SV-QSFP-400G-PSR4

Features

- QSFP112 MSA Compliant
- CMIS compliance
- Optical Interface: IEEE 802.3db compliant
- Electrical Interface: IEEE 802.3ck 400GAUI-4
- Support 425Gb/s aggregate bit rate
- 4 Parallel optical lanes
- MPO-12 connector
- Up to 50m transmission over OM4 with KP4 FEC
- Operating case temperature 0 to 70℃
- Maximum power consumption 9.0W

Part number	Description
SV-QSFP-400G-PSR4	Starview QSFP-DD 400Gbps Flat Top module 400G-SR4 aggregating 4 x 100Gbps 850nm MM (MPO-12 APC) with Digital Diagnostic Monitoring (DDM), distance up to 50m on 50/125um MM OM4

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

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				$2.4x10^{-}$		
Post-FEC Bit Error Ratio				$1x10^{-12}$		1
Link Distance (OM4)	D1	2		50	m	2
Link Distance (OM3)	D2	2		30	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				9.0	W	
Supply Current	Icc			2.87	A	
Module Input (each Lane)						
Signaling Rate, each Lane	TP1		53.125 ± 100 ppm		GBd	
Differential pk-pk voltage tolerance	TP1a	750			mV	
Peak-to-peak AC common- mode voltage tolerance Low-frequency,VCMLF	TP1a	32			mV	
Full-band,VCMFB		80				

Differential-mode to common-mode return loss, RLcd	TP1	IEEE 802.3ck Equation (120G–2)		dB
Effective return loss, ERL	TP1	8.5		dB
Differential termination mismatch	TP1		10	%
Module stressed input tolerance	TP1a	IEEE802.3ck 120G.3.4.3		
Single-ended voltage tolerance range	TP1a	–0.4 to 3.3		V
DC common-mode voltage tolerance Upper limit Lower limit	TP1	 2.85 -0.35		 V V
Receiver (each Lane)				
Signaling Rate, each lane	TP4	53.125 ± 100 ppm		GBd
Peak-to-peak AC common- mode voltage Low-frequency, VCMLF Full-band, VCMFB	TP4		 32 80	mV
Differential peak-to-peak output voltage Short mode Long mode	TP4		 600 845	 mV mV
Eye height	TP4	15		mV
Vertical eye closure, VEC	TP4		12	dB
Common-mode to differential-mode return loss, RLdc	TP4	IEEE802.3ck Equation (120G–1)		dB
Effective return loss, ERL	TP4	8.5		dB
Differential termination mismatch	TP4		10	%
Transition time	TP4	8.5		ps
DC common-mode voltage tolerance Upper limit Lower limit	TP4	 2.85 -0.35		 V V

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter						
Data Rate, each Lane			53.125 ± 100 ppm		GBd	
Modulation Format			PAM4			
Wavelength	λ	842		948	nm	
RMS spectral width				0.65	nm	1
Average Launch Power, each Lane	PAVG	-4.6		4	dBm	
Outer Optical Modulation Amplitude (OMAouter), each Lane For max (TECQ, TDECQ) ≤1.8 dB For 1.8 < max (TECQ, TDECQ) ≤ 4.4 dB	POMA	-2.6 -4.4 + max(TECQ,TDECQ)		3.5	dBm	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each Lane	TDECQ			4.4	dB	
Transmitter eye closure for PAM4, each Lane	TECQ			4.4	dB	
Overshoot/undershoot				29	%	
Transmitter power excursion, each Lane				2.3	dBm	
Extinction Ratio	ER	2.5			dB	
Transition Time	Tt			17	ps	
Average Launch Power of OFF Transmitter, each Lane	P_{off}			-30	dBm	
RIN14OMA	RIN			-132	dB/Hz	
Optical Return Loss Tolerance	TOL			14	dB	
Encircled flux		≥ 86% at 19 μm ≤ 30% at 4.5 μm				2

Receiver					
Data Rate, each Lane		53.125 ± 100 ppm		GBd	
Modulation Format		PAM4			
Center wavelength	λ	842	948	Nm	
Damage Threshold, each Lane	THd	5		dBm	3
Average Receive Power, each Lane		-6.3	4	dBm	4
Receive Power (OMAouter), each Lane			3.5	dBm	
Receiver Reflectance	RR		-15	dB	
Receiver Sensitivity (OMAouter), each Lane For TECQ ≤1.8 dB For 1.8 < TECQ ≤ 4.4 dB	SEN		-4.4 -6.2 + TECQ	dBm	
Stressed Receiver Sensitivity (OMAouter), each Lane	SRS		-1.8	dBm	5
LOS Assert	LOSA	-15		dBm	
LOS De-assert	LOSD		-9.2	dBm	
LOS Hysteresis	LOSH	0.5		dB	
Conditions of Stress Receiver Sensitivity Test (Note 6)					
Stressed Eye Closure for PAM4 (SECQ), Lane under Test			4.4	dB	
OMAouter of each aggressor lane			3.5	dBm	

Notes:

1. RMS spectral width is the standard deviation of the spectrum.
2. If measured into type A1a.2 or type A1a.3, or A1a.4, 50 μm fiber, in accordance with IEC 61280-1-4.
3. 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.
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. Measured with conformance test signal at TP3 for the BER equal to 2.4x10-4.

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

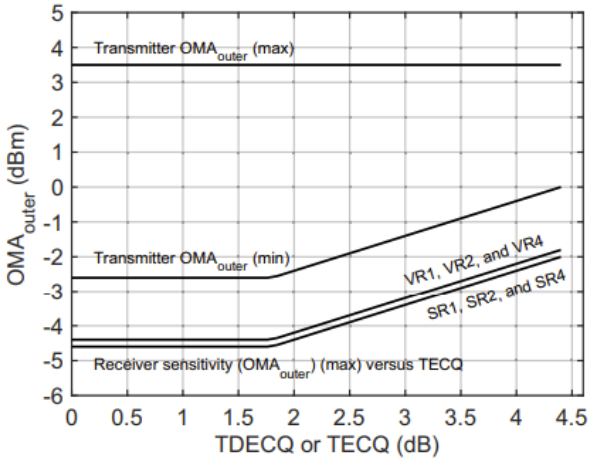

Illustration of Receiver Sensitivity Mask