

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		V _{CC}	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	I _{CC}			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			mV _{pp}	LOSA Threshold
Differential Input Voltage Swing	V _{in,pp}	190		700	mV _{pp}	
Differential Input Impedance	Z _{in}	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			UI	Hit Ratio = 5x10 ⁻⁵
		95, 350			mV	

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	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	P _{off}			-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.