PRE-QSFP28-FR

QSFP28, FR, 1310nm, 100G, 2km, SMF, LC, DDM

Product Features:

- Single optical lane with optical data rate 106.25Gbps (PAM4)
- Up to 2km reach on Single Mode Fiber (SMF) with built-in FEC
- 4 x 25.78125Gb/s Electrical Interface
- Maximum power consumption 4.5W
- Duplex LC Connector
- Digital Diagnostic Monitoring

Applications:

- 100G Ethernet
- Supports 4x100G breakout mode
- Datacenter Enterprise Networking

Compliance:

- QSFP28 MSA
- 100 Lambda MSA 100G-FR specification
- IEEE 802.3cd
- OIF CEI-28G-VSR
- RoHS
- MIL-STD-883 (ESD)

General Product Description:

The PRE-QSFP28-FR optical transceiver supports 100 Gigabit Ethernet applications up to 2km on SMF with built-in FEC. The QSFP28 module offers a single transmit optical wavelength and a single receive optical wavelength.

The PRE-QSFP28-FR is MSA, RoHS and DDM compliant and designed to meet external operating conditions including temperature, humidity, and EMI interference.

Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Operating Case Temperature	T_{OP}	0	-	70	degC	
Power consumption	P_W	-	-	4.5	W	
Power Supply Current	I_{CC}	-	-	1.36	A	
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Electrical Data Rate, each Lane	-	25.78125 ± 100 ppm			GBd	
Pre-FEC Bit Error Ratio	$BER_{Pre-FEC}$	-	-	$2.4x10^{-4}$	-	
Post-FEC Bit Error Ratio	$BER_{Post-FEC}$	-	-	$1x10^{-12}$	-	1
Transmission Distance	TD		-	2	km	2

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Wavelength Range	λ	1304.5		1317.5	nm	
Data Rate	-	53.125 ± 100 ppm			GBd	PAM4
Side-Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Launch Power	P_{TX_AVG}	-2.4	-	4	dBm	1
Outer Optical Modulation Amplitude (OMA_{outer})	P_{TX_OMA}	-0.2	-	4.2	dBm	2
Launch Power in OMA_{outer} minus TDECQ, for ER ≥ 4.5 dB ER < 4.5 dB	-	 -1.6 -1.5	-	-	dBm	
Transmitter and Dispersion Eye Closure for PAM4	TDECQ	-	-	3.4	dB	
Extinction Ratio	ER	3.5	-	-	dB	
$RIN_{17.1}$ OMA	RIN	-	-	-136	dB/Hz	
Optical Return Loss Tolerance	TOL	-	-	17.1	dB	
Transmitter Reflectance	T_R	-	-	-26	dB	
Average Launch Power of OFF Transmitter	P_{OFF}	-	-	-15	dBm	
Receiver						
Wavelength Range	λ	1304.5		1317.5	nm	
Data Rate	-	53.125 ± 100 ppm			GBd	PAM4
Damage Threshold	TH_d	5.5			dBm	3
Average Receive power	P_{RX_AVG}	-6.4		4.5	dBm	4
Receive Power (OMA_{outer})	P_{RX_OMA}			4.7	dBm	
Receiver Sensitivity (OMA_{outer})	SEN			Eq. (1)	dBm	5
Stressed Receiver Sensitivity (OMA)	SRS			-2.5	dBm	6
Receiver Reflectance	R_R			-26	dB	
Stressed Receiver Sensitivity Test Conditions: (Note 7)						
Stressed eye closure for PAM4 (SECQ)			3.4		dB	
SECQ – $10*\log_{10}(C_{eq})$				3.4	dB	

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 OMA_{outer} (min) must exceed the minimum value specified here.*
3. *The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.*
4. *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.*
5. *Receiver sensitivity (OMA_{outer}), each lane (max) is informative and is defined for a transmitter with SECQ of up to 3.4 dB. It should meet Equation (1), which is illustrated in Figure 1.*

$$\text{Receiver Sensitivity per lane} = \max(-4.5, \text{SECQ} - 5.9)\ \text{dBm} \qquad (1)$$

Where SECQ is that of the transmitter used to measure the receiver sensitivity

6. *Measured with conformance test signal at receiver input for the BER of 2.4×10^{-4}*
7. *These test conditions are for measuring stressed receiver sensitivity. They are not characteristics of the receiver.*

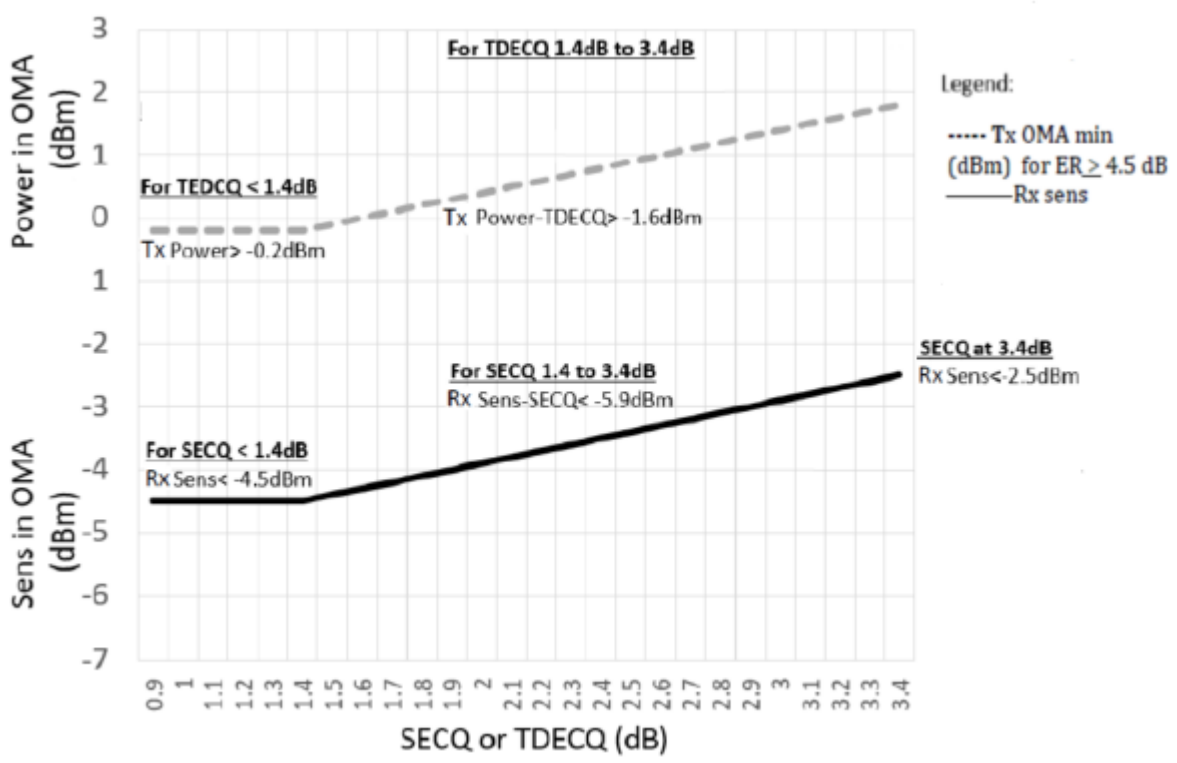

Figure 1Receiver Sensitivity Mask for 100G-FR

Product Ordering Information

Part Number	Description
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