

PRE-QSFP28-DR

QSFP28, DR, 1310nm, 100G, 500m, SMF, LC, DDM



Product Features:

- Single optical lane with optical data rate 106.25Gbps (PAM4)
- Up to 500m 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
- IEEE 802.3cd
- OIF CEI-28G-VSR
- RoHS
- MIL-STD-883 (ESD)

General Product Description:

The PRE-QSFP28-DR optical transceiver supports 100 Gigabit Ethernet applications up to 500m on SMF with built-in FEC. The QSFP28 module offers a single transmit optical wavelength and a single receive optical wavelength.

The PRE-QSFP28-DR 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	-	500	m	2

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Wavelength Range	λ	1304.5		1317.5	nm	
Data Rate	-	53.125 \pm 100 ppm			GBd	PAM4
Side-Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Launch Power	P_{TX_AVG}	-2.9	-	4	dBm	1
Outer Optical Modulation Amplitude (OMA _{outer})	P_{TX_OMA}	-0.8	-	4.2	dBm	2
Launch Power in OMA _{outer} minus TDECQ, for ER \geq 5 dB ER < 5 dB	-	-2.2 -1.9	-	-	dBm	
Transmitter and Dispersion Eye Closure for PAM4	TDECQ	-	-	3.4	dB	
Extinction Ratio	ER	3.5	-	-	dB	
RIN _{15.5} OMA	RIN	-	-	-136	dB/Hz	
Optical Return Loss Tolerance	TOL	-	-	15.5	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 \pm 100 ppm			GBd	PAM4
Damage Threshold	TH _d	5			dBm	3
Average Receive power	P_{RX_AVG}	-5.9		4	dBm	4
Receive Power (OMA _{outer})	P_{RX_OMA}			4.2	dBm	
Receiver Sensitivity (OMA _{outer})	SEN			Eq. (1)	dBm	5
Stressed Receiver Sensitivity (OMA)	SRS			-1.9	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.

$$\text{Receiver Sensitivity per lane} = \max(-3.9, \text{SECQ} - 5.3) \text{ dBm} \quad (1)$$

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.

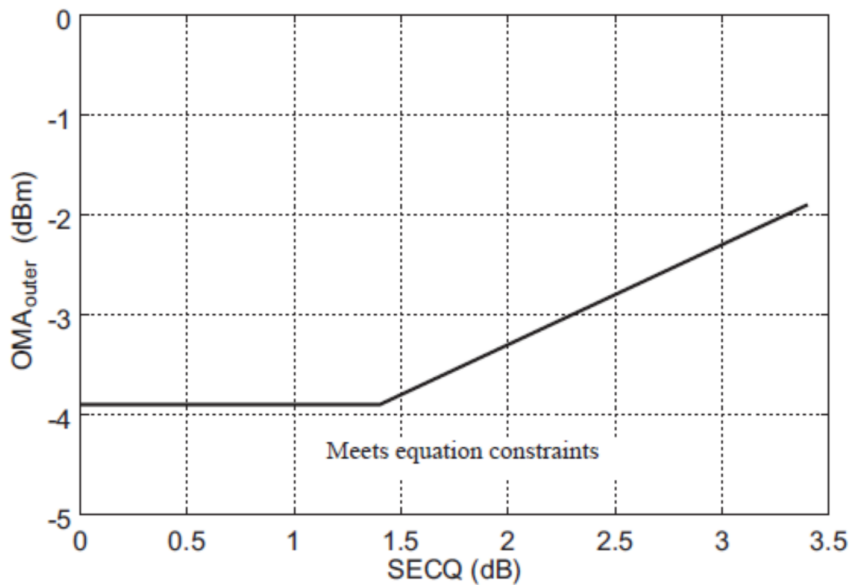


Figure 1 Receiver Sensitivity Mask for 100G-DR

Product Ordering Information

Part Number	Description
PRE-QSFP28-DR	QSFP28, DR, 1310nm, 100G, 500m, SMF, LC, DDM