

PRE-QSFP56DD-LR4

QSFP-DD, LR4, PAM4, 400Gbps, 10km, SMF/LC



Product Features:

- 53.125x4 GBd PAM4
- EML Transmitters
- SMF Transmission Medium
- LC-UPC Connector
- Digital Diagnostics Monitoring (DDM)
- <12W Power Consumption
- QSFP-DD MSA HW Rev. 5 Compliant



Product Applications:

- 400G-LR4-10
- 400GBASE-LR4-6

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature (Commercial Temp)	T_{op}	0	-	70	°C
Power Consumption	P_w	-	-	12	W
Power Supply Current	I_{cc}	-	3827	3960	mA
Power Supply Voltage	V_{cc}	3.14	3.3	3.46	V
Storage Humidity	H_s	0	-	85	%
Storage Temperature	T_s	-40	-	85	°C
Transmission Distance	TD	-	-	10	km
Data Rate (Total)	DR_T	-	425	-	Gbps
Signaling Data Rate per Lane	DR_{lane}	-	53.125	-	GBd

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**Optical Characteristics: 400G-LR4-10 Transmitter**

Parameter	Symbol	Min	Typ	Max	Unit
Center Wavelength 1	λ_1	1264.5	1271	1277.5	nm
Center Wavelength 2	λ_2	1284.5	1291	1297.5	nm
Center Wavelength 3	λ_3	1304.5	1311	1317.5	nm
Center Wavelength 4	λ_4	1324.5	1331	1337.5	nm
Transmit Power per Lane (Avg)	P_{TX_AVG}	-2.7	-	5.1	dBm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Total Launch Power (Avg)	T_{avg}	-	-	11.1	dBm
Outer Optical Modulation Amplitude (OMA _{outer}), per Lane ^{Fig 1}	P_{TX_OMA}	0.3 ¹	-	4.4	dBm
		-1.1 + TDECQ ²			
Transmitter and Dispersion PAM4 Eye Closure, per Lane	TDECQ	-	-	3.9	dB
Transmitter PAM4 Eye Closure, per Lane	TECQ	-	-	3.9	dB
TDECQ – TECQ	-	-	-	2.5	dB
Extinction Ratio	ER	3.5	-	-	dB
Transmitter Peak-Peak Power		-	-	5.2	dBm
Relative Intensity Noise (OMA)	RIN	-	-	-136	dB/Hz
Optical Return Loss Tolerance	ORL	-	-	15.6	dB
Transmitter OFF Output Power per Lane	P_{OFF}	-	-	-16	dBm

Note 1: For TDECQ <1.4 dB

Note 2: For 1.4 dB <= TDECQ <= 3.9 dB

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Optical Characteristics: 400G-LR4-10 Receiver

Parameter	Symbol	Min	Typ	Max	Unit
Receiver Wavelength 1	λ_1	1264.5	1271	1277.5	nm
Receiver Wavelength 2	λ_2	1284.5	1291	1297.5	nm
Receiver Wavelength 3	λ_3	1304.5	1311	1317.5	nm
Receiver Wavelength 4	λ_4	1324.5	1331	1337.5	nm
Damage Threshold per Lane (Avg)	P_D	6.1	-	-	dBm
Receive Power per Lane (Avg)	P_{RX_AVG}	-9	-	5.1	dBm
Receive Power (OMOuter) per Lane	R_{RX_OMA}	-	-	4.4	dBm
Receiver Sensitivity (OMOuter) per Lane ^{Fig 1}	SEN	-6.8 Max ³			dBm
		(-8.2 + TECQ) Max ⁴			dBm
Stressed Receiver Sensitivity (OMOuter)	SRS			-4.3 ⁵	dBm
LOS Assert	LOS_A	-30	-	10.3	dBm
LOS De-Assert	LOS_D	-	-	-9.8	dBm
LOS Hysteresis	LOS_H	0.5	-	-	dB

Note 3: For TECQ <1.4 dB, BER 2.4 x 10⁻⁴ Pre-FEC

Note 4: For 1.4 dB ≤ TECQ ≤ 3.9 dB, BER 2.4 x 10⁻⁴ Pre-FEC

Note 5: Test Conditions: Stressed Eye Closure (SECQ) @ 3.9dB, OMOuter of each aggressor lane -0.4 dBm

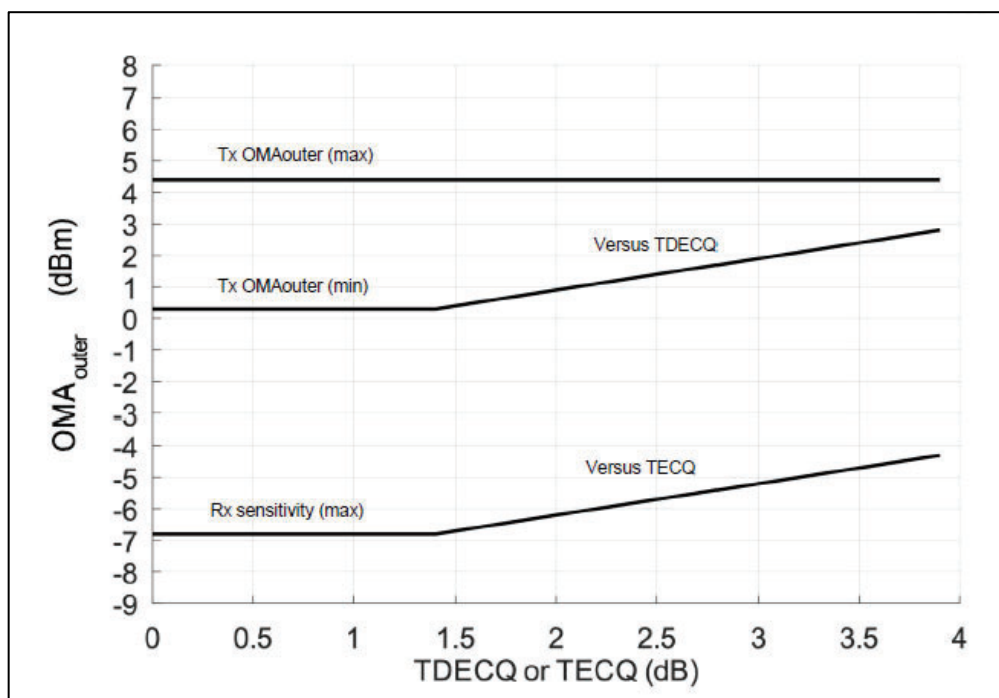


Figure 1: Transmitter OMOuter each lane versus TDECQ and receiver sensitivity (OMOuter) each lane versus TECQ for 400G-LR4-10

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Product Ordering Information

Part Number	Description
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