

# SO-XFP-ZR

XFP, 10GBase-ZR, Multirate 9.95-11.1 Gbps, 1550nm, SM, DDM, 24dB, 80km

## OVERVIEW

The SO-XFP-ZR series single mode transceiver is small form factor pluggable module for duplex optical data communications of 10G. It is with the SFP+ 20-pin connector to allow hot plug capability.

This module is designed for single mode fiber and operates at a nominal wavelength of 1550 nm. The transmitter section uses a 1550nm EML, which is class 1 laser compliant according to International Safety Standard IEC-60825.

The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

## PRODUCT FEATURES

- 1550nm cooled EML Transmitter
- High sensitivity APD Receiver
- Distance up to 80km over SMF
- Single 3.3V Power supply and TTL Logic Interface
- Duplex LC Connector Interface
- Hot Pluggable
- Power Dissipation < 1.5 W
- Dispersion Tolerance 1600ps/nm
- Operating Case Temperature Standard: 0°C~+70°C
- Compliant with SFF-8431 MSA
- Compliant with SFF-8432 MSA
- Compliant with SFF-8472 MSA

## APPLICATIONS

- 10GBASE-ER/EW
- 10G FC
- Other Optical Links

## ORDERING INFORMATION

Part Number	Description
SO-XFP-ZR	XFP, 10GBase-ZR, Multirate 9.95-11.1 Gbps, 1550nm, SM, DDM, 24dB, 80km

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	3.6	V

## RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ	Max.	Unit
Operating Case Temperature	TC	0		+70	°C
Power Supply Voltage	VCC	3.15	3.3	3.45	V
Power Supply Current	ICC			455	mA
Surge Current	ISurge			+30	mA
Baud Rate				10.3	Gbps

## PERFORMANCE SPECIFICATIONS - TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Inputs(Differential)	Vin	150		1200	mVpp	AC coupled inputs
Input Impedance (Differential)	Zin	85	100	115	ohms	Rin > 100 kohms @ DC
Tx_DISABLE Input Voltage – High		2		Vcc+0.3	V	
Tx_DISABLE Input Voltage – Low		0		0.8	V	
Tx_FAULT Output Voltage – High		2		Vcc+0.3	V	Io = 400µA; Host Vcc
Tx_FAULT Output Voltage – Low		0		0.5	V	Io = -4.0Ma

## PERFORMANCE SPECIFICATIONS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Outputs (Differential)	Vout	350		700	mVpp	AC coupled outputs
Output Impedance (Differential)	Zout	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		Vcc+0.3	V	Io = 400µA; Host Vcc
Rx_LOS Output Voltage – Low		0		0.8	V	Io = -4.0Ma
MOD_DEF ( 2:0 )	VoH	2.5			V	With Serial ID
	VoL	0		0.5	V	

## OPTICAL AND ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
9µm Core Diameter SMF			80		km

## OPTICAL AND ELECTRICAL CHARACTERISTICS TRANSMITTER

Parameter	Symbol	Min.	Typ	Max.	Unit
Centre Wavelength	$\lambda_c$	1528	1550	1565	nm
Spectral Width (-20dB)	$\Delta\lambda$			1	nm
Side Mode Suppression Ratio	SMSR	30			dB
Average Output Power	$P_{out, AVG}$	0		5	dBm
Extinction Ratio, EOLP-1596-80-N	ER	3.5			dB
Transmitter and Dispersion Penalty	TDP			3	dB
Average Power of OFF Transmitter				-30	dBm
Relative Intensity Noise	RIN			-128	dB/Hz
Input Differential Impedance	ZIN	90	100	110	$\Omega$
TX Disable Assert Time	$t_{off}$			10	us

## OPTICAL AND ELECTRICAL CHARACTERISTICS RECEIVER

Parameter	Symbol	Min.	Typ	Max.	Unit
Centre Wavelength	$\lambda_c$	1260		1600	nm
Sensitivity	PIN			-24	dBm
Receiver Overload	P <sub>MAX</sub>	-8			dBm
Output Differential Impedance	PIN	90	100	110	$\Omega$
LOS De-Assert	LOSD			-26	dBm
LOS Assert	LOSA	-36			dBm

## PIN FUNCTION DEFINITIONS

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V <sub>EE</sub> T	Transmitter Ground	11	V <sub>EE</sub> R	Receiver Ground
2	TX_Fault	Transmitter Fault Indication	12	RD-	Inv. Received Data Out
3	TX_Disable	Transmitter Disable	13	RD+	Received Data Out
4	SDA	Module Definition 2	14	V <sub>EE</sub> R	Receiver Ground
5	SCL	Module Definition 1	15	V <sub>CC</sub> R	Receiver Power
6	MOD_ABS	Module Definition 0	16	V <sub>CC</sub> T	Transmitter Power
7	RS0	RX Rate Select (LVTTTL).	17	V <sub>EE</sub> T	Transmitter Ground
8	LOS	Loss of Signal	18	TD+	Transmit Data In
9	RS1	TX Rate Select (LVTTTL).	19	TD-	Inv. Transmit Data In
10	V <sub>EE</sub> R	Receiver Ground	20	V <sub>EE</sub> T	Transmitter Ground

## MECHANICAL SPECIFICATIONS

