

SV-CFP4-100G-LR4

100GBase aggregating 4 x duplex LWDM (1295.6 nm, 1300.1 nm, 1304.6 nm, and 1309.1nm) wavelengths SM (LC) with DDM, distance up to 10km supporting 100GE



Features

- Hot pluggable CFP4 MSA form factor
- Compliant to IEEE 802.3ba 100GBASE-LR4 and CFP-MSA-CFP4-HW-Specification
- Supports 103.1Gb/s aggregate bit rate
- Up to 10km reach for G.652 SMF
- Single +3.3V power supply
- Operating case temperature: 0~70°C
- Transmitter: cooled 4x25Gb/s LAN WDM EML TOSA (1295.56, 1300.05, 1304.58, 1309.14nm)
- Receiver: 4x25Gb/s PIN ROSA
- 4x25G electrical interface (OIF CEI-28G-VSR)
- MDIO management interface with digital diagnostic monitoring
- Power consumption less than 5.0W
- Duplex LC receptacle

Applications

- 100GBASE-LR4 Ethernet

Ordering Information

Part number	Description
SV-CFP4-100G-LR4	Starview CFP4 100Gbps module 100GBase aggregating 4 x duplex LWDM (1295.6 nm, 1300.1 nm, 1304.6 nm, and 1309.1nm) wavelengths SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 10km supporting 100GE

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T _s	-40		85	°C	
Relative Humidity (non-condensation)	RH			85	%	
Operating Case Temperature	T _{OP}	0		70	°C	
Supply Voltage	V _{CC}	-0.5		3.6	V	
Voltage on LVTTTL Input	V _{ilvttl}	-0.5		V _{CC} +0.3	V	
LVTTTL Output Current	I _{olvttl}			15	mA	
Voltage on Open Collector Output	V _{OCO}	0		6	V	
Damage Threshold, each Lane	TH _d	5.5			dBm	1

Note(1): PIN receiver

Recommended Operating Conditions and Supply Requirements

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Case Temperature	T _{OP}	0		70	°C	
Power Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Data Rate, each Lane		25.78125 ± 100 ppm			Gbps	
Control Input Voltage High		2		V _{CC}	V	
Control Input Voltage Low		0		0.8	V	
Power Supply Noise	V _{rip}			2	%	DC-1MHz
				3	%	1-10MHz
Link Distance with G.652	D			10	km	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Power Consumption				5	W	
Supply Current	I _{CC}			1.51	A	
Low Power Mode Power Dissipation				2	W	
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	

Note(1): Vcm is generated by the host. Specification includes effects of ground offset voltage.

Note(2): From 250MHz to 30GHz.

Optical Characteristics

CFP4 100GBASE-LR4						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Lane Wavelength	L0	1294.53	1295.56	1296.59	nm	
	L1	1299.02	1300.05	1301.09	nm	
	L2	1303.54	1304.58	1305.63	nm	
	L3	1308.09	1309.14	1310.19	nm	
Transmitter						
SMSR	SMSR	30			dB	
Total Average Launch Power	P _T			10.5	dBm	
Average Launch Power, each Lane	P _{AVG}	-4.3		4.5	dBm	
OMA, each Lane	P _{OMA}	-1.3		4.5	dBm	1
Difference in Launch Power between any Two Lanes (OMA)	P _{tx,diff}			5	dB	
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane		-2.3			dBm	
TDP, each Lane	TDP			2.2	dB	
Extinction Ratio	ER	4			dB	
RIN _{20OMA}	RIN			-130	dB/Hz	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter Reflectance	R _T			-12	dB	
Average Launch Power OFF Transmitter, each Lane	P _{off}			-30	dBm	
Eye Mask{X1, X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}				2

Receiver						
Damage Threshold, each Lane	TH _d	5.5				dBm
Total Average Receive Power				10.5		dBm
Average Receive Power, each Lane		-10.6		4.5		dBm
Receive Power (OMA), each Lane				4.5		dBm
Receiver Sensitivity (OMA), each Lane	SEN			-8.6		dBm
Stressed Receiver Sensitivity (OMA), each Lane				-6.8		dBm
Difference in Receive Power between any Two Lanes (OMA)	Prx,diff			5.5		dB
LOS Assert	LOSA	-30				dBm
LOS Deassert	LOSD			-13		dBm
LOS Hysteresis	LOSH	0.5				dB
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	F _c			31		GHz
Conditions of Stress Receiver Sensitivity Test (Note 5)						
Vertical Eye Closure Penalty, each Lane				1.8		dB
Stressed Eye J2 Jitter, each Lane				0.3		UI
Stressed Eye J9 Jitter, each Lane				0.47		UI

Note(1): Hit ratio 5x10⁻⁵. Even if TDP < 1 dB, the OMA min must exceed the minimum value specified here.

Note(2): Hit ratio 5x10⁻⁵.

Note(3): Measured with conformance test signal at receiver input for BER = 1x10⁻¹².

Note(4): Vertical eye closure penalty, stressed eye J2 jitter, and stressed eye J9 jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Digital Diagnostic Functions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Temperature monitor absolute error	DMI_Temp	-3		3	°C	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	Ch1~Ch4
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