

LXF-M85-02D

XFP 10Gb/s 850nm Multi-mode 0.3km DDM

PRODUCT FEATURES

- Supports 8.5Gb/s to 11.3Gb/s bit rates
- Uncooled 850nm VCSEL laser transmitter and PIN/TIA receiver
- Up to 0.3km on 50/125umMMF
- Hot-pluggable XFP footprint
- Duplex LC connector
- Power dissipation < 1.5W
- No Reference Clock required
- RoHS-6 compliant and lead-free
- Support Digital Diagnostic Monitor interface
- Single +3.3V power supply
- Standard bail release mechanism
- Case operating temperature

Commercial: 0°C to +70°C

APPLICATIONS

- 10GBASE-SR/SW 10G Ethernet
- 1200-Mx-SN-I 10G Fiber Channel
- 800-SM-LC-L 8G Fiber Channel

Compliance

- SFF-8472XFP MSA.
- Fibre Channel 1200-Mx-SN-I
- IEEE802.3ae
- RoHS

PRODUCT DESCRIPTION

LXF-M85-02D 10Gb/sXFPtransceivers are compatible with the current XFP Multi-Sourcing Agreement (MSA) Specification.They comply with 10-Gigabit Ethernet 10GBASE-SR-SW per IEEE 802.3ae, 10G Fiber Channel 1200-Mx-SN-I and 8G Fiber Channel 800SM-LC-L. Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA. The optical transceiver is compliant per the RoHS Directive 2011-65-EU.

Ordering information

Package	Product part NO.	Data Rate(G bps)	Media	Wavelength(nm)	Transmission Distance(km)	Temperature Range (°C)	
XFP	LXF-M85-02D	10.3125	multi-mode fiber	850	0.3	0~70	Commercial

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Storage Temperature	T _s	-40		85	°C	
Storage Ambient Relative Humidity	H _A	0		85	%	
Power Supply Voltage	V _{CC}	-0.5		4	V	
Signal Input Voltage		-0.3		V _{CC} +0.3	V	
Receiver Damage Threshold		+3			dBm	
Lead Soldering Temperature/Time	TSOLD			260/10	°C/sec	1
Lead Soldering Temperature/Time	TSOLD			360/10	°C/sec	2

Note(1): Suitable for wave soldering.

Note(2): Only for soldering by iron.

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.	
Case Operating Temperature	T _{case}	0		70	°C	LXF-M85-02D	
Ambient Humidity	H _A	5		70	%	Non-condensing	
Data Rate			10.3125/10.3125		Gbps	TX Rate/RX Rate	
Transmission Distance				0.3	km		
Coupled Fiber	OM4 Multi-mode fiber						50/125um G.651

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter						
Average Output Power	P_{OUT}	-7.3		-1	dBm	
Extinction Ratio	ER	3			dB	
Center Wavelength	λ_C	840	850	860	nm	
RMSSpectral Width	$\Delta\lambda_{rms}$		0.4	0.45	dB	
Transmitter and Dispersion Penalty	TDP			3.9	dB	
Transmitter OFF Output Power	P_{Off}			-30	dBm	
Encircled Flux	$<4.5\mu m$			30	%	1
	$<19\mu m$	86				
Optical Modulation Amplitude(OMA)	P_{OMA}	-2.8	-1.5		dBm	
Receiver						
Input Optical Wavelength	λ_{IN}	840		860	nm	LXF-M85-02D
Rx Sensitivity	R_{SENS1}			-11.1	dBm	2
Rx Sensitivity(OMA)	R_{SENS2}			-7.5	dBm	3
InputSaturation Power (Overload)	$PSAT$	+0.5			dBm	
Loss of Signal Assert	P_A	-30			dBm	
Loss of Signal De-assert	P_D			-12.1	dBm	
LOS Hysteresis	$P_D - P_A$	0.5		6	dB	

Note :

- 1.Measured into Type A1a (50/125 μm multimode) fiber per ANSI/TIA/EIA-455-203-2.
- 2.Measured with worst ER; BER<10⁻¹²; 231 – 1 PRBS.
- 3.Per IEEE 802.3ae.

