

# SV-QSFP-40G-LR4F

40GBase aggregating 4 x 10Gbps duplex CWDM (1270/ 1290/ 1310/ 1330nm) SM (LC) with DDM, distance up to 10km, supporting 40GE and OTU-3



## Features

- Compliant to the IEEE 802.3ba(40GBASE-LR4)
- Compliant to the QSFP+ MSA SFF-8436 Specification
- Up to 10km over SMF
- DFBs and PIN monitor photodiodes array for transmitter section
- PIN detectors and TIAs array for receiver section
- Four 10Gbps CWDM channels in the 1300nm band
- I2C interface with integrated Digital Diagnostic Monitoring
- Utilizes two standard LC optical connector
- Operating Case Temperature: 0~70°C

## Applications

- 40GBASE-LR4 Ethernet links
- Infiniband QDR and DDR interconnects Client-side
- 40G Telecom connections
- OTN OTU3

## Ordering Information

Part number	Description
<b>SV-QSFP-40G-LR4F</b>	Starview QSFP+ 40Gbps module 40GBase aggregating 4 x 10Gbps duplex CWDM (1270/ 1290/ 1310/ 1330nm) SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 10km, dual rates supporting 40GE and OTU-3

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	TC	0		70	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			1100	mA
Power Dissipation	PD			3.5	W
Aggregate Bit Rate	BRAVE		41.25(40GE) 43.018(OTU3)		Gbps
Lane Bit Rate	BRLANE		10.3125(40GE) 10.7546(OTU3)		Gbps

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter						
Single ended inputvoltage tolerance		-0.3		4	V	Referred to TP1 signal common
Differential Input amplitude		150		1000	mvp-p	
AC common mode input voltage tolerance		15			mV	RMS
Input Impedance (Differential)	Zin	85	100	115	ohms	Rin > 100 kohms @ DC
TX Disable	Disable	VIH	2	Vcc+0.3	V	
	Enable	VIL	0	0.8		
TX FAULT	Fault	VOH	2.4	Vcc+0.3	V	
	Normal	VOL	0	0.8		
Receiver						
Single ended output voltage		-0.3		4	V	Referred to signal common
Differential output amplitude		290		1000	mvp-p	
AC common mode voltage				7.5	mV	RMS

Termination mismatch at 1MHz				5	%
Output Impedance (Differential)	Zout	85	100	115	ohms
Output Rise/Fall Time	tr/tf	30			ps 10%~90%
RX_LOS	LOS	VOH	2.4	Vcc+0.3	V
	Normal	VOL	0	0.8	V

## Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
SMF	L	-	10	-	km
Aggregate Bit Rate	BRAVE	-	41.25	-	Gbps
Per Lane Bit Rate	BRLANE	-	10.3125	-	Gbps
<b>Transmitter</b>					
Channels wavelength	$\lambda_C$		1264.5	1271	1277.5
			1284.5	1291	1297.5
			1304.5	1311	1317.5
			1324.5	1331	1337.5
					nm
-20dB spectral width	$\Delta\lambda$	-	-	1	nm
Average Launch Power, Each Lane*(note3)	Pout/lane	-7	-	2.3	dBm
Transmit OMA, per Lane	TX_OMA/lane	-4	-	3.5	dBm
Extinction Ratio	Er	3.5	-	-	dB
Output Optical Eye*(note4)	IEEE 802.3ba-2010 Compliant				
<b>Receiver</b>					
Channels wavelength	$\lambda_C$		1264.5	1271	1277.5
			1284.5	1291	1297.5
			1304.5	1311	1317.5
			1324.5	1331	1337.5
					nm
Damage Threshold		5.5	-	-	dBm
Receiver sensitivity in OMA, each lane	Pmins	-	-	-11.5	dBm
Maximum Receive Power, each lane	Pmax	2.3	-	-	dBm
Receiver reflectance	Rr	-	-	-26	dB
LOS De-Assert	LOSD			-11.5	dBm
LOS Assert	LOSA	-24			dBm
LOS Hysteresis		0.5			dB

Note3: Output is coupled into a 9/125 $\mu$ m Single-Mode fiber.

Note4: Filtered, measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps