

## XFPS-ER

XFP Single-Mode, Single Fiber transceiver for 10GbE/10FC



### Product description

The XFPS-ER is designed for Single Fiber bi-directional 10G serial optical data communications such as IEEE 802.3ae 10GBASE-BX by using 1330(1270nm) transmitter and 1270(1330) nm receiver. The transceiver consists of two sections: The transmitter section uses a multiple quantum well 1330(1270) nm DFB laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated 1270(1330) nm detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

### Features

- Supports 9.95Gb/s to 10.5Gb/s data rates
- Power budget 16dB at least
- ITU-T G.694.2 Compliant
- Tx: 1270nm/Rx: 1330nm
- Tx: 1330nm/Rx: 1270nm
- Compliant with Digital Diagnostic Interface

### Applications

- 10GBASE-LR 10G Ethernet at 10.3125Gbps
- 10GBASE-LW 10G Ethernet at 9.953Gbps
- 1200-SM-LL-L 10G Fiber Channel at 10.51875Gbps



All product specifications are subject to change without notice to improve reliability, function or design or otherwise.

*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	Distance	Optical Interface	DDMI
XFPS-ER-2733	10.5 Gbps	1270 nm DFB	40km	LC	YES
XFPS-ER-3327	10.5 Gbps	1330 nm DFB	40km	LC	YES

## Absolute maximum ratings

Parameter	Symbol	Min	Max	Unit
Maximum Supply Voltage 1	V <sub>cc3</sub>	-0.5	4.0	V
Storage Temperature	T <sub>s</sub>	-40	85	°C
Case Operating Temperature	TOP	0	70	°C

\*Note3: Exceeding any one of these values may destroy the device permanently.

## Recommend operating conditions

Parameter	Symbol	Min	Typ	Max	Units
Operating Temperature	T <sub>op</sub>	0		70	°C
Power Supply Current	I <sub>cc</sub>	-	-	800	mA
Supply Voltage	V <sub>cc</sub>	3.13	-	3.45	V

## Electrical Characteristics (TO = -10 to 85, VCC = 3.15V to 3.45V)

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Transmitter Data Rate		9.95	-	10.52	Gbps
Input differential impedance	R <sub>in</sub>	90	100	110	Ω
Differential data input swing <sup>3</sup>	V <sub>in,pp</sub>	120		820	mV
Transmit Disable Voltage	VD	2.0		V <sub>cc</sub>	V
Transmit Enable Voltage	VEN	GND		GND+ 0.8	V
Transmit Disable Assert Time		-	-	10	μs
Receiver					
Differential data output swing <sup>4</sup>	V <sub>out,pp</sub>	340	650	850	mV
Data output rise time <sup>5</sup>	t <sub>r</sub>	-	-	38	ps
Data output fall time <sup>5</sup>	t <sub>f</sub>	-	-	39	ps
LOS Fault	V <sub>LOS fault</sub>	2.4	-	V <sub>cc</sub>	V
LOS Normal	V <sub>LOS norm</sub>	GND	-	GND+0.5	V

Note4. Internal AC coupling.

Note5. 20 - 80 %.

## Optical Characteristics

### XFPS-ER-2731, 40km

Parameter	Symbol	Min	Typ	Max	Unit
9um Core Diameter SMF	L	-	40	-	Km
Data Rate			9.953/10.3125		Gbps
Transmitter					
Center Wavelength	$\lambda_c$	1260	1270	1280	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power <sup>6</sup>	Pout, AVG	2		7	dBm
Extinction Ratio	ER	3.5			dB
Side Mode Suppression Ratio	SMSR	30			dB
Average Power of OFF Transmitter	Pout			-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Input Differential Impedance	ZIN	90	100	110	$\Omega$
Disable		2.0		Vcc+0.3	TX Disable
Enable		0		0.8	V
Fault		2.0		Vcc+0.3	TX Fault
Normal		0		0.8	V
TX Disable Assert Time	t_off	10			$\mu$ s
Receiver					
Center Wavelength	$\lambda_c$	1320		1340	nm
Sensitivity <sup>7</sup>	PIN			-14	dBm
Output Differential Impedance	PIN	90	100	110	$\Omega$
LOS De-Assert	LOSD			-18	dBm
LOS Assert	LOSA	-30			dBm
LOS Hysteresis		0.5			dB
High		2.0		Vcc+0.3	LOS
Low		0		0.8	V

### XFPS-ER-3127, 40km

Parameter	Symbol	Min.	Typical	Max.	Unit
9 $\mu$ m Core Diameter SMF	L		40		km
Data Rate			9.953/10.3125		Gbps
Transmitter					
Center Wavelength	$\lambda_c$	1320	1330	1340	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Average Output Power <sup>6</sup>	Pout, AVG	2		7	dBm
Extinction Ratio	ER	3.5			dB

Parameter	Symbol	Min.	Typical	Max.	Unit
Side Mode Suppression Ratio	SMSR	30			dB
Average Power of OFF Transmitter				-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Input Differential Impedance	ZIN	90	100	110	$\Omega$
Disable		2.0		Vcc+0.3	TX Disable
Enable		0		0.8	V
Fault		2.0		Vcc+0.3	TX Fault
Normal		0		0.8	V
TX Disable Assert Time	t_off	10			$\mu$ s
Receiver					
Center Wavelength	$\lambda_c$	1260		1280	nm
Sensitivity <sup>7</sup>	PIN			-14	dBm
Receiver Overload	PMAX	0.5			dBm
Output Differential Impedance	PIN	90	100	110	$\Omega$
LOS De-Assert	LOSD			-18	dBm
LOS Assert	LOSA	-30			dBm
High		2.0		Vcc+0.3	LOS
Low		0		0.8	V

Note6. Output is coupled into a 9/125 $\mu$ m SMF.

Note7: Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps.