XFP-ZR

XFP Single-Mode, Dual Fiber transceiver
for 10GbE/10GFC/SDH/ SONET

Product description

The XFP-ZR (10GbE Gigabit Small Form Factor Pluggable) is a hot - swappable, protocol independent optical transceiver, operating at 1550nm, for 10 Gigabit per second SONET/SDH, Fiber Channel, Gigabit Ethernet, 10 Gigabit Ethernet and other applications. It includes digital diagnostics similar to SFF-8472 but more extensive, that provide a robust management tool. The XFI electrical interface specification is a portion of the XFP Multi Source Agreement specification. OC-192 / STM-64 is a network line with transmission speeds of up to 9953.28 Mbit/s (payload: 9621.504 Mbit/s; overhead: 331.776 Mbit/s)

Features

- Data Rate 9.95Gb/s up to 11.3 Gb/s
- Maximum Link length up to 80km
- Hot-pluggable
- Duplex LC connector
- Temperature-Stabilized EML transmitter
- Digital Diagnostics

Applications

- OC192/ STM 64
- 10GBASE-ZR/ZW 10G Ethernet
- 1200-SM-LL-L 10G Fiber Channel

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	Laser	Fiber type	Distance	Optical interface	Temp.
XFP-ZR	10Gbps	EML	SMF	80km	LC	Standard

Regulatory compliance

Feature	Standard	Performance
Electrostatic discharge (ESD) to the electrical pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic discharge to the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compatible with standards
Electromagnetic interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compatible 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	Compatible 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

Note1: For update of the equipments and strict control of raw materials, Opticonnect has the ability to supply the customized products since Jan 1, 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, Item13: 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*Note2

Parameter	Symbol	Min	Typ	Max	Unit
Maximum supply voltage 1	$V_{CC}3$	-0.5	-	4.0	V
Maximum supply voltage 2	$V_{CC}5$	-0.5	-	6.0	V
Storage temperature	T_S	-40	-	85	°C
Case operating temperature, XFP-ZR	T_{OP}	0	-	70	°C
Maximum input power	Pm			-8	dBm

Note2: Exceeding any one of these values may destroy the device permanently.

Recommended operating condition

Parameter	Symbol		Min	Typ	Max	Units
Supply voltage 1	$V_{CC}3$		3.13	3.3	3.45	V
Supply voltage 2	$V_{CC}5$		4.75	5	5.25	V
Case operating temperature	T_c	XFP-ZR	0	-	70	°C

Electrical characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Main supply voltage	$V_{CC}5$	4.75	-	5.25	V
Supply voltage #2	$V_{CC}3$	3.13	-	3.45	V
Supply current – $V_{CC}5$ supply	$I_{CC}5$	-	-	370	mA
Supply current – $V_{CC}3$ supply	$I_{CC}3$	-	-	500	mA
Module total power	P	-	-	3.5	W
Transmitter					
Input differential impedance*Note3	Rin	-	100	-	Ω
Differential data input swing	Vin,pp	120	-	820	mV
Transmit disable voltage	V_D	2.0	-	Vcc	V
Transmit enable voltage	V_{EN}	GND	-	GND+ 0.8	V
Transmit disable assert time		-	-	10	µs
Receiver					
Differential data output swing*Note3	Vout,pp	340	650	850	mV
Rise time (20– 80%)	tr	-	-	38	ps
Fall time (20– 80%)	tf	-	-	38	ps
LOS Fault*Note4	$V_{LOS\ fault}$	Vcc – 0.5	-	VccHOST	V
LOS Normal*Note4	$V_{LOS\ norm}$	GND	-	GND+0.5	V

Note3. After internal AC coupling

Note4. Loss of signal is open collector. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Optical characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Output power @ 9/125 SMF	Pout	0	-	+4	dBm
Optical wavelength	λ_C	1530	-	1565	nm
Spectral width (-20dB)	$\Delta\lambda$	-	-	1	nm
Optical extinction ratio	ER	9	-	-	dB
Average launch power of OFF transmitter	P_{OFF}	-	-	-30	dBm
TX jitter generation (Peak-to-Peak)	T_{Xj}	-	-	0.1	UI
TX jitter generation (RMS)	T_{XjRMS}	-	-	0.01	UI
Relative intensity noise	RIN	-	-	-130	dB/Hz
Eye mask		Compliant with ITU-T G.691			
Receiver					
Receiver sensitivity@ 9.95Gb/s*Note5	Pmin	-	-	-24	dBm
Receiver sensitivity @ 10.7Gb/s*Note5	Pmin	-	-	-24	dBm
Overload power	Pmax	-7	-	-	dBm
Optical center wavelength	λ_C	1270	1550	1600	nm
Receiver reflectance	Rf	-	-	-27	dB
LOS De-Assert	LOS_{DEASS}	-	-	-26	dBm
LOS assert	LOS_{ASS}	-38	-	-	dBm
LOS hysteresis		0.5	-	-	dB

Note5: Back to back, measured with a PRBS 2^{31} -1 test pattern and ER=9dB, BER $1X10^{-12}$.