QSFP28-LR4S

100GBASE, QSFP28, LR4S, SMF TRANSCEIVER
1295.56 - 1309.14nm, 10km REACH, DUPLEX LC CONNECTOR

Features

- Hot pluggable QSFP28 MSA form factor
- Compliant to IEEE 802.3ba 100GBASE-LR4
- Up to 10km reach for G.652 SMF
- Single +3.3V power supply
- Transmitter: cooled 4x25Gb/s LAN WDM TOSA (1295.56, 1300.05, 1304.58, 1309.14nm)
- QSFP28 MSA Specification Compliant
- Receiver: 4x25Gb/s PIN ROSA
- 4x25G Electrical Serial Interface
- Maximum power consumption 4W
- Duplex LC receptacle
- Compatible with RoHS
- Temperature Range 0 to 70°C

Applications

- 100GBASE-LR4 Ethernet Links
- Infiniband QDR & DDR interconnects
- Client-side 100G Telecom connections

1. Absolute Maximum Ratings

Parameter	Unit	Min	Max
Storage Ambient Temperature Range	°C	-40	85
Powered case Temperature Range	°C	0	70
Power Supply Voltage	V	-0.5	3.6
Relative Humidity (non-condensation)	%	0	85
Receiver Damage Threshold Per Lane	dBm	5.5	

2. Recommended Operating Conditions

Parameter	Units	Min	Typ	Max	Notes
Operating Case Temperature	°C	0		70	
Power Supply Voltage	V	3.135	3.3	3.465	
Data Rate, each line	Gbps		25.78125		

Link Distance with G.652	Km	0		10	
Control Input Voltage High	V	2		Vcc	
Control Input Voltage Low	V	0		0.8	

3. Electrical Characteristics

Parameter	Unit	Min	Typ	Max	Notes
Power Consumption	W	1		4	
Supply Current	mA			1154.4	1
Transceiver Power-on Initialization Time	ms			2000	
High Speed Electrical Module Output Characteristics					
Differential voltage pk-pk	mV			900	
Common mode noise (rms)	mV			17.5	
Differential termination mismatch	%			10	
Transition time	ps	12			2
Common mode voltage	V	-0.3		2.85	
Eye width	UI	0.57			
Eye height, Differential	mV	228			
High Speed Electrical Module Input Characteristics					
Differential pk-pk input Voltage Tolerance	mV	900			
Differential termination mismatch	%			10	
Single-ended voltage tolerance range	V	-0.4		3.3	
DC common-mode voltage	V	-0.35		2.85	

1. Steady state current
2. 20% to 80%

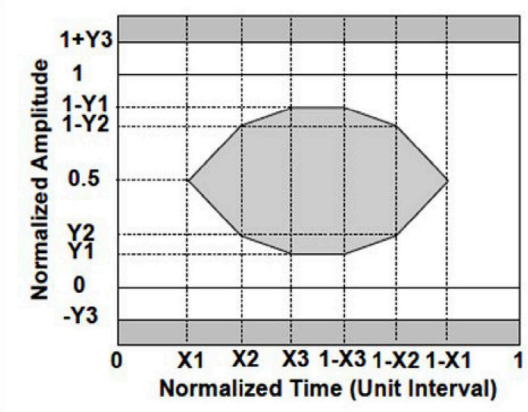
4. Optical Characteristics

Parameter	Units	Min.	Typ.	Max.	Notes
Transmitter					
L0 Lane Wavelength	nm	1294.53	1295.56	1296.59	
L1 Lane Wavelength	nm	1299.02	1300.05	1301.09	
L2 Lane Wavelength	nm	1303.54	1304.58	1305.63	
L3 Lane Wavelength	nm	1308.09	1309.14	1310.19	
SMSR	dB	30			
Total Average Launch Power	dBm			10.5	