IV. General Specifications

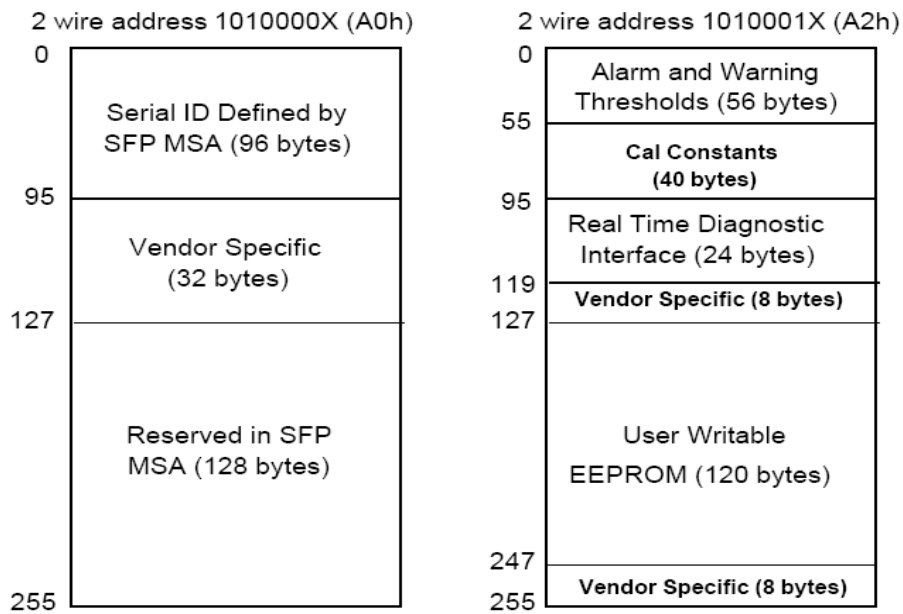
Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Bit Rate	BR	8.5		10.5	Gb/s	1
Bit Error Ratio	BER			10 ⁻¹²		2
Maximum Supported Distances						
Fiber Type	850nm OFL Bandwidth					
	62.5 μm	Lmax			26	m
	OM1 200MHz-km				33	
50 μm	400MHz-km	Lmax			66	m

	OM2 500MHz-km				82		
	OM3 2000MHz-km				300		

Note(1): 800-SM-LC-L, 10GBASE-SR/SW, 1200-Mx-SN-I

Note(2): Tested with a 231 – 1 PRBS

V. Digital Diagnostic Memory Map



VI. Digital Diagnostic Monitoring Information

Parameter	Unit	Accuracy
Case Temperature	°C	±3
Supply Voltage	V	±3%
Tx Bias Current	mA	±10%
Tx Optical Power	dB	±3
Rx Optical Power	dB	±3

VII. Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{CC}	3.13	3.30	3.47	V	
Supply Current	I _{CC}			400	mA	
Module total power	P		1.0	1.5	W	1

Transmitter						
Input different impedance	R_{in}	90	100	110	Ω	2
Single ended data input swing	$V_{in,pp}$	120		1000	mV	
Transmitter Disable Voltage	V _{DIS}	2		V _{CC}	V	
Transmitter Enable Voltage	V _{EN}	0		0.8	V	
Receiver						
Output different impedance	R_{out}	90	100	110	Ω	2
Single ended data output swing	$V_{out,pp}$	340		850	mV	3
LOSAsserted	V _{LOSA}	2		V _{CCHOST}	V	4
LOSDe-asserted	V _{LOSD}	0		0.8	V	4

Note:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Connected directly to TX data input pins. AC coupled thereafter.
3. Into 100 Ω differential termination.
4. LossOf Signal is LVTTTL. Logic "0" indicates normal operation; logic "1" indicates no signal detected.

