NoviConnect™ 514 40G QSFP+ ER Transceiver

NoviConnect 514. This Industry Standard 40GBase-ER4 QSFP+ Transceiver offers up to 11.2Gbps data rate per wavelength, with a reach of up to 40km transmission on SMF, is certified for optimal performance with NoviFlow switching products, and is fully compliant with MSA (Multi-Source Agreement) standards. All NoviConnect products from NoviFlow are 100% functionally tested to ensure trouble-free installation and operation when used with NoviFlow's NoviSwitch network products.

NoviConnect Transceivers are factory programmed with specific configuration data required for seamless networking compliance and for optimal network performance when used with NoviFlow switching products. These transceivers can be mixed and connected to devices with MSA industry standard compliant transceivers, for outstanding network performance.

NoviFlow Inc.™ aims to change the traditional approach to networking by making switching smarter. The company was founded to deliver upon the promise of SDN. Our SDN data plane products combine the benefits of virtualization and programmability with network processors that can handle complex flows, making it possible for data center and network operators to keep up with today's exponentially growing networking demand. In order to ensure the highest levels of network performance, seamless compatibility and trouble-free upgrades with our NoviSwitch and products, NoviFlow offers a complete line of high-performance and cost-effective SFP transceiver modules.

Key Features:

- Compliant with 40G Ethernet IEEE802.3ba and
- 40GBase-ER4 standard
- Compliant with QDR/DDR Infiniband data rates
- Up to 11.2Gb/s data rate per wavelength
- 4 CWDM lands MUX/DEMUX design
- Up to 40km transmission on single mode fiber
- (SMF)
- Operating case temperature 0°C to 70°C
- Maximum power consumption 3.5W
- RoHS 6 compliant

PRODUCT DESCRIPTION

The NoviConnect 514 40G QSFP+ ER4 Transceiver (40 Gbps over fiber) is a high performance, cost effective module supporting 40 Gigabit Ethernet and up to 40km transmission distance with multi-mode fiber (MMF).

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	Vcc	3.135	3.3	3.465	V
Operating Case Temp.	Tca	0		70	°C
Data Rate Per Lane			10.3125	11.2	Gbps
Humidity		2		Vcc	V
Power Dissipation		0		0.8	V
Fiber Bend Radius	D			40	km

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tst	-40		85	°C
Case Operating Temperature	Top	0		70	°C
Humidity (non-condensing)	Rh	0		95	%
Damage Threshold. Each lane		TH_d	3.8		dBm

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTES
Power Consumption				3.5	W	
Supply Current	Icc			1.1	A	
Transceiver Power-on Initialization Time				2000	ms	1
Transmitter						
Single-ended Input Voltage		-0.3		4.0	V	
AC Common Mode Input Voltage Tolerance		15			mV	
Differential Input Voltage Swing Threshold		50			mVpp	
Differential Input Voltage Sing	Vin, pp	190		700	mVpp	
Differential Input Impedance	Zin	90	100	110	Ohm	
Differential Input Return Loss		IEEE 802.3ba 86A.4.11			dB	
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	
Receiver						
Single Ended Output Voltage		-0.3		4.0	V	
AC Common Mode Output Voltage				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		IEEE 802.3ba 86A.4.2.1			dB	
Common Mode Output Return Loss		IEEE 802.3ba 86A.4.2.2			dB	
Output Transition Time		28			ps	
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, 420			UI mV	

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.
2. The single ended input voltage tolerance is the allowable range of the instantaneous input signals.

OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTES
Wavelength Assignment	L0	12694.5	1271	1277.5	nm	
	L1	1284.5	1291	1297.5	nm	
	L2	1304.5	1311	1317.5	nm	
	L3	1324.5	1331	1337.5	nm	
Transmitter						
Side Mode Suppression Ratio	SMSR	30			dB	
Total Average Launch Power	P_T			10.5	dBm	
Average Launch Power, each Lane	P_{AVG}	-3.7		4.5	dBm	
Optical Modulation Amplitude (OMA), each Lane	P_{OMA}	-.07		5	dBm	1
Difference in Launch Power between and Two Lanes (OMA)	Ptx,diff			4.7	dB	
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane		1.5			dBm	
TDP, each Lane	TDP			2.6	dB	
Extinction Ratio	ER	5.5			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter Reflectance	R_T			-12	dB	
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}		{0.25,0.4,0.45,0.25,0.28,0.4}				
Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Receiver						
Damage Threshold, each Lane	TH_d	3.8			dBm	2
Average Receive Power, each Lane		-20.2		-1.5	dBm	
Receiver Reflectance	R_R			-26	dB	
Receiver Power (OMA), each Lane				-1	dBm	
Receiver Sensitivity (OMA), each Lane	SEN			-18	dBm	
Stressed Receiver Sensitivity (OMA), each Lane				-15.8	dBm	3
Difference in Receiver Power between and Two Lanes (OMA)	Prx,diff			7	dB	
LOS Assert	LOSA	-35			dBm	
LOS Deassert	LOSD			-20	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	Fc			12.3	GHz	
Conditions of Stress Receiver Sensitivity Test (Note 4)						
Vertical Eye Closure Penalty, each Lane			2.2		dB	
Stressed Eye J2 Jitter, each Lane			0.3		UI	
Stressed Eye J9 Jitter, each Lane			0.47		UI	

Note:

1. Even if the TDP<0.8 dB, the OMA min must exceed the minimum value specified here.
2. 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.
3. Measured with conformance test signal at receiver input for BER= 1x10-12.
4. Vertical eye closure penalty and stressed eye jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

ORDERING INFORMATION MODEL NUMBER 400000514

FOR MORE INFORMATION

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