



LXF-M85-02D

XFP10Gb/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 (℃)	
XFP	LXF-M85-02D	10.3125	multi-mode fiber	850	0.3	0~70	Commercial

I. Pin Diagram

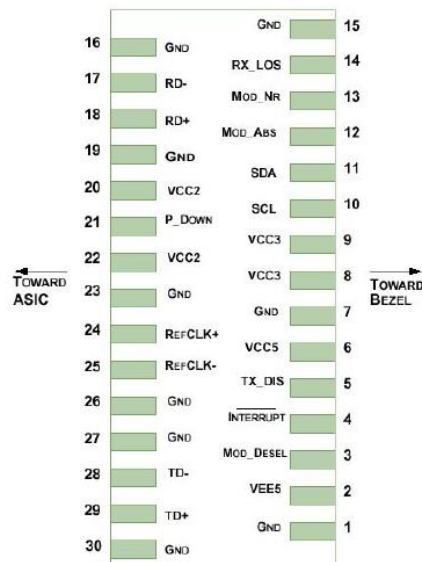


Diagram of Host Board Connector Block Pin Numbers and Name

II. Pin Descriptions

Pin	Logic	Symbol	Name/Description	Ref.
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-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	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	2
13	LVTTL-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	LVTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1

16		GND	Module Ground	1
Pin	Logic	Symbol	Name/Description	Ref.
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.

III. 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.
2. Only for soldering by iron.

IV. 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

V. 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.

VI. General Specifications

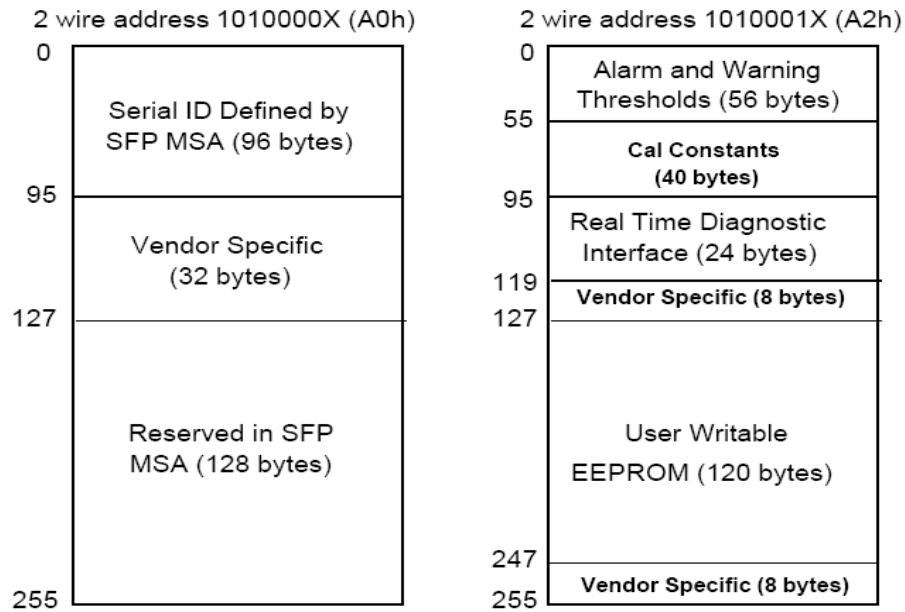
Parameter		Symbol	Min.	Typ.	Max.	Unit	Ref.
Bit Rate		BR	8.5		10.5	Gb/s	1
Bit Error Ratio		BER			10^{-12}		2
Maximum Supported Distances							
Fiber Type	850nm OFL Bandwidth						
	160MHz-km				26	m	
62.5µm	OM1 200MHz-km	Lmax			33		
50µm	400MHz-km	Lmax			66	m	
	OM2				82		
	500MHz-km						
	OM3 2000MHz-km				300		

Note :

