

SO-XFP-LR40

XFP, 10GBase-LR, Multirate 9.95-11.1 Gbps, 1310nm, SM, DDM, 16dB, 40km

OVERVIEW

The SO-XFP-LR40 series single mode transceiver is small form factor pluggable module for serial optical data communications such as IEEE 802.3ae 10GBASE-LR/LW. This module is designed for single mode fiber and operates at a nominal wavelength of 1310 nm. The transmitter section uses a 1310nm multiple quantum well DFB laser and is a 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

- Supports 9.95Gb/s to 11.1Gb/s bit rates
- Hot-pluggable XFP footprint
- Maximum link length of 40km
- Uncooled 1310nm DFB laser
- Duplex LC connector
- Power dissipation <2.5W
- Built-in digital diagnostic functions
- Operating case temperature
 - Standard: 0°C to +70°C
 - Industrial: -40°C to +85°C
- Complaint with XFP MSA

APPLICATIONS

- SONET&, SDH
- 10GBASE-LR/LW 10G Ethernet
- 1200-SM-LL-L 10G Fibre Channel
- 10GE over G.709 at 11.09Gbps
- OC192 over FEC at 10.709Gbps

ORDERING INFORMATION

Part Number	Description
SO-XFP-LR40	XFP, 10GBase-LR, Multirate 9.95-11.1 Gbps, 1310nm, SM, DDM, 16dB, 40km
SO-XFP-LR40-I	XFP, 10GBase-LR, Multirate 9.95-11.1 Gbps, 1310nm, SM, DDM, 16dB, 40km ind. temp

Subject to change without notice.

For more information, visit smartoptics.com.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	Vcc3	-0.5	4.0	V
Storage Temperature	TS	-40	+85	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ	Max.	Unit		
Operating Case Temperature	TC	SO-XFP- LR40	0		+70	°C	
		SO-XFP- LR40 -1	-40		+85		
Supply Voltage	VCC	3.13		3.45	V		

GENERAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc3	3.13		3.45	V	
Supply Current – Vcc3 supply	Icc3			720	mA	
Module total power	P			2.5	W	

PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Input Impedance (Differential)	Rin		100		Ω	After internal AC coupling
Differential data input swing	Vin,pp	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	

PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Differential data output swing	Vout,pp	340	650	850	mV	
Data output rise time	tr			38	ps	.20 – 80 %
Data output fall time	tf			38	ps	.20 – 80 %
LOS Fault	VLOS fault	Vcc – 0.5		VccHOST	V	
LOS Normal	VLOS norm	GND		GND+0.5	V	
Power Supply Rejection	PSR	Per Section 2.7.1. in the XFP MSA Specification				

PERFORMANCE SPECIFICATIONS – OPTICAL TRANSMITTER

Parameter	Symbol	Min.	Typ	Max.	Unit
Optical output Power	P	0		+4	dBm
Optical Wavelength	λ	1290		1330	nm

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Optical Extinction Ratio	<i>ER</i>	6	dB
Side Mode Suppression ratio	<i>SMSR</i>	30	dB
Average Launch power of OFF transmitter	<i>P_{off}</i>	-30	dBm
Tx Jitter	<i>T_{xj}</i>	Compliant with each standard requirements	

PERFORMANCE SPECIFICATIONS – OPTICAL RECEIVER

Parameter	Symbol	Min.	Typ	Max.	Unit
Receiver Sensitivity @ 9.95Gb/s	<i>RSENS</i>			-16	dBm
Maximum Input Power	<i>P_{max}</i>	0.5			dBm
Optical Center Wavelength	<i>λ_C</i>	1270		1600	nm
Receiver Reflectance	<i>R_{rx}</i>			-14	dB
LOS De-Assert	<i>LOSD</i>			-18	dBm
LOS Assert	<i>LOSA</i>	-30			dBm
LOS Hysteresis		1			dB

PIN FUNCTION DEFINITIONS

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V _{EE} T	Transmitter Ground	11	V _{EE} 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 _{EE} R	Receiver Ground
5	SCL	Module Definition 1	15	V _{CC} R	Receiver Power
6	MOD_ABS	Module Definition 0	16	V _{CC} T	Transmitter Power
7	RS0	RX Rate Select (LVTTTL).	17	V _{EE} 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 _{EE} R	Receiver Ground	20	V _{EE} T	Transmitter Ground

MECHANICAL SPECIFICATIONS

