

PRE-QSFP28-LR1

QSFP28, PAM4 LR, 1310nm, 100G, 10km, SMF/LC



Product Features:

- Single Wavelength PAM4
- DFB Laser Driver
- PIN Receiver
- 1310nm
- SMF Transmission Medium
- LC/UPC
- Digital Optical Monitoring
- C-Temp Rated
- 100Gbps Maximum Data Rate
- <4W Power Consumption
- 4x25.78Gbps Electrical Interface
- CAUI-4/100GAUI-4 Compliant



Product Applications:

- Backhaul Networks
- Enterprise Networks
- 100GBASE-LR Ethernet
- 4x100G Breakout Networks

Standards

- 100G Lambda MSA Rev. 2.0
- IEEE 802.3-2018, 6
- IEEE 802.3CD
- SFF-8665/8679/8636
- RoHS10

General Specifications

Parameter	Min	Typical	Max	Unit
Storage Humidity	5	-	95	%
Storage Temperature	-40	-	85	°C
Case Operating Temperature (Commercial)	0	-	70	°C
Power Consumption	-	-	4.0	W
Power Supply Voltage	3.14	3.3	3.46	V
Transmission Distance	-	-	10	km
PAM4 Signaling Rate	-	-	53.125	GBd
Data Rate (Per Lane)	25.78125	-	26.5625	Gbps

Optical Characteristics: Transmitter

Parameter	Min	Typical	Max	Unit
Operating Wavelength	1304.5	-	1317.5	nm
Side-Mode Suppression Ratio (SMSR)	30	-	-	dB
Average Transmit Power ¹	-1.4	-	4.5	dBm
Transmit Power (OMA _{outer}) ²	0.7	-	4.7	dBm
Extinction Ratio	3.5	-	-	dB
Optical Return Loss Tolerance	-	-	15.6	dB
RIN _{15.6} OMA	-	-	-136	dB/Hz
Launch power in OMA _{outer} minus TDECQ (min) ER≥4.5dB ²	-	-0.7	-	dBm
Launch power in OMA _{outer} minus TDECQ (min) ER<4.5dB ²	-	-0.6	-	dBm
Transmitter and dispersion penalty Eye Closure for PAM4 (TDECQ)	-	-	3.4	dB
TDECQ – 10*log ₁₀ (C _{eq}) (max) ³	-	-	3.4	dB
Optical Return Loss Tolerance	-	-	15.6	dB
Transmitter Reflectance	-	-	-26	dB
Transmitter OFF Output Power	-	-	-15	dBm

¹ Average transmit power, each lane (min) is informative and not the primary indicator of signal strength.

² Even if the TDECQ < 1.4 dB for an extinction ratio of ≥ 4.5 dB or TDECQ < 1.3 dB for an extinction ratio of < 4.5 dB, the OMA_{outer} (min) must exceed this value.

³ C_{eq} is defined in IEEE Std 802.3-2018 clause 121.8.5.3 which accounts for reference equalizer noise enhancement.

Optical Characteristics: Receiver

Parameter	Min	Typical	Max	Unit
Receiver Wavelength	1304.5	-	1317.5	nm
Damage Threshold	5.5	-	-	dBm
Average Receive Power ¹	-7.7	-	4.5	dBm
Receive Power (OMA _{outer})	-	-	4.7	dBm
Receive Sensitivity (OMA _{outer}) ² (Max)	-6.1, SECQ-7.5 ^(See Figure 1)			dBm
Stressed Receive Sensitivity (OMA _{outer}) ³	-	-	-4.1	dBm
Receiver Reflectance	-	-	-26	dB

¹ Average receive power, each lane (min) is informative and not the primary indicator of signal strength.

² Receiver sensitivity (OMA_{outer}), (max) is informative and is defined for a transmitter with a value of SECQ up to 3.4dB.

³ Measured with conformance test signal at TP3 (see 100G Lambda MSA 100G-LR - “Technical Specification, Rev. 2.0 clause 3.11) for the BER specified in IEEE Std 802.3cd clause 140.1.1.