1.800-SM-LC-L, 10GBASE-SR/SW, 1200-Mx-SN-I

2.Tested with a 231 – 1 PRBS

VII. Digital Diagnostic Memory Map



VIII. 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

IX. 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



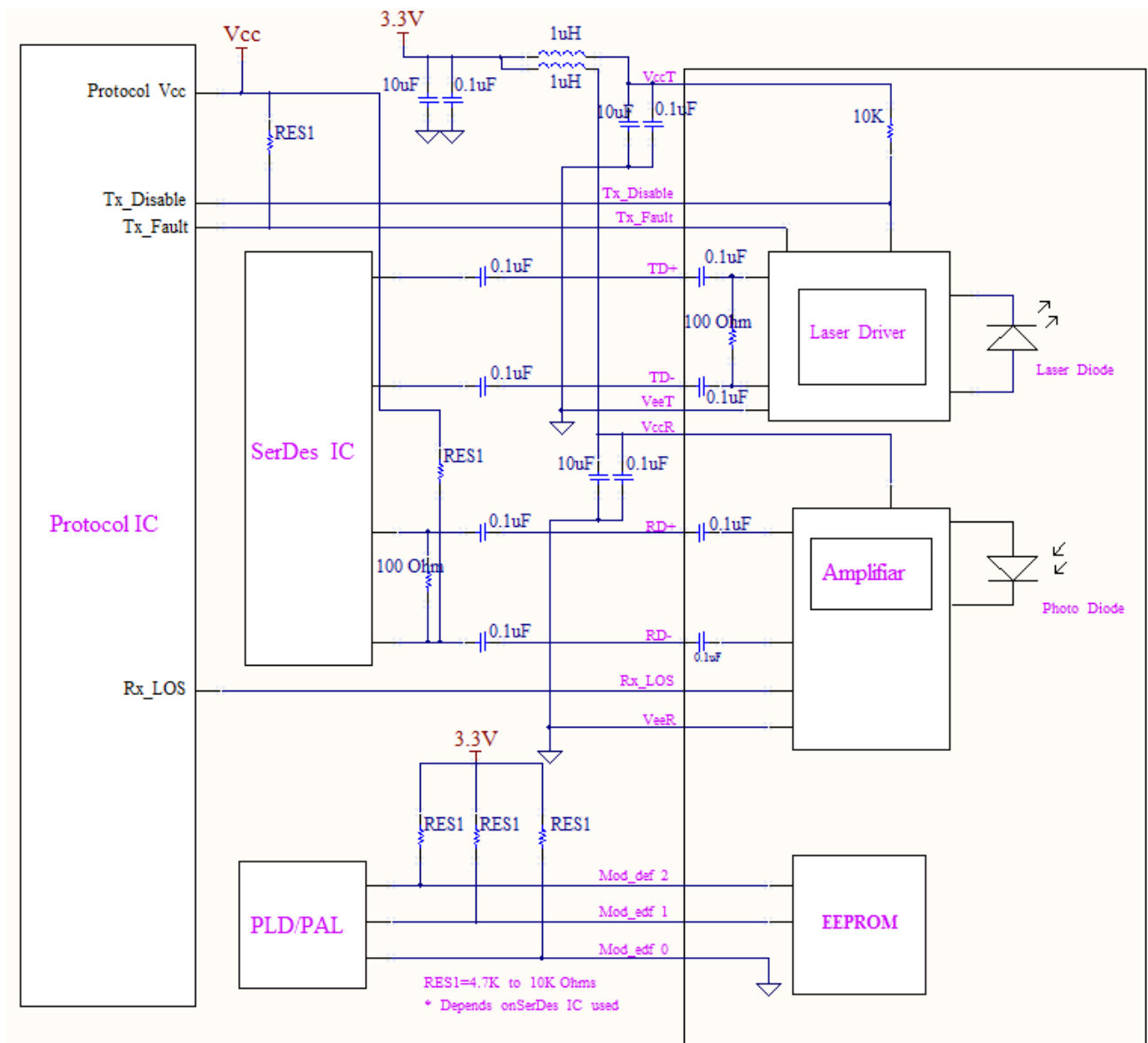
Product specification

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

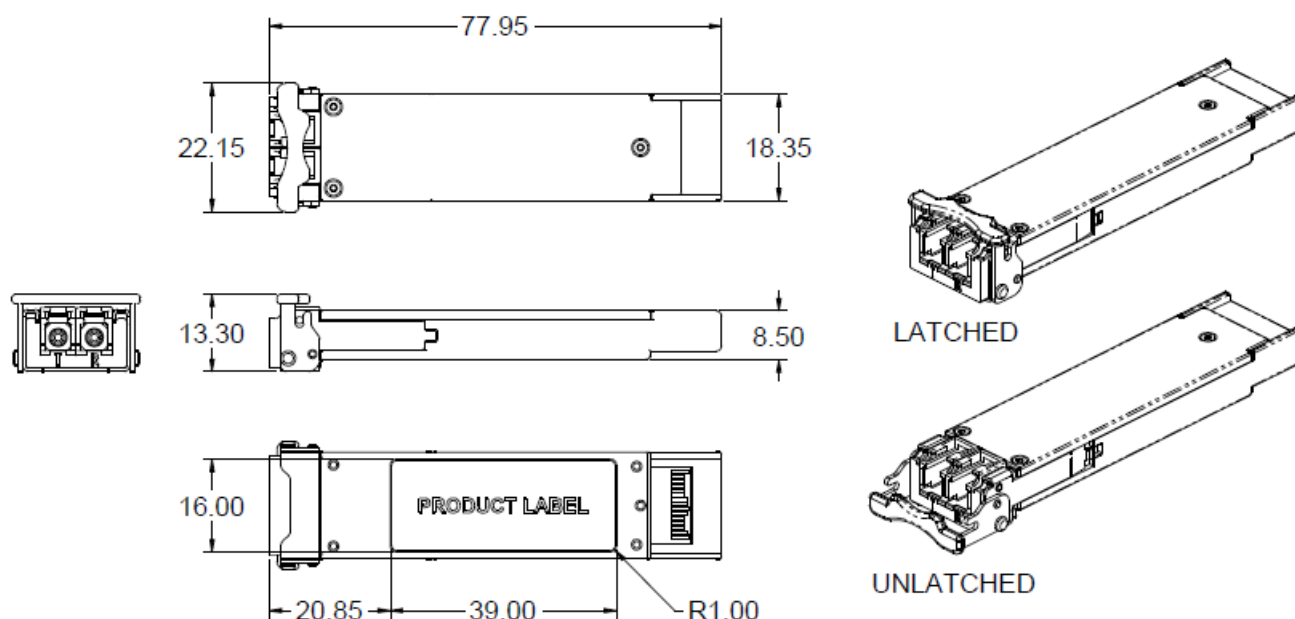
Note:

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 100Ω differential termination.
4. LossOf Signal is LVTTL. Logic “0” indicates normal operation; logic “1” indicates no signal detected.

X. Recommend Circuit Schematic



XI. Mechanical Specifications(Unit: mm)



XFP Transceiver (dimensions are in mm)

LXF-M85-02D

XII. Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B en 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1,2	Class 1 laser product
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

Revision History

Version No.	Date	Description
1.0	June 24, 2019	Preliminary datasheet



Product specification