02

XFP OPTEC, 10G, SM LC, 11.4dB DFB (20km), TX1310, (Series)

Decription:

OPTEC XFP transceiver is a high performance, cost effective modulse for serial optical data communications applications specified for signal rates of 9.95 Gb/sto11.3 Gb/s. It is fully compliant to XFP MSA Rev 4.5. The modules are designed for single mode fiber. The transmitter section incorporates uncooled directly modulated 1310 nm distributed feedback laser (DFB).



Ordering Information									
Name	Rate	Temp. [°C]	Wavelength	Distance	Laser	Connector	Fibre Type	Application	
XFP OPTEC, 10G, SM LC, 11,4dB DFB (20km), TX1310, DDM*	10G	0 ~ +70	1310nm	20km	DFB/PIN	LC	SMF	Eth,SDH,10GFC	
XFP OPTEC, 10G, SM LC, 11,4dB DFB (20km), TX1310, DDM, IN	10G	+40~ +85	1310nm	20km	DFB/PIN	LC	SMF	Eth,SDH,10GFC	

Note1: Standard version.

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	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*















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Absolute Maximum Ratings								
Parameter		S	Symbol	Min	Тур		Max	Unit
Maximum Supply Voltage			Vcc3	-0.5			4.0	V
Storage Temperature			TS	-40			85	°C
Recommend operating condition								
Parameter		S	Symbol	Min	Тур		Max	Unit
Case operating Temperature, Star	ndard		TC	0			70	°C
Case Operating Temperature, Indu	ustrial		TC	-40			85	°C
Supply Voltage 1			Vcc3	3.13			3.45	V
Electrical Characteristics								
Parameter	Symb	ol	Min	Тур	Max	Unit		Note
Supply Voltage	Vcc3	}	3.13		3.45	V		
Supply Current - Vcc3 supply	lcc3				720			
Module total power	Р				2.5	W		
				Transmitter				
Input differential impedance	Rin			100		Ω	After inte	ernal AC coupling
Differential data input swing	Vin, p	р	120		820	mV		
Transmit Disable Voltage	VD		2.0		Vcc	V		
Transmit Enable Voltage	Ven		GND		GND+0.8	V		
Transmit Disable Assert Time					10	US		
				Receiver				
Differential data output swing	Vot, p	р	340	650	850	mV		
Data output rise time	tr				38	ps		
Data output fall time	tr				38	ps		20 - 80 %
LOS Fault	VLOS fa	ault	Vcc - 0.5		VccHOST	V	Loss Of Signa be pulled up resisto	I is open collector to with a $4.7k - 10k0hm$ r to $3.15 - 3.6V$.
LOS Normal	VLOS no	orm	GND		GND+0.5	V	Logic o indica logic 1 indicat	tes normal operation; es no signal detected.
Power Supply Rejection	PSR			Per Sec	Per Section 2.7.1. in the XFP MSA Specification			
Optical Characteristics								
Parameter		9	Symbol	Min	Тур		Max	Unit
				Transmitter	ŕ	Ì		,
Optical Output Power			3	-3			+1	dBm
Launch Power min (OMA)			Poma			_	-3.5	dBm

Transmitter								
Optical Output Power	3	-3		+1	dBm			
Launch Power min (OMA)	Poma			-3.5	dBm			
Optical Wave Lenght	λ	1290		1330	nm			
Optical Extinction Ratio	ER	6			dB			
Side Mode Supression Ratio	SSRmin			30	dB			
Average Launch power of Off transmitter	POFF	-30			dBm			
Tx Jitter	Txj		Compliant with ea	ch standard requirements				
Receiver								
Receiver Sensitivity @ 10.7Gb/s	RSENS			-15	dBm			
Maximum Input Power	Pmax	+0,5			dBm			
Optical Center Wavelenght	λC	1270		1600	nm			
Receiver Reflectance	Rrx			-14	dB			
LOS De-Assert	LOSD			-17	dBm			
LOS Assert	LOSA	-29			dBm			
LOS Hysteresis		1			dB			