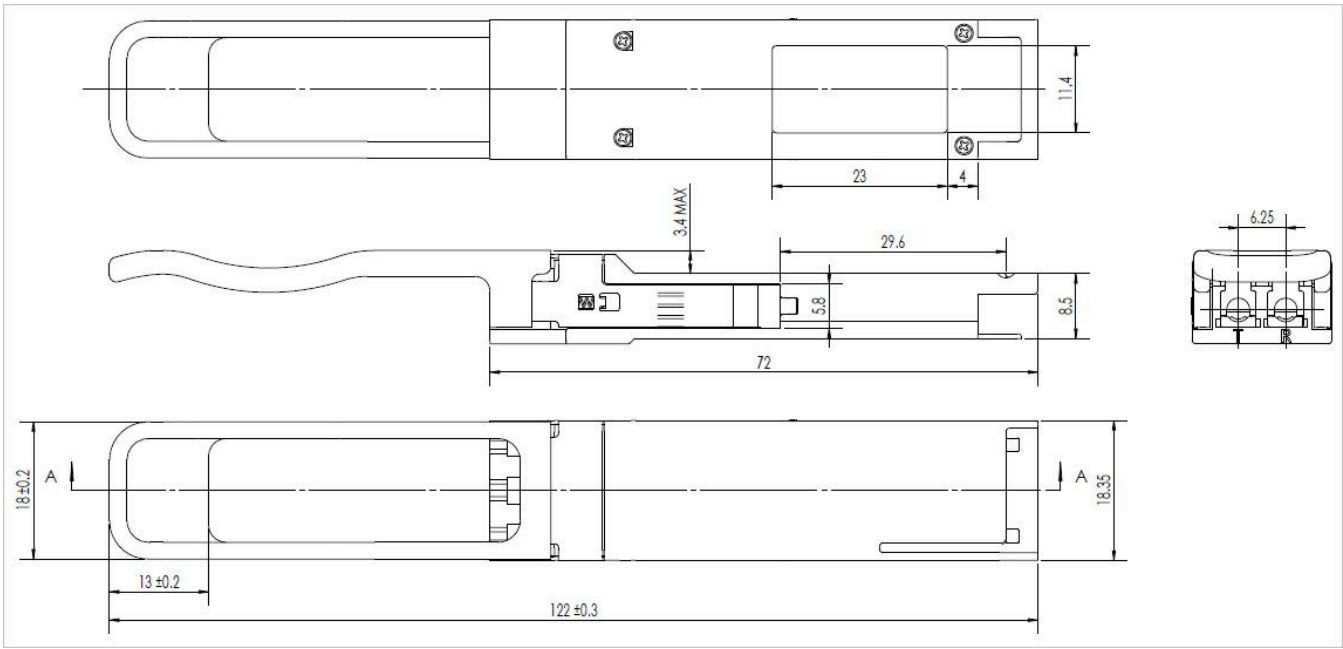
Average Launch Power, each Lane	dBm	-4.3		4.5	
OMA, each Lane	dBm	-1.3		4.5	
Difference in Launch Power between any Two Lanes (OMA)	dB			5	
Launch Power in OMA minus Transmitter and	dBm	-2.3			1
Dispersion Penalty (TDP), each Lane					
TDP, each Lane	dB			2.2	
Extinction Ratio	dB	4			
RIN20 OMA	dB/Hz			-130	
Optical Return Loss tolerance	dB			20	
Transmitter Reflectance	dB			-12	
Eye Mask{X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			2
Average Launch Power OFF Transmitter, each Lane	dBm			-30	
Receiver					
Damage Threshold, each Lane	dBm	5.5			3
Total Average Receive Power	dBm			10.5	
Average Receive Power, each Lane(100GE)	dBm	-10.6		4.5	
Receive Power (OMA), each Lane (100GE)	dBm			4.5	
Receiver Sensitivity (OMA), each Lane(100GE)	dBm			-8.6	4
Stressed Receiver ensitivity (OMA), each Lane(100GE)	dBm			-6.8	5
Difference in Receive Power between any Two Lanes (OMA)	dB			5.5	
LOS Assert	dBm	-25			
LOS Deassert	dBm			-9	
LOS Hysteresis	dB	0.5			
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	GHz			31	
Conditions of Stress Receiver Sensitivity Test (Note 5)					
Vertical Eye Closure Penalty, each Lane	dB			1.8	

Stressed Eye J2 Jitter, each Lane	UI			0.3	
Stressed Eye J9 Jitter, each Lane	UI			0.47	

1. Even if the TDP<1dB, the OMA min must exceed the minimum value specified here.
2. See Figure below.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.
4. Measured with conformance test signal at receiver input for BER=1x10-12.
5. Vertical eye closure penalty and stressed eye jitter are test conditions 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
MSA	AN-QSFP28-LR4S	MSA Champion ONE	100GQSFP28E-LR4S

7. Contact Information

Tel: 800.590.9535
Web: http://www.approvednetworks.com