SFP+ Bi-Directional 10G 80km
Tx1490/Rx1550nm & Tx1550/Rx1490nm

SLSSB-XXXX-80

Description

Sourcelight SLSSB-XXXX-80 is 10G SFP+ BIDI 80KM transceiver is hot pluggable 3.3V Small-Form-Factor transceiver module. It designed expressly for high-speed communication applications that require rates up to 11.1Gbps,it designed to be compliant with SFF-8472 and SFP+ MSA.

The module data link up to 80km in 9/125um single mode fiber. The optical output can be disabled by a LVTTL logic high-level input of Tx Disable. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner.

Features

♦ SFP MSA package with single LC connector
♦ Typical bidi 1490/1550nm and 1550nm/1490nm for commission
♦ APD receiver for high sensitivity
♦ Very low EMI and excellent ESD protection
♦ Digital Diagnostic Monitor Interface
♦ Hot pluggable
♦ Support 9.95Gb/s to 11.1Gb/s serial optical interface
♦ Up to 80km distance
♦ Compliant with SFP+ MSA
♦ High transmission margin
♦ +3.3V single power supply
♦ Below <1.5W power consumption

Applications

♦ 10GBASE-BX 10.3125Gb/s Ethernet
♦ 10GBASE-BX 9.953Gb/s Ethernet
♦ SONET OC-192 &SDH STM I-64.1

Ordering information

Part Number	Product Description
SLSSB-4955-80	10G SFP+ BIDI 10Gbps, 1490nm Transmitter and 1550nm Receiver, 80km, 0ºC ~ +70ºC
SLSSB-5549-80	10G SFP+ BIDI 10Gbps, 1550nm Transmitter and 1490nm Receiver, 80km, 0ºC ~ +70ºC

Absolute Maximum Ratings

Parameter		Symbol	Min	Tpye	Max	Unit	Ref.
Storage Ambient Temperature Range			-40		+85	℃	
Powered case Temperature Range			0		+70	℃	
Operating Relative Humidity		RH			85	％	
Data Rate	Ethernet			10.3125		Gb/s	
	Fiber Channel			9.953		Gb/s	

Electrical Characteristics

Parameter		Symbol	Min	Typical	Max	Unit	Note
Operating Case Temperature Range		T_c	0		+70	℃	
Power Supply Voltage @ 3.3V		Vcc3	3.13	3.3	3.47	V	
Supply Current		Icc			500	mA	
Transmitter							
Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff. input voltage swing			120		820	mVpp	1
Tx Disable input	H	VIH	2.0		Vcc+0.3	V	
	L	VIL	0		0.8		
Tx Fault output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		
Input Diff. Impedance		Zin		100		Ω	
Receiver							
Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff. output voltage swing			340	650	800	mVpp	3
Rx LOS Output	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		

Notes:

1. Note 1) TD+/- are internally AC coupled with 100Ω differential termination inside the module.
2. Note 2) Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7k to 10kΩ resistors on the host board. Pull up voltage between 2.0V and Vcc+0.3V.
3. Note 3) RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Ref.
Transmitter						
Operating Wavelength	T1490/R1550	1480	1490	1500	nm	1
	T1550/R1490	1540	1550	1560		
Ave. output power (Enabled)	Po	+1		+6	dBm	2
Extinction Ratio	ER	5			dB	2
RMS spectral width	Δλ			1	nm	
Rise/Fall time (20%~80%)	Tr/Tf			50	ps	3

Optical modulation amplitude	OMA	-4.8			dBm	
Dispersion penalty				3	dB	
Output Optical Eye	IEEE 802.3-2005 Compliant					
Receiver						
Operating Wavelength	T1550/R1490	1540	1550	1560	nm	1
	T1490/R1550	1480	1490	1500		
Sensitivity	Psen			-24	dBm	4
Min. overload	Pimax	-7			dBm	
LOS Assert	Pa	-40			dBm	
LOS De-assert	Pd			-22	dBm	
LOS Hysteresis	Pd-Pa	0.5		4	dB	

Notes:

1. Note 1) 1470nm~1610nm transmitter, minimum interval 60nm.
2. Note 2) Measured at 10.3125b/s with PRBS $2^{31} - 1$ NRZ test pattern.
3. Note 3)20%~80%
4. Note 4)Under the ER worst case, measured at 10.3125 Gb/s with PRBS $2^{31} - 1$ NRZ test pattern for BER < 1×10^{-12}
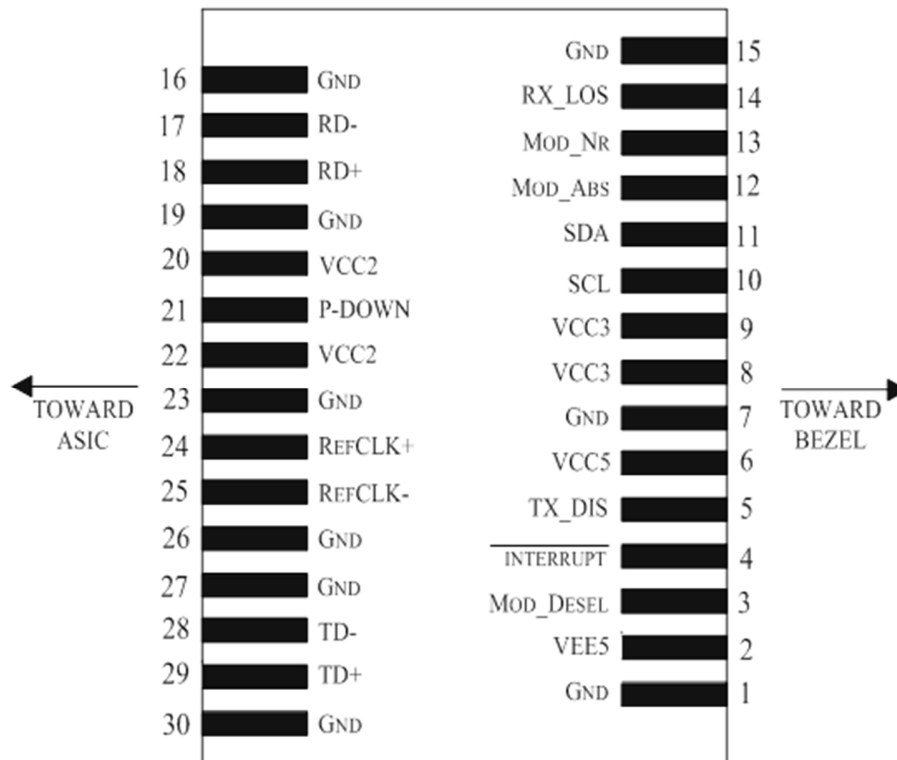
Hostboard Connector Pinout

Figure 1: Electrical Pin-out Details

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	LVTTL-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;	2
14	LVTTL-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	
21	LVTTL-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	
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 – 10k ohms on host board to a voltage between 3.15Vand 3.6V.
3. A Reference Clock input is not required.

Management Interface

The XFP modules implement the 2-wire serial communication protocol as defined in the XFP MSA. The serial ID information of the XFP modules and Digital Diagnostic Monitor parameters can be accessed through the I2C interface at address A0h and A2h.