VIII. Pin Diagram

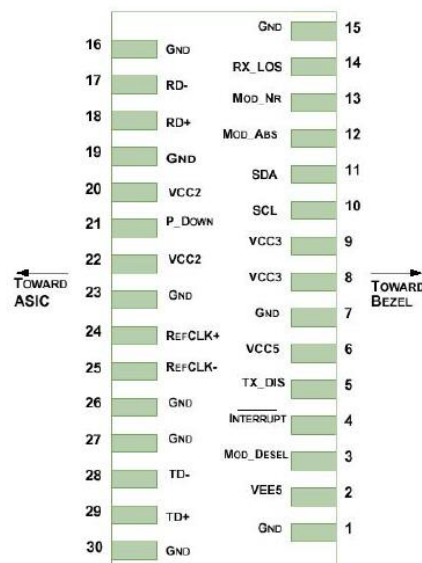


Diagram of Host Board Connector Block Pin Numbers and Name

IX. Pin Descriptions

Pin	Logic	Symbol	Name/Description	Ref.
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	

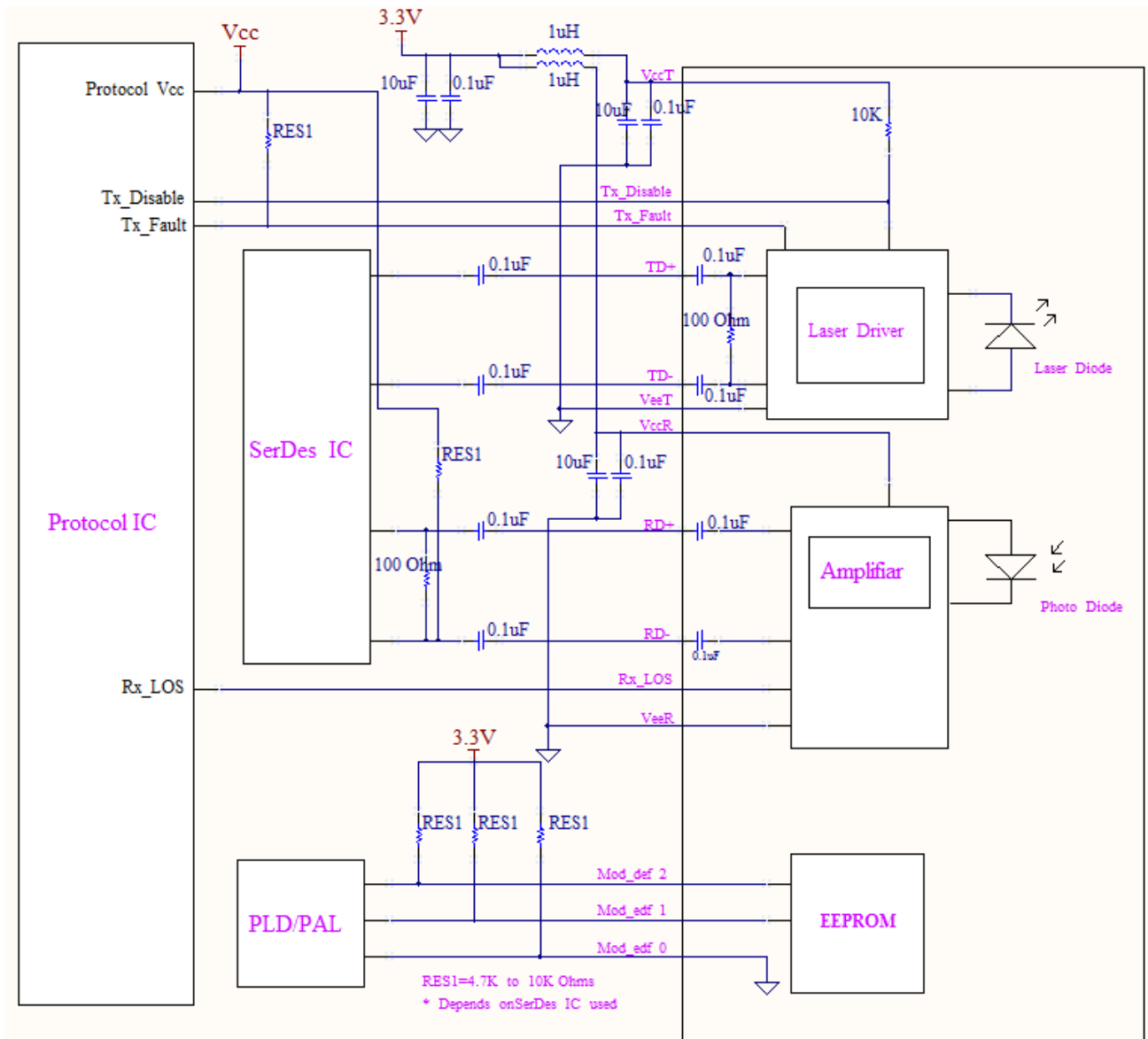
3	LVTTTL-I	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	
4	LVTTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply – Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LCTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	2
13	LVTTTL-O	Mod_NR	Module Not Ready; Finisar defines it as a logical OR between RX_LOS and Loss of Lock ON TX/RX.	2
14	LVTTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply – Not required	
21	LVTTTL-I	P_Down/RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply – Not required	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not required	3
26		GND	Module Ground	1
27		GND	Module Ground	1

