O112-FLT-400G-DR4-5

400GBase, OSFP112, Flat Top, DR4, CMIS 5.2, SMF TRANSCEIVER
1310nm, 500m, MPO-12 APC CONNECTORS

Features

- OSFP Hot-pluggable form factor
- Maximum link length of 500m on SMF with FEC
- Single 3.3V power supply
- Power dissipation 8W
- Support DDMI
- Operating case temp: 0°C to +70 °C
- Single APC MPO-12 connector
- Compliant with CMIS 5.2
- Anti-sulphuration Compliant
- RoHS 6 Compliant

Applications

- 400GBASE-DR4
- 200GBASE-DR2
- 100GBASE-DR1

1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	-0.5	3.6	V
Storage Temperature	T_S	-40	85	°C
Operating Case Temperature	TC	-5	75	°C
Operating Humidity (No condensation)	RH	5	85	%
Control Input Voltage	$V_{CONTROL}$	-0.3	VCC+0.3	V
Optical Receiver Damage Threshold, each lane	R_{DAMAGE}	5		dBm

2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	TC	0	-	70	°C
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Power Dissipation	P_D	-	-	8	W
Operating Humidity (No condensation)	RH	5	-	85	%

3. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Host to Module Side					
Data Rate, each lane	DR		53.125		GBd
Data Rate Variation	-	-100	-	100	ppm
Modulation Format	-		PAM4		-
Differential Input Peak-peak Voltage Tolerance	VIN-DIFF	750	-	-	mVpp
Differential Input Termination Mismatch	-	-	-	10	%
Single-ended Voltage Tolerance	-	-0.4	-	3.3	V
DC Common-mode Voltage Tolerance	-	-0.35	-	2.85	V
Module to Host Side					
Data Rate, each lane	DR		53.125		GBd
Data Rate Variation	-	-100	-	100	ppm
Modulation Format	-	PAM4	-		
Differential Output Peak-to-peak Voltage (Short mode)	Vout-diff, short	-	-	600	mVpp
Differential Output Peak-to-peak Voltage (Long mode)	Vout-diff, Long	-	-	845	mVpp
Transition Time (20% to 80%)	TR/TF	8.5	-	-	ps
Eye Height	EH	-	-	15	mV
Vertical Eye Closure	VEC	-	-	12	dB
Differential Output Termination Mismatch	-	-	-	10	%
DC Common-mode Voltage Tolerance	-	-0.35	-	2.85	V

