SV-QSFP-40G-PLR4L

40GBase aggregating 4 x duplex CWDM Lite(1270/ 1290/ 1310/ 1330nm) wavelengths Parallel SM (MPO-12) with DDM, distance up to 1.4km

Features

- 4 Parallel lanes design
- Up to 11.2Gb/s data rate per channel
- Aggregate Bandwidth of up to 44.0G
- QSFP+ MSA compliant
- Up to 1.4km transmission on single mode fiber (SMF)
- Maximum power consumption 3.5W
- Single +3.3V power supply
- Operating case temperature: 0~70°C
- RoHS-6 compliant

Applications

- 40G Ethernet
- Infiniband QDR, DDR and SDR
- Datacenter and Enterprise networking

Ordering Information

Part number	Description
SV-QSFP-40G-PLR4L	Starview QSFP+ 41.25Gbps module 40GBase aggregating 4 x duplex CWDM Lite(1270/ 1290/ 1310/ 1330nm) wavelengths Parallel SM (MPO-12) with Digital Diagnostic Monitoring (DDM), distance up to 1.4km

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	T_S	-40		85	°C
Operating Case Temperature	T_{OP}	0		70	°C
Power Supply Voltage	V_{CC}	-0.5		3.6	V
Relative Humidity (non-condensation)	RH	0		85	%
Damage Threshold, each Lane	TH_d	3.3			dBm

Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	T_{OP}	0		70	°C
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Data Rate, each Lane			10.3125	11.2	Gb/s
Control Input Voltage High		2		Vcc	V
Control Input Voltage Low		0		0.8	V
Link Distance with G652	D			1.4	km

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Power Consumption				3.5	W	
Supply Current	Icc			1.1	A	
Transceiver Power-on Initialization Time				2000	ms	1
Transmitter(each lane)						
Single-ended Input Voltage Tolerance (Note 2)		-0.3		4.0	V	Referred to TP1 signal common
AC Common Mode Input Voltage Tolerance (RMS)		15			mV	
Differential Input Voltage Swing Threshold		50			mVpp	LOSA Threshold
Differential Input Voltage Swing	Vin,pp	190		700	mVpp	
Differential Input Impedance	Zin	90	100	110	Ω	
Differential Input Return Loss		See IEEE 802.3ba 86A.4.11			dB	10MHz-11.1GHz
J2 Jitter Tolerance	Jt2	0.17			UI	
J9 Jitter Tolerance	Jt9	0.29			UI	
Data Dependent Pulse Width Shrinkage (DDPWS) Tolerance		0.07			UI	

Eye Mask Coordinates {X1, X2 Y1, Y2}		0.11, 0.31 95, 350			UI mV	Hit Ratio = $5x10^{-5}$
Receiver(each lane)						
Single-ended Output Voltage		-0.3		4.0	V	Referred to signal common
AC Common Mode Output Voltage (RMS)				7.5	mV	
Differential Output Voltage Swing	Vout,pp	300		850	mVpp	
Differential Output Impedance	Zout	90	100	110	ohm	
Termination Mismatch at 1MHz				5	%	
Differential Output Return Loss		See IEEE 802.3ba 86A.4.2.1			dB	10MHz-11.1GHz
Common Mode Output Return Loss		See IEEE 802.3ba 86A.4.2.2			dB	10MHz-11.1GHz
Output Transition Time		28			ps	20% to 80%
J2 Jitter Output	Jo2			0.42	UI	
J9 Jitter Output	Jo9			0.65	UI	
Eye Mask Coordinates {X1, X2 Y1, Y2}		0.29, 0.5 150, 425			UI mV	Hit Ratio = $5x10^{-5}$

Note(1): Power-on initialization time is the time from when the power supply voltages reach and remain above the minimum recommended operating supply voltages to the time when the module is fully functional.

Note(2): The single ended input voltage tolerance is the allowable range of the instantaneous input signals

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Center Wavelength	λ_C	1260	1310	1355	nm	
RMS Spectral Width	$\Delta\lambda_{rms}$			3.5	nm	
Total Average Launch Power	PT			7.5	dBm	
Average Launch Power, each Lane	P_{AVG}	-5.5		1.5	dBm	1
Optical Modulation Amplitude (OMA), each Lane	P_{OMA}	-4.5		2.5	dBm	2
Difference in Launch Power between any Two Lanes (OMA)	Ptx,diff			6.5	dB	
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane	OMA-TDP	-5.5			dBm	
TDP, each Lane	TDP			3.2	dB	
Extinction Ratio	ER	3.5			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Optical Return Loss Tolerance	TOL			12	dB	
Transmitter Reflectance	R_T			-12	dB	

Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				
Receiver						
Center Wavelength	λ_C	1260	1310	1355	nm	
Damage Threshold, each Lane	TH_d	3.3			dBm	3
Average Power at Receiver Input, each Lane		-11.5		1.5	dBm	
Receiver Reflectance	R_R			-12	dB	
Receive Power (OMA), each Lane				2.5	dBm	
Receiver Sensitivity in OMA, each Lane	SEN			-11.5	dBm	Infor-mative
Difference in Receive Power between any Two Lanes (OMA)	Prx,diff			7.5	dB	
LOS Assert	LOSA	-30			dBm	
LOS Deassert	LOSD			-15	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	Fc			12.3	GHz	

Note(1): The maximum transmitter average optical power of 1.5 dBm is well within the guardband of receiver overload specifications of commercially available 10GBASE-LR SFP+ transceivers offered by Starview and other vendors.

Note(2): Even if the TDP < 1 dB, the OMA min must exceed the minimum value specified here.

Note(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.

Digital Diagnostic Functions

Parameter	Symbol	Min.	Max.	Unit	Notes
Temperature monitor absolute error	DMI_Temp	-3	3	degC	Over operating temp
Supply voltage monitor absolute error	DMI _VCC	-0.1	0.1	V	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	Ch1~Ch4
Channel TX power monitor absolute error	DMI_TX_Ch	-2	2	dB	1

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