SV-QSFP-400G-PSR4.2

Features

- QSFP-DD MSA compliant
- 8x53.125Gb/s electrical interface (400GAUI-8)
- Up to 150m OM5 MMF transmission
- Operating case temperature: 0 to 70℃
- Single 3.3V power supply
- Maximum power consumption 12W
- MPO-12 optical connector
- RoHS-6 compliant

Features

- Data Center
- Infiniband HDR， EDR

Part number	Description
SV-QSFP-400G-PSR4.2	Starview QSFP56-DD 400Gbps Bi-Directional module, 400GBase aggregating 4 x 850nm - 910nm MM (MPO-12) with Digital Diagnostic Monitoring (DDM), distance up to 70m on 50/125um OM3 MM fiber, 150m on 50/125um OM5 MM fiber

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	%	
Damage Threshold, each Lane	THd	3.4		dBm	

Recommended Operating Conditions

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			26.5625		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 with OM3	D	0.5		70	m	2

Notes:

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

Electrical Specifications

Parameter	Test Point	Min	Typical	Max	Units	Notes
Power Consumption				12	W	
Supply Current	Icc			3.63	A	
Module Input (each Lane)						
Signaling Rate, each Lane	TP1		26.5625 ± 100 ppm		GBd	
Differential pk-pk voltage tolerance	TP1a	900			mVpp	1
Differential Termination	TP1			10	%	
Differential Input Return Loss	TP1	IEEE 802.3-2015 Equation (83E-5)			dB	

Differential to Common Mode Input Return Loss	TP1	IEEE 802.3-2015 Equation (83E-6)		dB	
Module Stressed Input Test	TP1a	See IEEE 802.3bs 120E.3.4.1			2
Single-ended Voltage Tolerance Range (Min)	TP1a	-0.4 to 3.3		V	
DC Common Mode Input Voltage	TP1	-350	2850	mV	3
Receiver (each Lane)					
Signaling Rate, each lane	TP4	26.5625 ± 100 ppm		GBd	
Differential Peak-to-Peak Output Voltage	TP4		900	mVpp	
AC Common Mode Output Voltage, RMS	TP4		17.5	mV	
Differential Termination Mismatch	TP4		10	%	
Differential Output Return Loss	TP4	IEEE 802.3-2015 Equation (83E-2)			
Common to Differential Mode Conversion Return Loss	TP4	IEEE 802.3-2015 Equation (83E-3)			
Transition Time, 20% to 80%	TP4	9.5		ps	
Near-end Eye Symmetry Mask Width (ESMW)	TP4	0.265		UI	
Near-end Eye Height, Differential	TP4	70		mV	
Far-end Eye Symmetry Mask Width (ESMW)	TP4	0.2		UI	
Far-end Eye Height, Differential	TP4	30		mV	
Far-end Pre-cursor ISI Ratio	TP4	-4.5	2.5	%	

Common Mode Output Voltage (Vcm)	TP4	-350	2850	mV	3

Notes:

1. With the exception to IEEE 802.3bs 120E.3.1.2 that the pattern is PRBS31Q or scrambled idle.
2. Meets BER specified in IEEE 802.3bs 120E.1.1.
3. DC common mode voltage generated by the host. Specification includes effects of ground offset voltage.

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter						
Center Wavelength	λ1	844		863	nm	
Center Wavelength	λ2	900		918	nm	
RMS Spectral Width	Δλrms			λ1:0.6 λ2: 0.65	nm	
Average Launch Power, each Lane	PAVG	-6.5		4	dBm	1
Optical Modulation Amplitude (OMA), each Lane	POMA	-4.5		3	dBm	2
Launch power in OMA minusTDECQ, each lane		-5.9			dBm	
Transmitter Dispersion Penalty ,each lane	TDECQ			4.5	dB	3
TDECQ – 10log10(Ceq), each lane				4.5		4
Extinction Ratio	ER	3.0			dB	
RIN12 OMA				-12.8	dB/Hz	
Optical Return Loss Tolerance	TOL	12			dB	
Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Encircled Flux			≥ 86% at 19 μm ≤ 30% at 4.5 μm			5
Receiver						
Signaling rate, each lane			26.5625± 100ppm		Gbps	

Center Wavelength Lane0	λ1	844	863	nm	
Center Wavelength Lane1	λ2	900	918	nm	
Damage Threshold, each Lane	THd	5		dBm	6
Average Receive Power, each Lane		-8.5	4	dBm	7
Receive Power (OMA), each Lane			3.0	dBm	
Receiver Sensitivity (OMA), each Lane	SEN		Max (-6.6,SECQ – SEN8) Refer to Figure 5	dBm	9
Receiver Reflectance	RR		-12	dB	
Stressed receiver sensitivity in OMA, each lane			-3.5	dBm	8

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 OMAouter (min) must exceed this value.
3. TDECq is specified and measured as per IEEE802.3.cm Clause 150.8.5.
4. Ceq is a coefficient defined in IEEE 802.3-2018 Clause 121.8.5.8, which accounts for the reference equalizer noise enhancement.
5. If measured into type A1a.2, or type A1a.3, or type A1a.4, 50 um fibers in accordance with IEC 61280-1-4.
6. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level on one lane. The receiver does not have to operate correctly at this input power.
7. 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.
8. Measured with a conformance test signal at TP3 (see IEEE 802.3 Cl 150) for the BER specified. They are not characteristics of the receiver. The conditions for measuring stressed receiver sensitivity are the following:

Stressed eye closure (SECQ), lane under test	4.5	dB
SECQ – 10log10(Ceq) lane under test (max)	4.5	dBm
OMAouter of each aggressor lane	3.0	dBm

These test conditions are for measuring stressed receiver sensitivity.

9. Receiver sensitivity is considered a normative requirement.
RX sensitivity is defined for a transmitter with a value of SECQ up to 4.5dB. For transmitter with SECQ different from 4.5dB, limit is reported as per figure 5

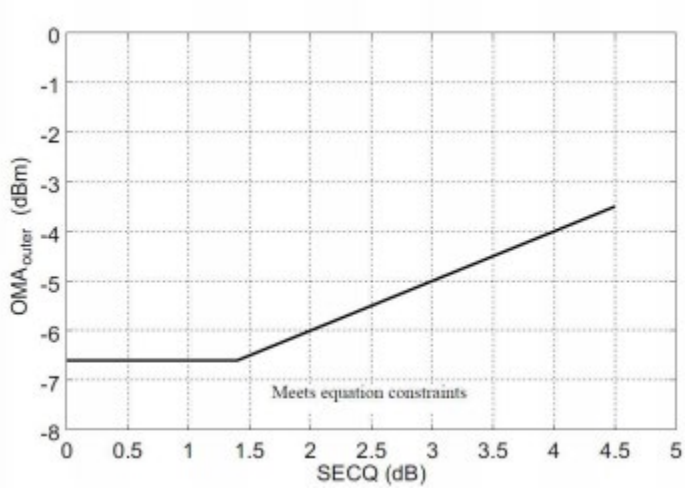

Figure 5. RX sensitivity