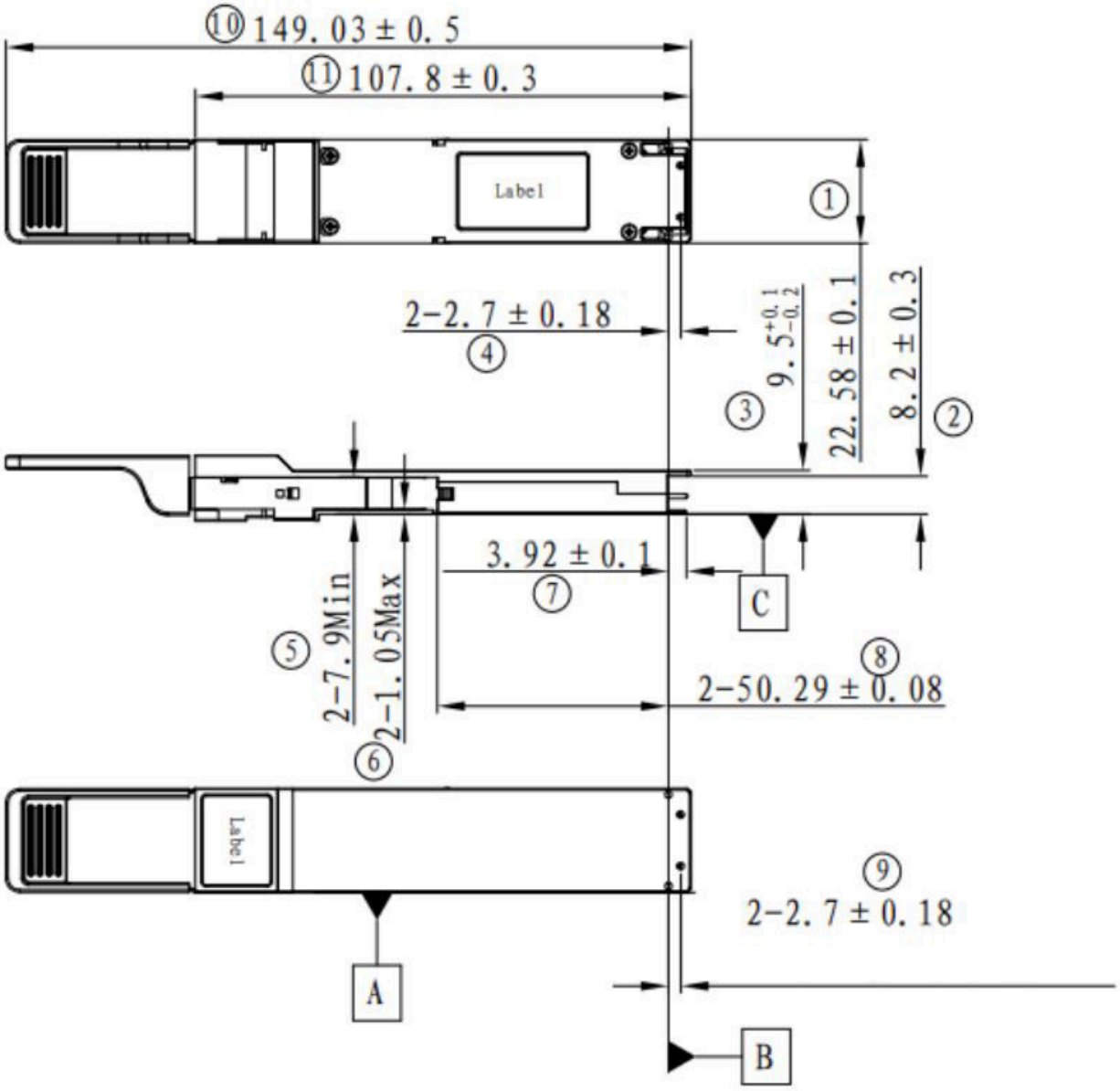
4. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Data Rate, each lane	DR		53.125±100 ppm		GBd
Data Rate Variation	-100	100	-	+100	
Modulation Format	-		PAM4		-
Center Wavelength Lane0	L0	1304.5	1311	1317.5	nm
Center Wavelength Lane1	L1	1304.5	1311	1317.5	nm
Center Wavelength Lane2	L2	1304.5	1311	1317.5	nm
Center Wavelength Lane3	L3	1304.5	1311	1317.5	nm
Single-mode Suppression Ratio, each lane	SMSR	30	dB		

Average Launch Power, each lane [1]	PTxAOP	-2.9	-	4	dBm
Outer Optical Modulation Amplitude, each lane [2]	TxOMA	-0.8	-	4.2	dBm
Extinction Ration, each lane	ER	3.5	4.5	-	dB
Launch Power in OMA minus TDECQ, each lane	-	-2.2	-	-	dBm
Transmitter and Dispersion Eye Closure for PAM4, each lane	TDECQ	-	-	3.4	dB
RIN OMA	RIN	-	-	-136	dB/Hz
Optical Return Loss Tolerance	ORL	-	-	21.4	dB
Transmitter Reflectance	-	-	-	-26	dB
Average Launch Power of OFF					
Transmitter, each lane	-	-	-	-15	dBm
Receiver					
Data Rate, each lane	DR	53.125±100 ppm			GBd
Data Rate Variation	-	-100	-	100	ppm
Modulation Format	-	PAM4	-		
Receiver Wavelength Range Lane0	L0	1304.5	1311	1317.5	nm
Receiver Wavelength Range Lane1	L1	1304.5	1311	1317.5	nm
Receiver Wavelength Range Lane2	L2	1304.5	1311	1317.5	nm
Receiver Wavelength Range Lane3	L3	1304.5	1311	1317.5	nm
Average Receiver Power, each lane	PRxAOP	-5.9	-	4	dBm
Receive Power(OMAouter), each lane	RxOMA	-	-	4.2	dBm
Receiver Reflectance	-	-	-	-26	dB
Receiver Sensitivity(OMAouter), each lane [3]	OMASen	-	-	-4.5	dBm
Stressed Receiver Sensitivity(OMAouter), each lane	-	-	-	-1.9	dBm
Stressed Eye Closure for PAM4(SECQ), each lane under test	-	-	-	3.4	dB
OMAouter of each Aggressor Lane	-	-	-	4.2	dBm
Los Assert	LOSAssert	-14	-	-11.5	dBm
Los De-assert	LOS De-assert	-11	-	-8	dBm
LOS Hysteresis	LOSHys	0.5	-	4	dB

Notes:
1. Minimum value is informative only and not the principal indicator of signal strength.
2. Transmitter reflectance is defined looking into the transmitter.
3. @BER 1E-6.

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
MSA	AN-O112-400G-DR4	Nvidia	MMS4X00-NS400-A

7. Contact Information

Tel: 800.590.9535
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