28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	1

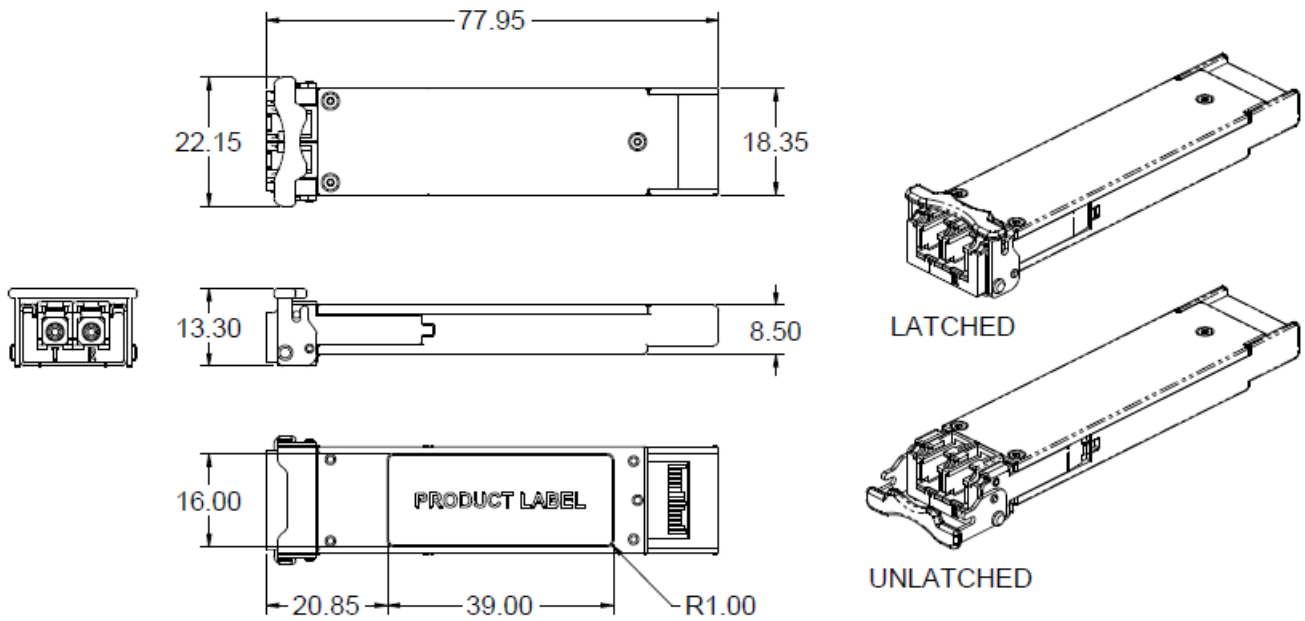
Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7K – 10KΩ on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required by the MHFL-S30M85. If present, it will be ignored.

X. Recommend Circuit Schematic



XI. Mechanical Specifications(Unit: mm)



XFP Transceiver (dimensions are in mm)

Revision History

Version No.	Date	Description
1.0	June 24, 2020	Preliminary datasheet