

CSFPS-ELX-3149/4931 (I)



Single-Mode 1000Mbps FC/GBE, 2CH Compact BiDi SFP Transceiver, RoHS6 Compliant



Product Description

The CSFPS-ELX-3149/4931(I) series is compliant with the compact Small Form-Factor Pluggable (CSFP) MSA option 2 for Gigabit Ethernet 1000BASE-BX and Fiber Channel. Both channels have BOSA. Each BOSA is using 1310nm / 1490nm transmitter and 1490nm / 1310nm receiver. It is with the 20-pin connector to allow hot plug capability. It also can be compatible with conventional SFP. Conventional SFP can function when plugged into a C-SFP socket. No damage to C-SFP and host board if C-SFP module is plugged into a conventional SFP socket

The CSFPS-ELX-3149/4931(I) series are designed to be compliant with SFF-8472 Multi-source Agreement (MSA).

Features

- Support 1.25Gbps Data Links
- A type: 1310nm FP TX /1490nm RX
- B type: 1490nm DFB TX /1310nm RX
- 20km with 9/125 μ m SMF
- Single 3.3V Power supply and TTL Logic Interface
- 2XBi-directional transceivers in 1 SFP transceiver package
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- Operating Case Temperature:
 - Standard: 0 °C ~+70 °C
 - Industrial: -40 °C ~+85 °C
- Compliant with CSFP MSA Option 2
- Compliant with Digital Diagnostic Monitor Interface SFF-8472

Applications

- Fiber Channel Links
- Gigabit Ethernet (1000Base-BX)
- Point to Point FTTH Application

For more information please contact:



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Opticonnect SYSTEMS B.V., an Optical Networking vendor with its headquarters in the Netherlands, provides Optical Transport solutions and Optical Transceivers at the best price performance ratio possible. Our goal is to simplify the planning, deployment and maintenance of

complex Optical Networks. This is achieved by our user friendly planning apps and information, sophisticated products and transparent support. Relying on our superior product quality, all items are supplied with life time warranty.

Ordering Information

Part No.	Data Rate	Link Budget*(note2)	Interface	Temperature	DDMI
CSFPS-ELX-3149 ^{*note1}	1.063/1.25Gbps	1310nm	LC	Standard	YES
CSFPS-ELX-4931 ^{*note1}	1.063/1.25Gbps	1490nm	LC	Standard	YES
CSFPS-ELX-3149I	1.063/1.25Gbps	1310nm	LC	Industrial	YES
CSFPS-ELX-4931I	1.063/1.25Gbps	1490nm	LC	Industrial	YES

*note1: Standard version

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000V)
Electrostatic Discharge to the Enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component Recognition	UL and CUL EN60950-1:2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards ^{*note2}

Note 2: For update of the equipments and strict control of raw materials, Opticonnect has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union. In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for Opticonnect's transceivers, because Opticonnect's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

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		-	95	%

*Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _a	CSFPS-3149/4931	0	-	+70	°C
		CSFPS-3149/4931 (I)	-40	-	+85	°C
Power Supply Voltage		V _{cc}	3.15	3.3	3.45	V
Power Supply Current		I _{cc}	-	-	300	mA
Data Rate	GBE		-	1.063	-	Gbps
	FC		-	1.25	-	

Performance Specifications - Electrical

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter							
LVPECL Inputs(Differential)		V _{in}	400	-	2000	mVpp	AC coupled inputs*(note5)
Input Impedance (Differential)		Z _{in}	85	100	115	ohm	R _{in} > 100 kohm @ DC
TX_Dis	Disable		2	-	V _{cc} +0.3	V	
	Enable		0	-	0.8		
TX_FAULT	Fault		2	-	V _{cc} +0.3	V	
	Normal		0	-	0.8		
Receiver							
CML Outputs (Differential)		V _{out}	400	-	800	mVpp	AC coupled outputs*(note5)
Output Impedance (Differential)		Z _{out}	85	100	115	ohm	
RX_LOS	LOS		2	-	V _{cc} +0.3	V	
	Normal		0	-	0.8	V	
MOD_DEF (0:2)	VoH		2.5	-	-	V	With Serial ID
	VoL		0	-	0.5	V	

Optical and Electrical Characteristics

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Parameter		Symbol	Min.	Typical	Max.	Unit
9µm Core Diameter SMF		L		20		km
Data Rate				1063/1250		Mbps
Transmitter						
Center Wavelength		λ _C	1260	1310	1360	nm
Spectral Width (RMS)		Δλ			4	nm
Average Output Power*(note3)		P _{out}	-8		-3	dBm
Extinction Ratio @ 1250Mbps		ER	8.2			dB
Rise/Fall Time(20%~80%)		tr/tf			0.26	ns
Total Jitter		TJ			260	ps
Output Optical Eye*(note4)		Compliant with IEEE 802.3z*(note7)				
TX_Disable Assert Time		t _{off}			10	us
Pout@TX Disable Asserted		P _{out}			-45	dBm

Receiver					
Center Wavelength	λ_C	1480	1490	1500	nm
Receiver Sensitivity ^{*(note6)} @1250Mbps	Pmin			-22	dBm
Receiver Overload	Pmax	-3			dBm
LOS De-Assert@1250Mbps	LOSD			-25	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis ^{*(note8)}		0.5			dB

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Parameter	Symbol	Min.	Typical	Max.	Unit
9 μ m Core Diameter SMF	L		20		km
Data Rate			1063/1250		Mbps
Transmitter					
Center Wavelength	λ_C	1480	1490	1500	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power ^{*(note3)}	Pout	-8		-3	dBm
Extinction Ratio @ 1250Mbps	ER	8.2			dB
Side Mode Suppression Ratio	SMSR	30			dB
Rise/Fall Time(20%~80%)	tr/tf			0.26	ns
Output Optical Eye ^{*(note4)}	Compliant with IEEE 802.3ah-2004 ^{*(note7)}				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1260		1360	nm
Receiver Sensitivity ^{*(note6)} @1250Mbps	Pmin			-22	dBm
Receiver Overload	Pmax	-3			dBm
Return Loss		12			dB
Optical Path Penalty				1	dB
LOS De-Assert@1250Mbps	LOSD			-25	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis ^{*(note8)}		0.5			dB

Note3: Output is coupled into a 9/125 μ m single-mode fiber.

Note4: Filtered, measured with a PRBS 27-1.

Note5: LVPECL logic, internally AC coupled.

Note6: Minimum average optical power measured at BER less than 1E-12, with a 27-1 PRBS and ER=9 dB.

Note7: Eye Pattern Mask

Note8: LOS Hysteresis