The memory is mapped in Table 1. Detailed ID information(A0h) And the DDM specification(A2h) . For more details of the memory map and byte definitions, please refer to the SFF-8472 (Rev 9.3, Aug. 2002), "Digital Diagnostic Monitoring Interface for Optical Transceivers".
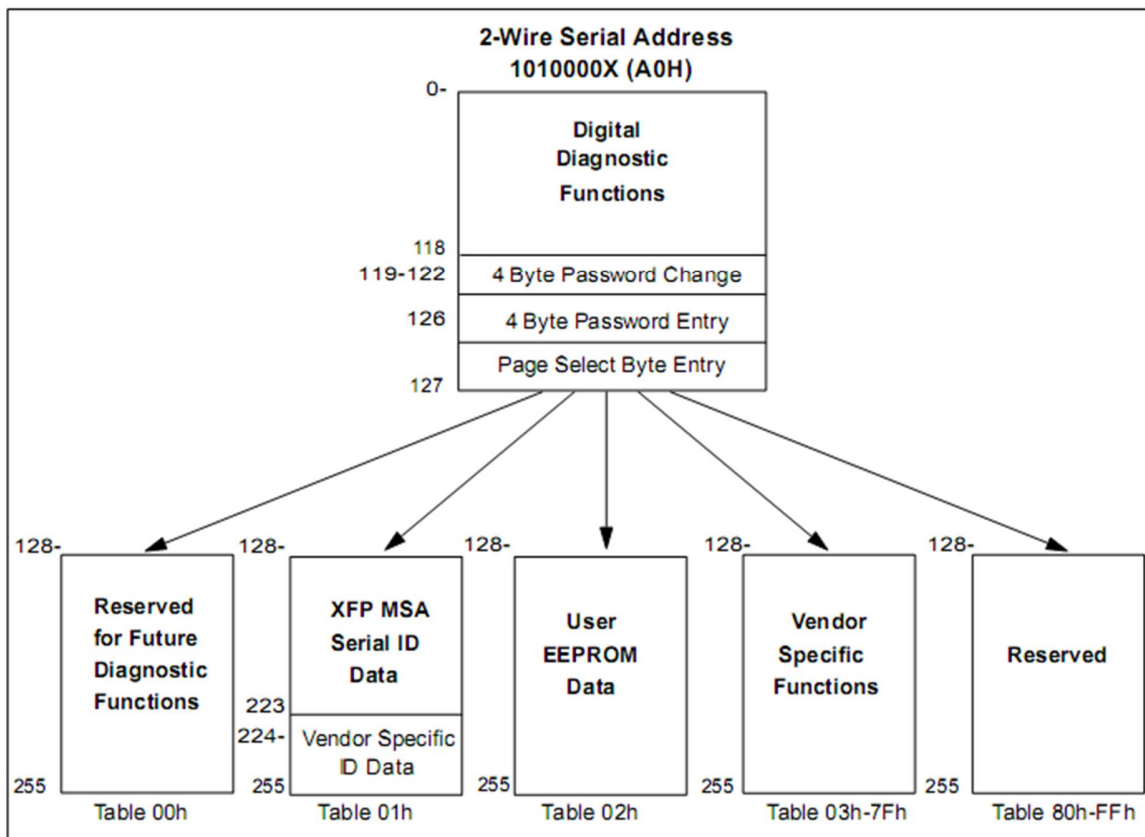

Figure 2: Digital Diagnostic Memory Map

Mechanical Specifications

XFP transceivers are compliant with the dimensions defined by the XFP Multi-Sourcing Agreement (MSA).
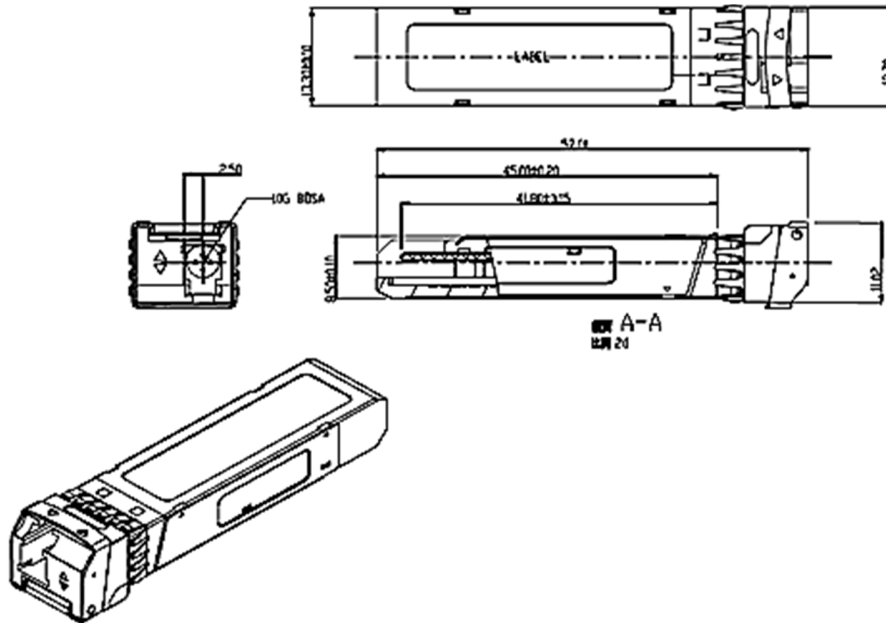

Figure3. Mechanical Specifications

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