

SV-QSFP-100G-LR2XXH

100GBase Bidi LWDM4 aggregating 4 x 25Gbps with 1273.55-1286.66nm TX/ 1295.56-1309.14nm RX (1295.56-1309.14nm TX/ 1273.55-1286.66nm RX) DDM, distance up to 20km



Features

- Hot pluggable QSFP28 MSA form factor
- Supports 103.1Gb/s aggregate bit rate
- Up to 20km reach for G.652 SMF with RS (528,514) FEC
- Single +3.3V power supply
- Extended case temperature range of -20 to 85°C
- Cooled 4x25Gb/s LAN WDM Blue or Red Side TOSA LAN WDM Red or Blue Side ROSA
- Maximum power consumption 5.5W
- Single LC receptacle
- Compliant with the QSFP28 and 4WDM-20 MSA
- Compatible with RoHS2.0
- DDM function

Applications

- Ethernet Links
- 100G 4WDM-20 applications with FEC

Part number	Description
SV-QSFP-100G-LR21H	Starview QSFP28 Single Fiber Bi-Directional module supporting 100Gbps 1273.55-1286.66nm TX/ 1295.56-1309.14nm RX single fiber LWDM4 SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 20km, Industrial temperature range
SV-QSFP-100G-LR22H	Starview QSFP28 Single Fiber Bi-Directional module supporting 100Gbps 1295.56-1309.14nm TX/ 1273.55-1286.66nm RX single fiber LWDM4 SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 20km, Industrial temperature range

Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Units
Storage Temperature	TS	-40		+85	degC
Storage Relative Humidity	RH	5		95	%
Power Supply Voltage	VCC	-0.3		+3.6	V
Case Temperature Range	Tc	-20		85	degC
Mean Receiver Damage Threshold Per Lane	P dag			+6.0	dBm
ESD (HBM)				1000	v

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units	Notes
Operating Case Temperature	Tc	-20		85	degC	
Relative Humidity	RH	0		90	%	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Total Power Dissipation	Pw			5.5	W	
Data rate (each line)			25.78125	-	Gb/s	

Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter Electrical Input from Host at TPIa						
Differential Voltage Pk-Pk				900	mV	
Common Mode Noise (RMS)				17.5	mV	
Eye Height		95			mV	
Eye Width		0.46			UI	
Differential Termination Mismatch				10	%	1
Transition Time		10			ps	
Common Mode Voltage		-0.3		2.8	V	

Receiver Electrical Output to Host at TP4						
Differential Voltage Pk-Pk				900	mV	
Common Mode Noise (RMS)				17.5	mV	
Eye Height	228				mV	
Eye Width	0.57				UI	
Differential Termination Mismatch				10	%	
Transition Time	9.5				ps	1
Vertical Eye Closure				5.5	dB	

Notes:

1. 20%~80%

Voltage Supply Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Steady State Supply Current	I _{cc}	-	-	1443.0	mA	
Sustained peak current	I _{SP}			1650	mA	
Instantaneous peak current	I _{IP}			2000		
Power Dissipation	P _w			5.5	W	
Low Power Dissipation	P _{low}			1.5	W	

3.3V LVTTTL Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Input High Voltage	V _{IH}	2.0	-	V _{cc} +0.3	V	
Input Low Voltage	V _{IL}	-0.3	-	0.8	V	
Input Leakage Current	I _{IN}	-10	-	+10	uA	
Output High Voltage (I _{OH} =100uA)	V _{OH}	V _{cc} -0.5	-	V _{cc} +0.3	V	
Output Low Voltage (I _{OL} =100uA)	V _{OL}	0		0.4	V	

3.3V LVCMOS Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Input High Voltage	V _{IH}	V _{cc} *0.7	-	V _{cc} +0.5	V	

Input Low Voltage	VIL	-0.3	-	Vcc*0.3	V
Output High Voltage (IOH =100uA)	VOH	Vcc-0.5	-	Vcc+0.3	V
Output Low Voltage (IOL =100uA)	VOL	0		0.4	V
I/O Pin Capacitance	CI			14	pF

