORS

Features

- Compliant with IEEE Std 802.3cd
- Compliant with QSFP-DD MSA
- Compliant with QSFP-DD Management interface specifications
- Duplex LC receptacles
- 53.125GBd PAM4x4 cooled EML
- 26.5625GBd PAM4x8 electrical connector
- Single +3.3V power supply
- Commercial operating temperature: 0°C to +70°C
- 7nm DSP for power dissipation <12W
- Up to 40km on SMF
- RoHS Compliant

Applications

- 400G BASE-ER4 Ethernet
- Supports breakout

Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Unit
Storage Temperature	TS	-40	85	°C
Relative Humidity	RH	15	85	%
Supply Voltage	VCC	-0.5	4.0	V

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Case Temperature	TC	0	25	70	°C
Supply Voltage	VCC	3.135	3.3	3.465	V
Data Rate PER Channel			53.125		GBd
Modulation Format		PAM4			

Transceiver Electrical Characteristics						
Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Module Supply Current	I _{cc}	-	-	3.8	A	-
Power Dissipation	PD	-	-	12	W	-
Transmitter						
Input Differential Impedance	Z _{IN}	-	100	-	Ω	-
Differential Data Input Swing	V _{IN} , P-P	180	-	900	mVP-P	-
Receiver						
Output Differential Impedance	Z _O	-	100	-	Ω	-
Differential Data Output Swing	V _{OUT} , P-P	300	-	850	mVP-P	1
Notes:						
1. Internally AC coupled, but requires a external 100Ω differential load termination.						

Optical Characteristics						
Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Transmitter						
Data Rate Per Lane			53.125		GBd	
LaneWavelengths	λ _c	1304.06	-	1305.1	nm	1
		1306.33	-	1307.38		
		1308.61	-	1309.66		
		1310.9	-	1311.96		
Side-mode Suppression Ratio	SMSR	30	-	-	dB	-
Total Average Launch Power	PT	-	-	10	dBm	-
Average Launch Power, Each Lane	P	1.5	-	7.1	dBm	-
Outer Optical Modulation Amplitude, Each Lane (min)	OMA outer	4.5		7.9	dBm	-
Transmitter and Dispersion Eye Closure for PAM4(TDECQ), Each LANE	TDECQ	-	-	3.9	dB	-
Transmitter Eye Closure for PAM4(TECQ), Each Lane	TECQ	-	-	3.9	dB	-
TDECQ-TECQ				2.7	dB	
Extinction Ratio	ER	6	-	-	dB	-
Average LaunchPower of OFF Transmitter, Each Lane	P _{off}	-	-	-30	dBm	-
Optical Return Loss Tolerance	ORLT	-	-	15	dB	-
Transmitter Reflectance	-	-	-	-26	dB	-
Receiver						
Data Rate Per Lane			26.5625		GBd	-
Lane Wavelengths	λ _c	1304.06	-	1305.1	nm	-
		1306.33	-	1307.38		
		1308.61	-	1309.66		
		1310.9	-	1311.96		
Average Receiver Power, Each Lane (P _{avg})		-16.2	-	-3.4	dBm	-
Receiver Overload (Average power), Each Lane		-3.4	-	-	dBm	-
Damage Threshold	PTHD	-2.4	-	-	dBm	-
Receive Power, Each Lane (OMA outer)	OMA	-	-	-2.6	dBm	-
Receiver Sensitivity Each Lane (OMA outer)				-14	dBm	2
Stressed Receiver Sensitivity Each Lane (OMA outer)				-11.5	dBm	2
LOS Assert	LOSA	-	-	-20	dBm	-

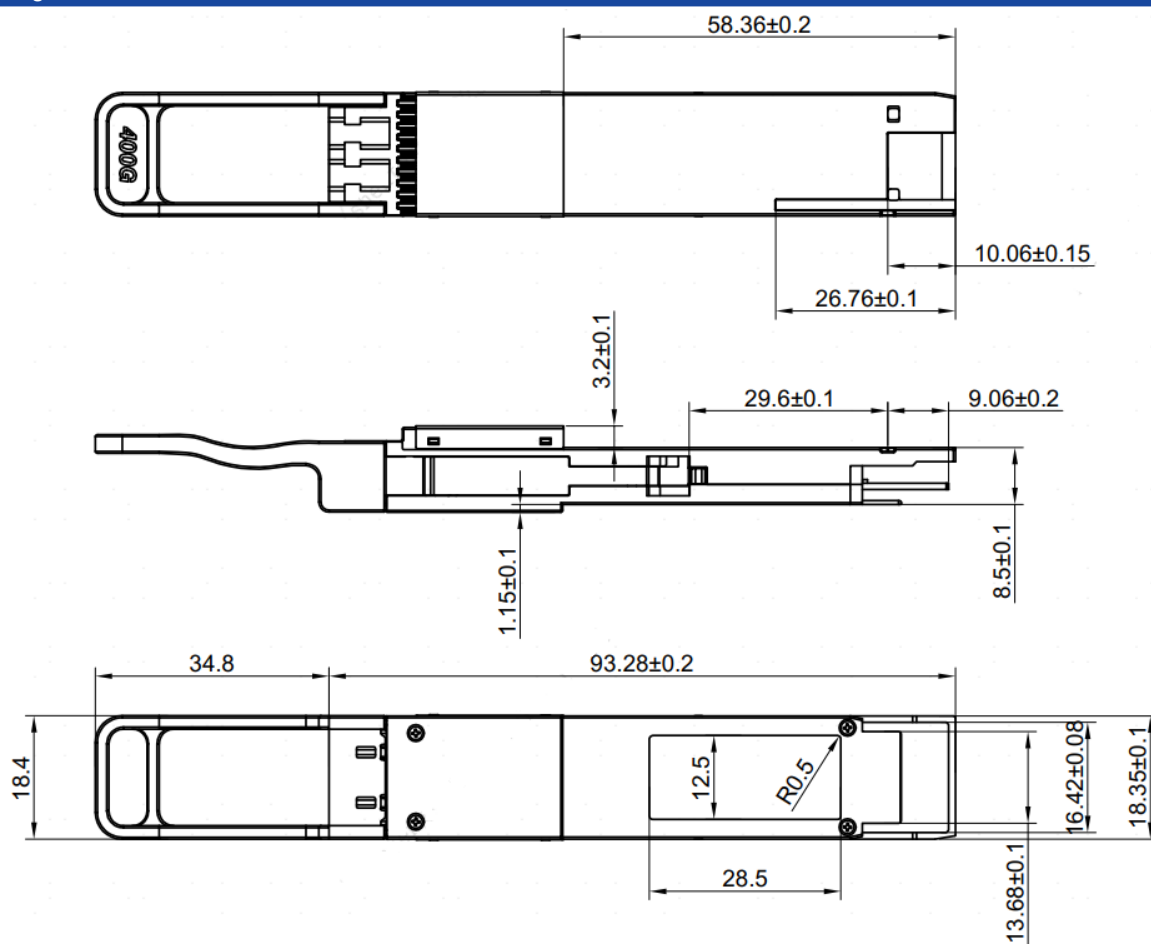
Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
LOS De-assert	LOSD	-	-	-17	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-

Notes:

- The typical wavelengths compliant with 1310nm nLWDM wavelength grids.
- Measured with PRBS31Q test pattern, 53.125Gb/s, PAM4, BER<2.4E-4.

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.

Ordering Information

OEM	Part Number	OEM	Part Number
MSA	AN-QSFPDD-ER4		