

SV-QSFP-100G-CLR4L

100GBase aggregating 4 x duplex CWDM (1270/ 1290/ 1310/ 1330nm) wavelengths SM (LC) with DDM, distance up to 2km.



Features

- QSFP28 MSA compliant
- 4 CWDM lanes MUX/DEMUX design
- Supports 103.1Gb/s aggregate bit rate
- 100G CWDM4 MSA Technical Spec Rev1.1
- Up to 2km transmission on single mode fiber (SMF) with FEC
- Operating case temperature: 0 to 70oC
- 4x25G electrical interface (OIF CEI-28G-VSR)
- Maximum power consumption 3.5W
- LC duplex connector
- RoHS compliant

Applications

- Data Center Interconnect
- 100G Ethernet
- Infiniband QDR and DDR interconnects
- Enterprise networking

Part number	Description
SV-QSFP-100G-CLR4L	Starview QSFP28 100Gbps module 100GBase aggregating 4 x duplex CWDM (1270/ 1290/ 1310/ 1330nm) wavelengths SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 2km.supporting 100GE, Infiniband QDR and DDR

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T _s	-40	85		degC
Operating Case Temperature	T _{OP}	0	70		degC
Power Supply Voltage	V _{CC}	-0.5	3.6		V
Relative Humidity (non-condensation)	RH	0	85		%
Damage Threshold, each Lane	TH _d	3.5			dBm

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Case Temperature	T _{OP}	0		70	degC	
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Data Rate, each Lane			25.78125		Gb/s	
Data Rate Accuracy		-100		100	ppm	
Control Input Voltage High		2		V _{CC}	V	
Control Input Voltage Low		0		0.8	V	
Link Distance with G.652	D	0.002		2	km	

Electrical Characteristics

Parameter	Test Point	Min	Typical	Max	Units	Notes
Power Consumption				3.5	W	
Supply Current	I _{CC}			1.06	A	
Transmitter (each Lane)						
Overload Differential Voltage pk-pk	TP1a	900			mV	
Common Mode Voltage (V _{cm})	TP1	-350		2850	mV	1
Differential Termination Resistance Mismatch	TP1			10	%	At 1MHz
Differential Return Loss (SDD11)	TP1			See CEI- 28G-VSR Equation 13-19	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC11, SCD11)	TP1			See CEI- 28G-VSR Equation 13-20	dB	

Stressed Input Test TP1a See CEI-
28G-VSR
Section
13.3.11.2.1

Receiver (each Lane)					
Differential Voltage, pk-pk	TP4		900	mV	
Common Mode Voltage (Vcm)	TP4	-350	2850	mV	1
Common Mode Noise, RMS	TP4		17.5	mV	
Differential Termination Resistance Mismatch	TP4		10	%	At 1MHz
Differential Return Loss (SDD22)	TP4		See CEI- 28G-VSR Equation 13-19	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC22, SCD22)	TP4		See CEI- 28G-VSR Equation 13-21	dB	
Common Mode Return Loss (SCC22)	TP4		-2	dB	2
Transition Time, 20 to 80%	TP4	9.5		ps	
Vertical Eye Closure (VEC)	TP4		5.5	dB	
Eye Width at 10 ⁻¹⁵ probability (EW15)	TP4	0.57		UI	
Eye Height at 10 ⁻¹⁵ probability (EH15)	TP4	228		mV	

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.
2. From 250MHz to 30GHz.

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Units	Notes
Wavelength Assignment	L0	1264.5	1271	1277.5	nm	
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	

Transmitter

Side Mode Suppression Ratio	SMSR	30			dB	
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Total Average Launch Power	P_T		8.5	dBm	
Average Launch Power, each Lane	P_{AVG}	-6.5	2.5	dBm	
Optical Modulation Amplitude (OMA), each Lane	P_{OMA}	-4.0	2.5	dBm	1
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane		-5.0		dBm	
TDP, each Lane	TDP		3.0	dB	
Extinction Ratio	ER	3.5		dB	
Optical Return Loss Tolerance	TOL		20	dB	
Transmitter Reflectance	R_T		-12	dB	
Average Launch Power OFF Transmitter, each Lane	P_{off}		-30	dBm	
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}			2
Receiver					
Damage Threshold, each Lane	TH_d	3.5		dBm	3
Average Receive Power, each Lane		-11.5	2.5	dBm	
Receive Power (OMA), each Lane			2.5	dBm	
Receiver Sensitivity (OMA), each Lane	SEN		-10	dBm	for BER = 5×10^{-5}
Stressed Receiver Sensitivity (OMA), each Lane			-7.3	dBm	4
Receiver Reflectance	R_R		-26	dB	
LOS Assert	LOSA	-30		dBm	
LOS Deassert	LOSD		-15	dBm	
LOS Hysteresis	LOSH	0.5		dB	
Receiver Electrical 3 dB upper Cutoff			31	GHz	

Frequency, each Lane

Conditions of Stress Receiver Sensitivity Test (Note 5)		
Vertical Eye Closure Penalty, each Lane	1.9	dB
Stressed Eye J2 Jitter, each Lane	0.33	UI
Stressed Eye J4 Jitter, each Lane	0.48	UI
SRS eye mask definition { X1, X2, X3, Y1, Y2, Y3}	{0.39, 0.5, 0.5, 0.39, 0.39, 0.4}	

Notes:

1. Even if the TDP < 1.0 dB, the OMA min must exceed the minimum value specified here.
2. Hit ratio 5×10^{-5} .
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. Measured with conformance test signal for BER = 5×10^{-5} .
5. Vertical eye closure penalty, stressed eye J2 jitter, stressed eye J4 jitter, and SRS eye mask definition are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Digital Diagnostics Functions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
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

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