QDD-800G-2LR4-ETH-5

800GBase-DR8, QSFPDD, 2x LR4 SMF TRANSCEIVER
1271nm-1331nm, 10km REACH, DUAL DUPLEX LC CONNECTORS

Features

- Compliant with MSA and IEEE802.3-2022:
  - 2x400G-LR4-10 optical interface
  - 2x400GBASE-LR4-6 optical interface
- Compliant with IEEE 802.3df-2024
  - 2x400GAUI-4 C2M electrical interface
- Compliant with QSFP-DD800 MSA HW Rev 6.01 with dual LC connector
- Compliant with CMIS Rev 5.0
- Case operating temperature 0°C to 70°C
- Two wire serial interface with digital diagnostic monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser

Absolute Maximum Ratings				
Parameter	**Symbol**	**Minimum**	**Maximum**	**Unit**
Storage Temperature	TS	-40	85	ºC
Supply Voltage	VCC	-0.5	3.6	V
Relative Humidity (non-condensing)	RH	5	95	%
Data Input Voltage Differential	IVDIP-VDINI	-	1	V
Control Input Voltage	VI	-0.3	VCC+0.5	V
Control Output Current	IO	-20	20	mA

Recommended Operating Conditions						
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**	**Notes**
Operating Case Temperature	TOPR	0	-	70	ºC	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP	-	-	7200	mA	
Sustained peak current at hot plug	ICC_SP	-	-	5941	mA	
Maximum Power Dissipation	PD	-	-	18	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	2	W	

Recommended Operating Conditions						
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**	**Notes**
Signalling Speed per Lane	DRL	-	53.125	-	GBd	
Control Input Voltage High	VIH	VCC*0.7	-	VCC+0.3	V	
Control Input Voltage Low	VIL	-0.3	-	VCC*0.3	V	
Two Wire Serial Interface Clock Rate	-	-	-	400	kHz	
Power Supply Noise 1 kHz - 1 MHz (p-p)	-	-	-	66	mVpp	
Operating Distance	-	2	-	10000	m	Follow MSA
	-	2	-	6000	m	Follow IEEE

Optical Characteristics						
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**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 (max)	AOPT	-	-	11.1	dBm	
Average launch power, each lane	AOPL	-2.7	-	5.1	dBm	1
Outer Optical Modulation Amplitude (OMAouter), each lane, for TDECQ <1.4 dB for 1.4 dB <=TDECQ<=TDECQ (max)	TOMA	0.3 –1.1 + TDECQ	-	4.4	dBm	
Difference in launch power between any two lanes (OMAouter)	AOPd	-	-	4	dB	
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane_10km	TDECQ	-	-	3.9	dB	
Transmitter and dispersion eye closure for PAM4 (TDECQ), each lane_6km	TDECQ	-	-	3.4	dB	
Transmitter eye closure for PAM4 (TECQ), each lane_10km	TECQ	-	-	3.9	dB	
Transmitter eye closure for PAM4 (TECQ), each lane_6km	TECQ	-	-	3.4	dB	
| TDECQ – TECQ |	-	-	-	2.5	dB	
Transmitter over/under-shoot_10km	-	-	-	25	%	
Transmitter over/under-shoot_6km	-	-	-	22	%	
Transmitter peak-to-peak power_10km	-	-	-	5.2	dBm	
Transmitter power excursion_6km	-	-	-	2.5	dBm	
Average Launch Power of OFF Transmitter, each lane	TOFF	-	-	-16	dBm	
Extinction Ratio	ER	3.5	-	-	dB	
Transmitter transition time (max)	Tr	-	-	17	ps	
RIN15.6OMA (max)	RIN	-	-	-136	dB/Hz	
Optical Return Loss Tolerance	ORL	-	-	15.6	dB	
Transmitter Reflectance	TR	-	-	-26	dB	2

Optical Characteristics						
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**	**Notes**
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, each Lane	AOPD	6.1	-	-	dBm	
Average receive power, each lane	AOPR	-9	-	5.1	dBm	
Receive Power (OMAouter), each Lane	OMAR	-	-	4.4	dBm	
Difference in receive power between any two lanes (OMAouter)	AOPg	-	-	4.3	dB	
Receiver Reflectance	RR	-	-	-26	dB	
Receiver sensitivity (OMAouter), each lane for TECQ < 1.4 dB for 1.4 dB≤ TECQ ≤TECQ (max)	SOMA	 - -	 - -	 -6.8 -8.2+TECQ	dBm	
Stressed receiver sensitivity (OMAouter), each lane_10km	SRS	-	-	-4.3	dBm	3
Stressed receiver sensitivity (OMAouter), each lane_6km	SRS	-	-	-4.8	dBm	3
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4(SECQ), lane under test_10km	-	-	3.9	-	dB	
Stressed eye closure for PAM4(SECQ), lane under test_6km	-	-	3.4	-	dB	
OMAouter of each aggressor lane	-	-	-0.4	-	dBm	

Notes:

