

# SV-XFP-10GER4D##

9.95Gbps to 11.1Gbps, DWDM SM (LC), distance up to 40km



## Features

- Hot-pluggable XFP footprint
- Supports 9.95Gb/s to 11.3Gb/s bit rates
- Supports Lineside and XFI loopback
- RoHS-6 Compliant (lead-free)
- Power dissipation <3.5W
- Case temperature range:0°C to 70°C
- Maximum link length of 40km
- Cooled DWDM EML and PIN Receiver
- Full Duplex LC connector
- No Reference Clock required
- Built-in digital diagnostic functions
- Standard bail release mechanism

## Applications

- 10GBASE-ER/EW 10G Ethernet
- 40KM 10G Fiber Channel
- SONET OC-192 &SDH STM 64

## Ordering Information

Part number	Description	TX Power (dBm)	RX Sens. (dBm)	Fiber Budget (dB)	Distance (km)	DDM
<b>SV-XFP-10GER4D##</b>	Starview XFP module with Digital Diagnostic Monitoring (DDM), Data rate from 9.95Gbps to 11.1Gbps supporting OC-192/ STM-64/ 10G LAN/ 10G FC and OC192 with FEC DWDM, SM (LC) with 100GHz spacing, ####nm SM (LC), distance up to 40km, where ## denotes *[see DWDM Wavelength Guide]	0 to 4	-16.5 to 0.5	16.5	40	YES

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage 1	Vcc3	-0.5		4.0	V
Maximum Supply Voltage 2	Vcc5	-0.5		6.0	V
Storage Temperature	TS	-40		85	°C
Case Operating Temperature	Tcase	0		70	°C

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Average Optical Power	Pf	0		4	dBm	
Optical Wavelength	$\lambda_c$	$\lambda_c - 0.1$		$\lambda_c + 0.1$	nm	
Center Wavelength Spacing			100		GHz	2
Side mode Suppression ratio	SMSR	30			dB	
Optical Extinction Ratio	ER	8.2			dB	
Transmitter and Dispersion Penalty	TDP			2	dB	
Average Launch power of OFF transmitter	POFF			-30	dBm	
Relative Intensity Noise	RIN			-130	dB/Hz	
Receiver						
Receiver Sensitivity	Psen			-16.5	dBm	1
Input Saturation Power (Overload)	Psat	+0.5			dBm	
Wavelength Range	$\lambda_c$	1260		1600	nm	
Receiver Reflectance	Rrx			-27	dB	
LOS De-Assert	LOSD			-22	dBm	
LOS Assert	LOSA	-28			dBm	
LOS Hysteresis		0.5			dB	

Note(1): Measured with BER <math>10^{-12}</math> @ 10.3Gbps,  $2^{31} - 1$  PRBS.

Note(2): Corresponds to approximately 0.8 nm.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Main Supply Voltage	Vcc5	4.75		5.25	V	
Supply Voltage #2	Vcc3	3.13		3.45	V	
Supply Current – Vcc5 supply	Icc5			320	mA	
Supply Current – Vcc3 supply	Icc3			450	mA	
Module total power	P			3.5	W	1
Transmitter						
Input differential impedance	Rin		100		$\Omega$	2
Differential data input swing	Vin,pp	120		820	mV	
Transmit Disable Voltage	VD	2.0		Vcc	V	3
Transmit Enable Voltage	VEN	GND		GND+ 0.8	V	
Transmit Disable Assert Time				10	us	

Receiver						
Differential data output swing	Vout,pp	340	650	850	mV	4
Data output rise time	tr			38	ps	5
Data output fall time	tf			38	ps	5
LOS Fault	VLOS fault	Vcc-0.5		VccHOST	V	6
LOS Normal	VLOS norm	GND		GND+0.5	V	6
Power Supply Rejection	PSR			See Note 6 below		7

Note(1):Maximum total power value is specified across the full temperature and voltage range.

Note(2):After internal AC coupling.

Note(3):Or open circuit.

Note(4):Into 100 ohms differential termination.

Note(5):These are unfiltered 20-80% values

Note(6):Loss Of Signal is open collector to be pulled up with a 4.7kΩ – 10kΩ resistor to 3.15 – 3.6V.

Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Note(7):Per Section 2.7.1. in the XFP MSA Specification<sup>1</sup>.

## General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Bit Rate	BR	9.95		11.3	Gb/s	1
Bit Error Ratio	BER			10 <sup>-12</sup>		2
Max. Supported Link Length	LMAX			40	km	1

Note(1): 10GBASE-ER/EW.

Note(2): Tested with 10.3Gbps, 2<sup>31</sup> – 1 PRBS

## DWDM Guide

Channel	Wavelength(nm)	Frequency(THZ)	Channel	Wavelength(nm)	Frequency(THZ)
17	191.7	1563.86	40	194.0	1545.32
18	191.8	1563.05	41	194.1	1544.53
19	191.9	1562.23	42	194.2	1543.73
20	192.0	1561.42	43	194.3	1542.94
21	192.1	1560.61	44	194.4	1542.14
22	192.2	1559.79	45	194.5	1541.35
23	192.3	1558.98	46	194.6	1540.56
24	192.4	1558.17	47	194.7	1539.77
25	192.5	1557.36	48	194.8	1538.98
26	192.6	1556.55	49	194.9	1538.19
27	192.7	1555.75	50	195.0	1537.40
28	192.8	1554.94	51	195.1	1536.61

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29	192.9	1554.13	52	195.2	1535.82
30	193.0	1553.33	53	195.3	1535.04
31	193.1	1552.52	54	195.4	1534.25
32	193.2	1551.72	55	195.5	1533.47
33	193.3	1550.92	56	195.6	1532.68
34	193.4	1550.12	57	195.7	1531.90
35	193.5	1549.32	58	195.8	1531.12
36	193.6	1548.51	59	195.9	1530.33
37	193.7	1547.72	60	196.0	1529.55
38	193.8	1546.92	61	196.1	1528.77
39	193.9	1546.12			