

# SO-TXFP-ZR-DWDM

XFP, 10GBase-ZR, Multirate 8.5-11.1 Gbps, C Tunable, DWDM, C-Band, 50GHz, 22dB, 80km

## OVERVIEW

The SO-TXFP-ZR-DWDM fiber optical XFP (small form pluggable) transceivers include an APD diode and temperature stabilized tunable Integrated Laser Mach-Zehnder. The modules operate at data-rates up to 11.35 Gbps. The DWDM modules operate at nominal Dense Wavelength Division Multiplexing (DWDM) wavelengths on the 50GHz grid as defined in the ITU-T 694.1 standard. The tunability range extends over the complete C-band from 1528.77nm (196.10THz) and 1563.86nm (191.70THz) with a 50GHz tuning step. The module has a duplex LC optical interface and all mechanical characteristics are compliant with the current INF-8077 XFP MSA specification (Rev. 4.5). XFP modules fulfill the content of the serial EEPROM described in the XFP MSA, as well as the extension specific to tunable XFP (INF-8477, Rev. 1.4). The tuning can easily be implemented by using the SmartOptics T-platform supporting XFP or the Smartboard and SmartTuner software. Once the wavelength is set, the setting is preserved by the unit, even after power cycle. Wavelengths stated in the specification are measured in vacuum. All requirements in this specification are valid throughout the specified lifetime and operational environmental temperature range unless otherwise stated. The transceiver modules are compliant to RoHS-6/6

## PRODUCT FEATURES

- Support 8.5 Gbps to 11.35 Gbps
- -300 to +1600 ps/nm dispersion tolerance
- Up to 80km on 9/125um SMF (G.652)
- Supports 50 GHz ITU-based channel spacing (C-band) with a wavelength locker
- Monolithic MZM Tunable TOSA
- High performance APD receiver
- Hot-pluggable XFP footprint
- No reference clock required
- Wavelength setting retained after power cycle
- RoHS6 Compliant
- Class 1 laser product complies with EN 60825-1
- Power consumption <3.5W
- Operating temperature range: -5°C to 70°C

## ORDERING INFORMATION

Part number	Description
SO-TXFP-ZR-DWDM	XFP, 10GBase-ZR, Multirate 8.5-11.1 Gbps, C Tunable, DWDM, C-Band, 50GHz, 22dB, 80km

## APPLICATIONS

Subject to change without notice.

For more information, visit [smaroptics.com](http://smaroptics.com).

- 10GBASE-ZR WAN and LAN (incl. FEC)
- SONET OC-192 and SDH STM-64 (incl. FEC)
- 8G/10G Fibre Channel

## GENERAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Data Rate	DR	8,5		11,35	Gbps	
Bit Error Rate	BER			$10^{-12}$		
Operating temperature	T <sub>op</sub>	-5		70	°C	Case temperature
Storage temperature	T <sub>STO</sub>	-40		85	°C	Ambient temperature
Supply current	I <sub>cc3</sub>			750	mA	At 3.3V
	I <sub>cc5</sub>			750		At 5.0V
Operating Voltage	V <sub>cc3</sub>	3.13	3.3	3.47	V	
	V <sub>cc5</sub>	4.75	5.0	5.25		
Maximum Voltage	V <sub>cc3, MAX</sub>	-0.3		3.63	V	For electrical power interface
	V <sub>cc5, MAX</sub>	-0.5		6.0		

## OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Output Optical Power	P <sub>TX</sub>	-1		+3	dBm	Average, coupled into 9/125um SMF
Extinction ratio	Er	8.2	9.5		dB	
Tuning Range		191.7		196.10	THz	
		1528.77		1563.86	nm	
Channel tuning				2	Sec	
Optical Center Wavelength	λ <sub>C</sub>	According to ITU-T 694.1			Nm	50GHz grid
Side mode suppression Ratio	SMSR	35			dB	
Relative Intensity Noise	RIN		-135		dB/Hz	Peak-to-Peak
Launch Power Off	P <sub>off</sub>			-27	dBm	Average

## OPTICAL CHARACTERISTICS – RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Optical Damage Threshold				+3	dBm	Average
Overload	P <sub>MAX</sub>	-6			dBm	
Optical Center Wavelength	λ <sub>C</sub>	1270		1615	nm	
Receiver Sensitivity @ 10.709GBpd	R <sub>X_SENS</sub>			-23	dBm	BER<10 <sup>-12</sup> , PRBS 2 <sup>31</sup> -1, back to back
Loss of Signal-Asserted	P <sub>LOS_A</sub>			-30	dBm	
Loss of Signal-Deasserted	P <sub>LOS_D</sub>	-37			dBm	

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RECEIVER SENSITIVITY, MEASURED AT 1528-1600NM WITH WORST CASE ER; PRBS 2<sup>31</sup>-1

Data rate (Gbps)	BER	Dispersion (ps/nm)	Sensitivity back-to-back at OSNR >30dB (dBm)	Dispersion Penalty at OSNR <30dB (dBm)	Threshold Adjust Required
9.95	1e-12	-300 to 1450	-23	2	No
10.3	1e-12	300 to 1450	-23	2.5	No
10.7	1e-4	300 to 1450	-27	3	Yes
11.1	1e-4	300 to 1450	-27	3	Yes

  

Data rate (Gbps)	BER	Dispersion (ps/nm)	Min OSNR Back-to-back at Power: -18 dBm to -7 dBm (dB)	Max OSNR Penalty at Power: -18dBm to -7 dBm (dB)	Threshold Adjust Required
9.95	1e-12	-300 to 1450	24	4	No
10.3	1e-12	-300 to 1450	24	4	No
10.7	1e-4	-300 to 1450	16	4	Yes
11.1	1e-4	-300 to 1450	16	4	Yes