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Pin Descriptions

02

1GNDModule Ground12VEE5Optional -5.2 Power Supply -Not required3LVTTL-1Mod-DeselModule De-select, When held iow allows the module to respond to 2-wire serial interface commands4LVTL-0InterruptInterrupt (bir); Indicates presence of an important condition which can be read over the serial 2-wire interface or an important condition which can be read over the serial 2-wire interface5LVTL-1TX_DISTransmitter Disable; Transmitter are source turned off6VCC5+5 Power Supply -Not Required17GNDModule Ground18VCC3+3 3V Power Supply9VCC3Serial 2-wire interface clock211LVTL-10SDASerial 2-wire interface clock212LVTL-10Mod_AbsModule Absent; Indicates module is not present. Grounded in the module.213LVTL-0Mod_AbsModule Absent; Indicates module Ground114LVTL-0Rx_LOSReceiver Loss of Signal Indicator215GNDModule Ground116GNDModule Ground117CML-0RD-Receiver Inserted data output118CML-0RD-Power Dwn; When hight; places the module in the low power stand -by mode and one the failine gde private to the power specify119GNDModule Ground1121LVTL-1P_Down;RSTReference Clock Non-inverted data output322VCC2+1.8V Power	Pin	Logic	Symbol	name/Description	Ref.																																																																																																												
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When hight, places the module in the low power stand -by mode and one the fallin edge of P_Down initiates a module reset22VCC2*1.8 V Power Supply -Not required23VCC2*1.8 V Power Supply -Not required124PECL-IGNDModule Ground125PECL-IRefCLK+Reference Clock Non-Inverted input, AC coupled ON the host board -Not Required326GNDGNDModule Ground127GNDGNDModule Ground128CML-IRefCLK+Reference Clock Non-Inverted input, AC coupled ON the host board -Not Required329GNDGNDModule Ground129CML-ITD-Transmitter inverted data input129CML-IGNDModule Ground130GNDGNDModule Ground1</td><td>15</td><td></td><td>GND</td><td>Module Ground</td><td>1</td></tr> <tr><td>17CML-ORD-Receiver inverted data output18CML-ORD+Receiver non-inverted data output19GNDGNDModule Ground120VCC2+1.8 V Power Supply -Not required21LVTTL-IP</td><td>16</td><td></td><td>GND</td><td>Module Ground</td><td>1</td></tr> <tr><td>18CML-ORD+Receiver non-inverted data output19GNDGND120VCC2+1.8V Power Supply-Not required-21LVTTL-IP_Down/RSTPower Down; When hight, places the module in the low power stand -by mode and one the fallin edge of P_Down initiates a module reset-22VCC2+1.8V Power Supply -Not required-23VCC2*1.8V Power Supply -Not required-24VCC2+1.8V Power Supply -Not required124PECL-IRefCLK+Reference Clock Non-Inverted input, AC coupled ON the host board -Not Required325PECL-IRefCLK-Reference Clock Inverted Input, AC coupled on the host board -Not required326GNDGNDModule Ground127GNDModule Ground128CML-ITD-Transmitter inverted data Input129CML-ITD+Transmitter non-inverted data input130GNDGNDModule Ground1</td><td>17</td><td>CML-O</td><td>RD-</td><td>Receiver inverted data output</td><td></td></tr> <tr><td>19GNDModule Ground120VCC2+1.8 V Power Supply -Not required21LVTTL-IP_Down/RSTPower Down; When hight, places the module in the low power stand -by mode and one the fallin edge of P_Down initiates a module reset22VCC2Reset; The falling edge initiates a complete reset of the module including the 2-owire serial interface, equivalent to the power cycle.123VCC2+1.8V Power Supply -Not required124PECL-IGNDModule Ground125PECL-IRefCLK+Reference Clock Non-Inverted input, AC coupled ON the host board -Not Requied326GNDGNDModule Ground127GNDGNDModule Ground128CML-ITD-Transmitter inverted data Input129CML-ITD+Transmitter non-inverted data input130GNDModule Ground11</td><td>18</td><td>CML-O</td><td>RD+</td><td>Receiver non-inverted data output</td><td></td></tr> <tr><td>20VCC2+1.8 V Power Supply -Not required21APPPower Down; 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Notes:

 ${\tt 1. Module\ circuit\ ground\ is\ isolated\ from\ module\ chassis\ ground\ within\ the\ module.}$

2. Open collector; should be pulled up with 4.7k - 10k ohms on host board to a voltage between 3.15V and 3.6V.

3. A Reference Clock input is not required.















XFP OPTEC, 10G, SM LC, 11.4dB DFB (20km), TX1310, (Series)

02

General Specifications							
Parameter	Symbol	Min	Тур	Max	Unit	Ref.	
Bit Rate	BR	9.95		11.1	Gb/s	1	
Bit Error Ratio	BER			10-12		2	
Max. Supported Link Length	LMAX		20		km	1	

Notes:

1. SONET OC-192 LR-1, SDH STM I-64.1 ,10GBASE-LR/LW, 1200-SM-LL-L

2. Tested with a 2³¹ – 1 PRBS

Digital Diagnostic Functions

OPTEC XFP Dual Small Form Factor 10 Gb/s (XFP) transceivers are compliant with the current XFP Multi-Source Agreement (MSA) Specification Rev 4.5. As defined by the XFP MSA, OPTEC XFP transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

-Transceiver temperature

-Laser bias current

-Transmitted optical power

-Received optical power

-Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range. The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller inside the transceiver, which is accessed through the 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host. The positive edge clocks data into the XFP transceiver into those segments of its memory map that are not write-protected. The negative edge clocks data from the XFP transceiver. The serial data signal (SDA pin) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from ooh to the maximum address of the memory.

Recommended Host Board Power Supply Circuit:



Ever since its foundation, Optec Technologies Limited has been putting a lot of effort on quality control and employee treatment to try the best to offer our clients with stable good quality products, Our fiber optic factory first gained the ISO 9001:2008. Optec Technology has passed many quality system verifications, established an internationally standardized quality assurance system and strictly implemented standardized management and control in the course of design, development, production, installation and service.

Contact OPTEC's Partner: xbest.pl Sp. z o.o. Sp. Komandytowa ul. Sw. Jozefa 141D, 44-200 Rybnik, Poland tel. (+48) 32-7006900 fax. (+48) 32-7205451 email: office@xbest.pl











