SV-QSFP-800G-PDR8

(For Preliminary Only)

Starview QSFP-DD 800G DR8 module
distance up to 500m

Features

- QSFP-DD MSA compliant
- CMIS 4.0 Fully compliant
- Parallel 8 Optical Lanes
- 100G Lambda MSA 100G-DR Specification compliant
- Up to 500m transmission on single mode fiber (SMF) with FEC
- Operating case temperature: 0 to 70℃
- Electrical interface: compliant with 800GAUI-8 (8x106.25Gb/s) interface defined in IEEE 802.3ck
- Rate Date operation at 106.25Gbps (PAM4) per channel
- Maximum power consumption 16W

Applications

- 800G Ethernet
- Infiniband interconnects
- Datacenter Enterprise networking

Part number	Description
SV-QSFP-800G-PDR8	Starview QSFP-DD 800Gbps module 800G-DR8 aggregating 8x 100Gbs/s DR x 100Gbps 1310nm SM (MPO-16 APC) with Digital Diagnostic Monitoring (DDM), distance up to 500m.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	TS	-40	85	degC	
Operating Case Temperature	TOP	0	70	degC	
Power Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensation)	RH	0	85	%	

Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min	Typical	Max	Units	Notes
Operating Case Temperature	TOP	0		70	degC	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Data Rate, each Lane			53.125		GBd	PAM4
Data Rate Accuracy		-100		100	ppm	
Pre-FEC Bit Error Ratio				$2.4x10^{-4}$		
Post-FEC Bit Error Ratio				$1x10^{-12}$		1
Link Distance	D			500	m	2

Notes:

1. FEC provided by host system.
2. FEC required on host system to support maximum transmission distance.

Electrical Characteristics

Parameter	Test Point	Min	Typical	Max	Units	Notes
Power Consumption				16	W	
Supply Current	Icc			4.84	A	
Transmitter (each Lane)						
Signaling Rate, each Lane	TP1		53.125 ± 100 ppm		GBd	
DC Common-mode input Voltage	TP1	-0.3		2.8	V	
Single-ended input Voltage	TP1	-0.4		3.3	V	
AC Common-mode RMS input Voltage	TP1			17.5	mV	

Differential Peak-to-Peak input Voltage	TP1		870	mV
Eye Symmetry Mask Width(ESMW)	TP1	TBD		UI
Differential input Eye Height	TP1	15		mV
Differential input Vertical Eye Closure	TP1		9	dB
Common to Different Mode input Return Loss	TP1	IEEE802.3ck Equation 120G-1		
Effective input Return Loss	TP1	TBD		
Differential input Termination Mismatch	TP1		10	%
Input Transition time (20% to 80%)	TP1	TBD		ps
Receiver (each Lane)				
Signaling Rate, each lane	TP4	53.125 ± 100 ppm		GBd
Differential Peak-to-Peak Output Voltage	TP4		900	mV
AC Common Mode Output Voltage, RMS	TP4		17.5	mV
Differential Termination Mismatch	TP4		10	%
Near-end output ESMW	TP4	IEEE802.3ck 120E.4.2		UI
Differential Near-end output Eye Height	TP4	IEEE802.3ck 120E.4.2		mV
Far-end output ESMV	TP4	IEEE802.3ck 120E.4.2		UI
Differential Far-end output Eye Height	TP4	IEEE802.3ck 120E.3.3.2.1		mV
Far-end output Pre-Cursor ISI Ratio	TP4	IEEE802.3ck 120E.3.3.1.2		
Common-mode to Differential mode output Return Loss	TP4	IEEE802.3ck Equation 120G-1		dB
Effective output Return Loss	TP4	TBD		dB
Output Transition	TP4	TBD		ps

time (20% to 80%)					
DC Common-mode output Voltage	TP4	-350		2850	mV

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Center Wavelength	λc	1304.5	1310	1317.5	nm	
Transmitter						
Data Rate, each Lane			53.125 ± 100 ppm		GBd	
Modulation Format			PAM4			
Side-mode Suppression Ratio	SMSR	30			dB	
Average Launch Power, each Lane	PAVG	-2.9		4	dBm	1
Outer Optical Modulation Amplitude (OMA_{outer}), each Lane	POMA	-0.8		4.2	dBm	2
Launch Power in OMA_{outer} minus TDECQ), each Lane for ER ≥ 5dB for ER < 5dB		 -2.2 -1.9			dB	
Transmitter and Dispersion Eye Closure for PAM4, each Lane	TDECQ			3.4	dB	
TDECQ – $10*\log_{10}(C_{eq})$, each Lane				3.4	dB	3
Extinction Ratio	ER	3.5			dB	
$RIN_{21.4}OMA$	RIN			–136	dB/Hz	
Optical Return Loss Tolerance	TOL			21.4	dB	
Transmitter Reflectance	TR			-26	dB	
Transmitter Transition Time				17	ps	

