

Features

- Supports 425Gbps
- Single 3.3V Power Supply
- Power dissipation < 10W
- Up to 500m over SMF
- RoHS compliant
- QSFP-DD MSA Compliant
- 8x53.125Gbps (PAM4) electrical interface
- MPO-12 connector
- Commercial case temperature range: 0°C to 70° C
- PIN and TIA array on the receiver side
- I2C interface with integrated Digital Diagnostic Monitoring



Safety Certification: TUV/UL/FDA

Applications

- 4 x 100G-DR applications
- Data center
- Infiniband interconnects

1. Absolute Maximum Ratings

Exceeding any one of these values may damage the device permanently.

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	85	٥C
Supply Voltage	VCC	-0.5	3.6	V
Damage Threshold	Rxdmg	5		dBm

2. Recommended Operating Conditions

Power Supply specifications, Instantaneous, sustained and steady state current compliant with QSFP-DD MSA Power Classification.

Parameter	Symbol	Min.	Тур.	Max.	Unit
Operating Case Temperature	Тс	0	70	C	
Power Supply Voltage	Vcc	3.135	3.3	3.465	V

Approved Networks

Operating Relative Humidity	RH	5	85	%	
Power Dissipation	PD			10	W

3. Electrical Characteristics

Parameter	Symbol	Min.	Тур.	Max	Unit	Notes		
Transmitter								
Differential data input swing per lane		900			mVp-p	1		
Differential input impedance	Zin	90	100	110	ohm			
Stresse	Stressed Input Parameters							
Eye width		0.265			UI	2		
DC common mode voltage		-350		2850	mV	3		
	Receiver							
Differential output amplitude				900	mVp-p			
Differential output impedance	Zout	90	100	110	ohm			
Output Rise/Fall Time	tr/tf	9.5			ps	4		
Eye width		0.265			UI			
Eye height differential		70			mV	2		

Notes:

- 1. With the exception to IEEE 802.3bs 120E.3.1.2 that the pattern is PRBS31Q or scrambled idle.
- 2. @TP4, all 3 PAM4 eyes, 1E-5
- 3. DC common mode voltage is generated by the host. Specification includes effects of ground offset voltage.
- 4. 20%~80%

4. Optical Characteristics

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes
Transmitter						
Signaling speed per lane			53.125		GBd	
Modulation format			PAM4			
Center wavelength	λC	1304.5	1311	1317.5	nm	
Side-mode Suppression Ratio	SMSR	30			dB	
Average launch power, each lane	TxAVG	-2.9		4	dBm	1
Transmit OMAouter, each lane	TxOMA	-0.8		4.2	dBm	2

Approved Networks

TDECQ, each lane-2.2dBmTransmitter and dispersion eye closure, each laneTDECQ3.4dBAverage launch power of OFF transmitter, each lane-15dBmExtinction RatioER3.5dBRIN21.4OMA-136dB/HzOptical return loss tolerance21.4dBTransmitter reflectance-26dBModulation formatPAM4-26Center wavelengthAC1304.5Average receive power each lane5GBdModulation formatFXAVG-5.94Average receive power each laneRxAVG-5.94Receiver reflectance-26dB5Receiver sensitivity (OMAouter), each laneSenOMA4.2dBmStressed Receiver sensitivity (OMAouter), each laneSenOMA-4.4dBmStressed Receiver sensitivity (OMAouter), each lane3.4dB8OMAouter), each laneLOSA-15dBm8LOS AssertLOSA-15dBm8		·					
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LOS AssertLOSA-15dBm8LOS De-AssertLOSD-10dBm8	Stressed eye closure for PAM4 (SECQ), lane under test			3.4		dB	8
LOS De-Assert LOSD -10 dBm 8	OMAouter of each aggressor lane			4.2		dBm	8
	LOS Assert	LOSA	-15			dBm	8
LOS Hysteresis 0.5 dB 8	LOS De-Assert	LOSD			-10	dBm	8
	LOS Hysteresis		0.5			dB	8

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, the OMAouter (min) must exceed these values.Note9: Transmitter reflectance is defined looking into the transmitter.
- 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

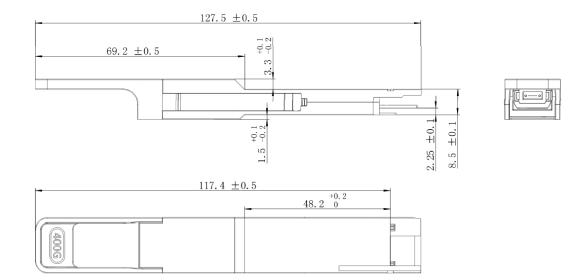


average power level. The receiver does not have to operate correctly at this input power.

- 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 (OMAouter), each lane (max) is informative and is defined for a transmitter with SECQ of 0.9 dB.
- 7. Measured with conformance test signal at TP3 for the BER specified in IEEE Std 802.3bs clause 124.1.1.
- 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	QDD-400G-DR4-AN-A	MSA	AN-QSFP400G-DR4
Cisco	QDD-400G-DR4-S-A	MSA Champion ONE	400GQSFPDDE-DR4
Juniper	QDD-400G-DR4-JN-A	Nvidia	MMS1V00-WM-A

7. Contact Information

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