These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

- Stressed eye closure for PAM4 (SECQ) = 3.4dB
- SECQ – 10*log₁₀(Ceq) (max) = 3.4dB

Ceq is defined in IEEE Std 802.3-2018 clause 121.8.5.3 which accounts for reference equalizer noise enhancement.

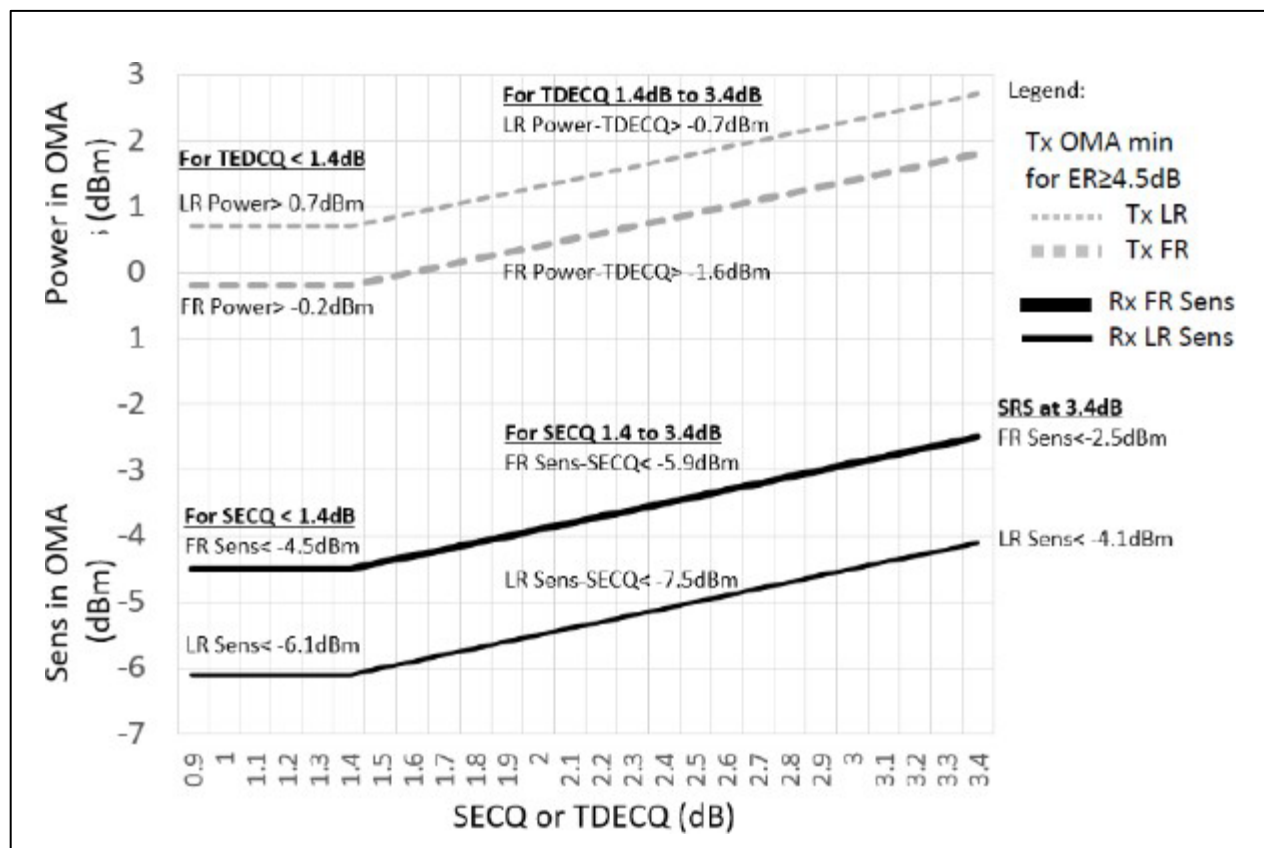


Figure 1– Receiver Sensitivity Mask

Product Ordering Information

Part Number	Description
PRE-QSFP28-LR1	QSFP28, PAM4 LR, 1310nm, 100G, 10km, SMF/LC, C-Temp