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Transmitter						
Signaling Rate for Each Lane		-	25.78125		Gbps	
Signaling Speed Accuracy		-100			ppm	
Blue Side Four Lane Wavelength Range	$\lambda 1$	1272.55	1273.55	1274.54	nm	
	$\lambda 2$	1276.89	1277.89	1278.89	nm	
	$\lambda 3$	1281.25	1282.26	1283.27	nm	
	$\lambda 4$	1285.65	1286.66	1287.68	nm	
	$\lambda 5$	1294.53	1295.56	1296.59	nm	
	$\lambda 6$	1299.02	1300.05	1301.09	nm	
Red Side Four Lane Wavelength Range	$\lambda 7$	1303.54	1304.58	1305.63	nm	
	$\lambda 8$	1308.09	1309.14	1310.19	nm	
Side Mode Suppression Ratio (min)	SMSR	30				
Total Average Launch Power	Pt	-		10.5	dBm	
Average Launch Power for Each Lane	Pa	-4.3		+4.5	dBm	1
Optical Modulation Amplitude for Each Lane	OMA	-1.3		4.5	dBm	2
Launch power in OMA minus TDP, per Lane(min)		-2.3			dB	
Difference in launch power between any two lanes(OMA)(max)				5.0	dB	
Transmitter and Dispersion Penalty for Each Lanes	TDP			2.8	dB	4
Average Launch Power of Off	Poff	-		-30	dBm	
Extinction Ratio	EX	4			dB	
Optical Return Loss Tolerance				20	dB	
Transmitter Reflectance				-26	dB	3
Eye Diagram		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				5

Eye Mask Margin					≥10%		
Optical Path & Power Budget							
Power budget (for max TDP)					13	dB	
Operating distance	20					km	
Channel insertion loss	0				10.2	dB	
Maximum discrete reflectance					-26	dB	
Allocation for penalties (for max TDP)					2.8	dB	
Dispersion @Blue side Neg	-102				-70	ps/nm	
Dispersion @Blue side Pos	-53				-23	ps/nm	
Dispersion @Red side Neg	-53				-26	ps/nm	
Dispersion @Red side Pos	-10				19	ps/nm	
Receiver							
Receive Rate for Each Lane	-				25.78125	Gbps	
Signaling Speed Accuracy	-100					ppm	
Red Side Four Lane Wavelength Range	λ5	1294.53	1295.56	1296.59		nm	
	λ6	1299.02	1300.05	1301.09		nm	
	λ7	1303.54	1304.58	1305.63		nm	
	λ8	1308.09	1309.14	1310.19		nm	
Blue Side Four Lane Wavelength Range	λ1	1272.55	1273.55	1274.54		nm	
	λ2	1276.89	1277.89	1278.89		nm	
	λ3	1281.25	1282.26	1283.27		nm	
	λ4	1285.65	1286.66	1287.68		nm	
Overload Input Optical Power	Pmax	5.5				dBm	6
Average Receive Power for Each Lane	Pin	-14.5					7
Receive Power In OMA for Each Lane	PinOMA					dBm	
Receiver reflectance							
Receiver Sensitivity in OMA for Each Lane(100GbE) at BER= 5x10 ⁻⁵ BER	SOMA					dBm	8
Stressed Receiver Sensitivity in OMA for Each Lane						dBm	9

RX Los Assert level	The assert level occurs for the RX input power to a lane corresponding to an equivalent BER of 1E-2 to 1E-4	
Los Hysteresis	0.5	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 TDP<1dB, the OMA (min) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. TDP does not include a penalty for multi-path interference (MPI).
5. Eye mask hit ratio is 5E-5.
6. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
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. Receiver sensitivity (OMA), each lane (max) at 5×10^{-5} BER is a normative specification.
9. Measured with conformance test signal at TP3 (Refer to IEEE Std 802.3™-2015 Cl.88.8.10) for BER = 5×10^{-5}