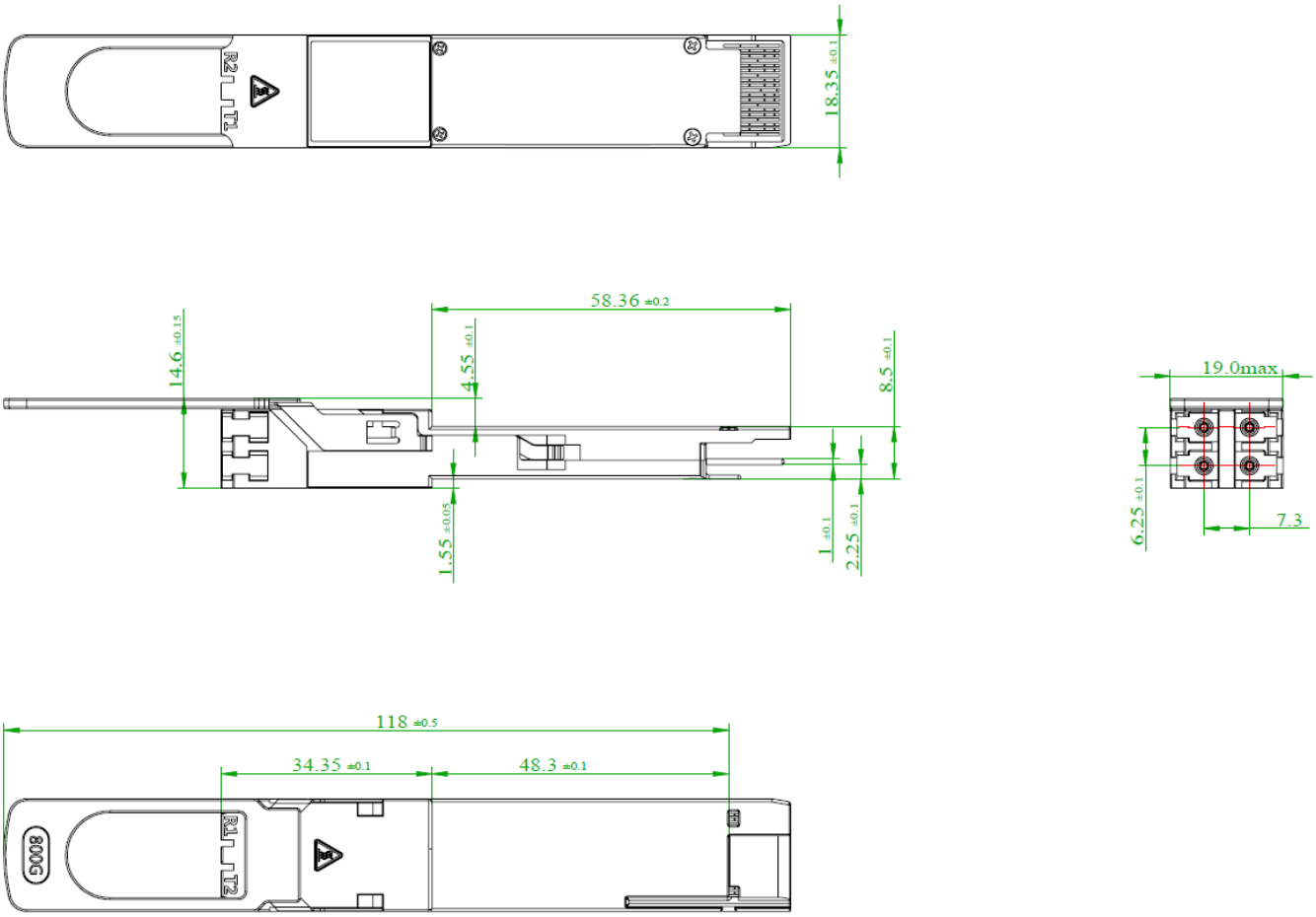
1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength.
2. Transmitter reflectance is defined looking into the transmitter.
3. Measured with conformance test signal at TP3 for the BER = $2.4x10^{-4}$.

Electrical Specification High Speed Signal (compliant with IEEE802.3ck C2M)					
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**
Receiver (Module Output, TP4)					
Peak-to-peak AC common-mode voltage Low-frequency, VCMLF Full-band, VCMFB	 - -	 - -	 - -	 32 80	mV
Differential peak-to-peak output voltage Short mode Long mode Disabled	 - - -	 - - -	 - - -	 600 845 35	mV
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

Electrical Specification High Speed Signal (compliant with IEEE802.3ck C2M)					
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**
Differential termination mismatch	-	-	-	10	%
Transition time	-	8.5	-	-	ps
DC common-mode voltage tolerance	-	-0.35	-	2.85	V
Transmitter (Module Input, TP1)					
Differential pk-pk input Voltage tolerance (TP1a)	-	750	-	-	mV
Peak-to-peak AC common-mode voltage tolerance Low-frequency, VCMLF Full-band, VCMFB	-	 32 80	 - -	 - -	 mV
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

Electrical Specification Low Speed Control and Sense Signals					
Parameter	**Symbol**	**Minimum**	**Maximum**	**Unit**	**Condition**
Module output SCL and SDA	VOL	0	0.4	V	
Module Input SCL and SDA	VIL	-0.3	VCC*0.3	V	
	VIH	VCC*0.7	VCC+0.5	V	
LPMode/TxDis, ResetL, ModSelL	VIL	-0.3	0.8	V	
	VIH	2	VCC+0.3	V	
IntL/RxLOS	VOL	0	0.4	V	
	VOH	VCC-0.5	VCC+0.3	V	

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
Juniper	QDD-400G-2XLR4-A	MSA	AN-QDD-800G-2LR4-ETH

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