Average Launch Power of OFF Transmitter, each Lane	Poff		-15	dBm	
Receiver					
Data Rate, each Lane		53.125 ± 100 ppm		GBd	
Modulation Format		PAM4			
Damage Threshold, each Lane	THd	5		dBm	4
Average Receive Power, each Lane		-5.9	4	dBm	5
Receive Power (OMA_{outer}), each Lane			4.2	dBm	
Receiver Sensitivity (OMA_{outer}), each Lane	SEN		Equation (1)	dBm	6
Stressed Receiver Sensitivity (OMA_{outer}), each Lane	SRS		-1.9	dBm	7
Receiver Reflectance	RR		-26	dB	
LOS Assert	LOSA	-15		dBm	
LOS De-assert	LOSD		-8.9	dBm	
LOS Hysteresis	LOSH	0.5		dB	
Stressed Conditions for Stress Receiver Sensitivity (Note 8)					
Stressed Eye Closure for PAM4 (SECQ), Lane under Test			3.4	dB	
SECQ – $10*\log_{10}(C_{eq})$, Lane under Test			3.4	dB	
OMA_{outer} of each Aggressor Lane			4.2	dBm	

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 < 1.4dB for an extinction ratio of ⩾ 5dB or TDECQ < 1.1dB for an extinction ratio of < 5dB, the OMAouter (min) must exceed the minimum value specified here.

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

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. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.

6. Receiver sensitivity (OMAouter), each lane (max) is informative and is defined for a transmitter with a value of SECQ up to 3.4 dB. It should meet Equation (1), which is illustrated in Figure 4.

$$RS = \max(-3.9, SECQ - 5.3)\ dBm$$

Where:

RS	is the receiver sensitivity, and
SECQ	is the SECQ of the transmitter used to measure the receiver sensitivity.

7.Measured with conformance test signal at TP3 for the BER equal to 2.4×10^{-4}.

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

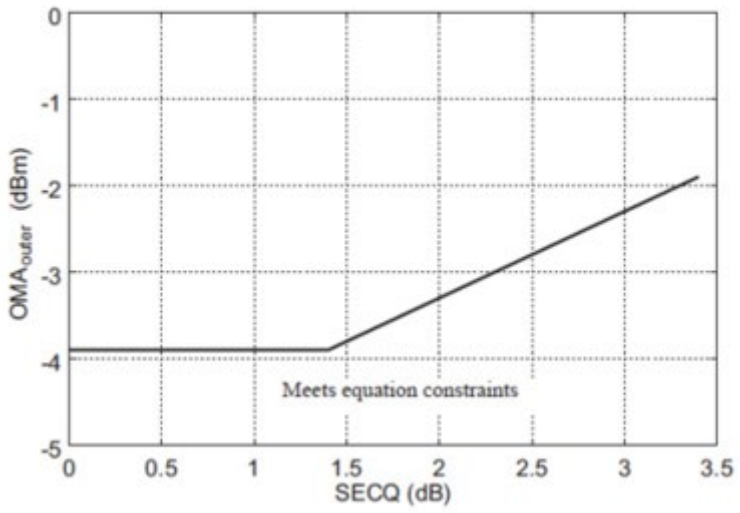

Illustration of Receiver Sensitivity Mask for 800G-DR8

Digital Diagnostic Functions

Parameter	Symbol	Min	Max	Units	Notes
Temperature Monitor Absolute Error	DMI_Temp	-3	3	degC	Over operating temperature range
Supply Voltage Monitor Absolute Error	DMI _VCC	-0.1	0.1	V	Over full operating range
Channel RX Power Monitor Absolute Error	DMI_RX_Ch	-2	2	dB	1

Channel Bias Current Monitor	DMI_Ibias_Ch	-10%	10%	mA	
Channel TX Power Monitor Absolute Error	DMI_TX_Ch	-2	2	dB	1

Notes:

1. Due to measurement accuracy of different single mode fibers, there could be an additional +/-1 dB fluctuation, or a +/- 3 dB total accuracy.