Alpha Bridge SFP
ASFP-1G-eLX Datasheet

Features

- SFP Multi-Source Agreement compliance
- Compliant with Fiber Channel 100-SM-LC-L standard
- Compliant with IEEE802.3z Gigabit Ethernet standard
- Industry standard small form pluggable (SFP) package
- Duplex LC connector
- Differential LVPECL inputs and outputs
- Single power supply 3.3V
- TTL signal detect indicator.
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1
- RoHS compliant

Applications

- Distributed multi-processing.
- Switch to switch interface.
- High speed I/O for file server
- Bus extension application
- Channel extender, data storage.

Absolute Maximum Ratings

Parameter	*symbol*	*Min.*	*Max.*	*Units*	*Note*
Storage Temperature	T_S	–40	85	°C	
Supply Voltage	*Vcc*	–0.5	4.0	V	
Input Voltage	V_{IN}	–0.5	*Vcc*	V	
Output Current	I_o	---	50	mA	
Operating Current	I_{OP}	---	400	mA	

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Case Operating Temperature	Tc	0	70	°C	OPAK-S10-13-CB
		-40	85	°C	OPAK-S10-13-IB
Supply Voltage	Vcc	3.1	3.5	V	
Supply Current	ICC		250	mA	

Transmitter Electro-optical Characteristics

***Vcc* = 3.1 V to 3.5 V, *T*C = 0 °C to 70 °C(-40 °C to 85 °C)**

Parameter	*Symbol*	*Type*	*Min*	*Max*	*Unites*	Notes
Output Optical Power 9/125 µm fiber	*Pout*	-8	---	-2	dBm	Average
Extinction Ratio	*ER*	9	---	---	dB	

Center Wavelength	λ_C	1270	1310	1355	nm	
Spectral Width (RMS)	$\Delta\lambda$	---	---	2.5	nm	
Rise/Fall Time, (20°80%)	*Tr, f*	---	---	260	ps	
Relative Intensity Noise	*RIN*	---	---	-120	dB/Hz	
Total Jitter	*TJ*	---	---	227	ps	
Output Eye	Compliant with IEEE802.3z					
Max. P_{out} TX-DISABLE Asserted	*POFF*	---	---	-45	dBm	
Differential Input Voltage	*VDIFF*	0.4	---	2.0	V	

Note 1: Average optical power shall be measured using the methods specified in TIA/EIA-455-95

Receiver Electro-optical Characteristics

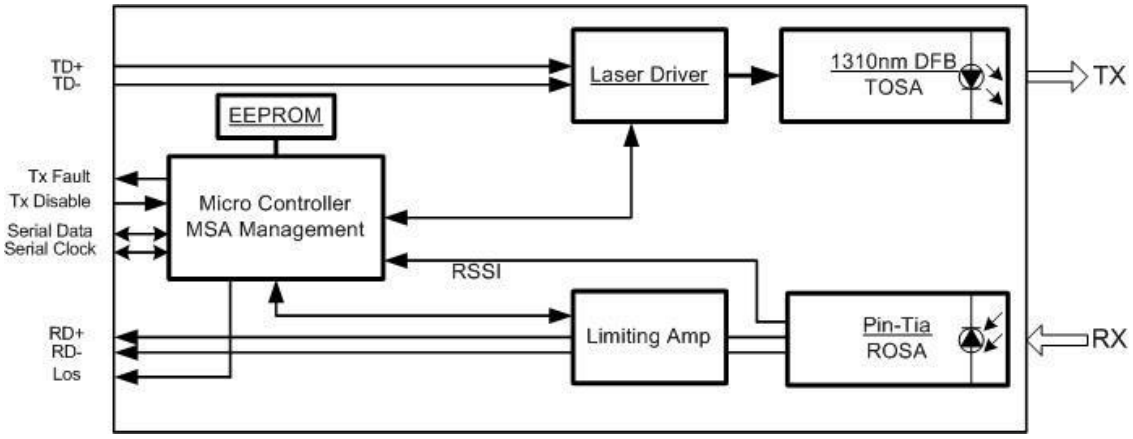
***Vcc* = 3.1 V to 3.5 V, *T*C = 0 °C to 70 °C(-40 °C to 85 C)**

Parameter	*Symbol*	*Min.*	*Typ.*	*Max.*	*Units*	*Note*
Optical Input Power-maximum	*PIN*	-1	---	---	dBm	BER < 10^{-12}
Optical Input Power-minimum (Sensitivity)	*PIN*	---	---	-23	dBm	BER < 10^{-12}
Operating Center Wavelength	λ_C	1260	---	1610	nm	
Optical Return Loss	*ORL*	12	---	---	dB	
Signal Detect-Asserted	*PA*	---	---	-23	dBm	
Signal Detect-Deasserted	*PD*	-35	---	---	dBm	
Stressed Receiver Sensitivity		---	---	-14.4	dBm	Note 1, 2
Differential Output Voltage	*VDIFF*	0.5	---	1.2	V	
Data Output Rise, Fall Time (20-80%)	*T r, f*	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-	*RX_LOSL*	0	---	0.5	V	
Low						
Receiver Loss of Signal Output Voltage-High	*RX_LOSH*	2.4	---	*VCC*	V	

Note 1: Measured with conformance test signal at TP3 for BER = 10^{-12} at the eye center.

Note 2: Measured with a transmit signal having a 9 dB extinction ratio. If another extinction ratio is used, theStressed receiver sensitivity should be corrected for the extinction ratio penalty.

Block Diagram of Transceiver



Transmitter Section

The transmitter section consists of a 1310 nm InGaAsP laser in an eye safe optical subassembly (OSA) which mates to the fiber cable. The laser OSA is driven by a LD driver IC which converts differential input LVPECL logicsignals into an analog laser driving current.

TX_DISABLE

The TX_DISABLE signal is high (TTL logic "1") to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic "0").

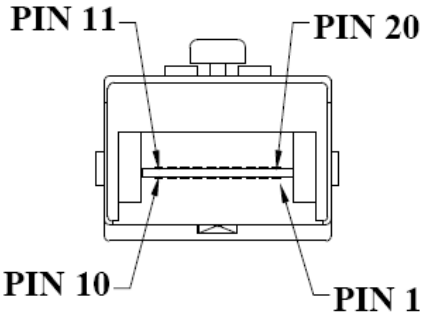
Receiver Section

The receiver utilizes a MSM detector integrated with a trans-impedance preamplifier in an OSA. This OSA isconnected to a circuit providing post-amplification quantization, and optical signal detection.

Receive Loss (RX_LOS)

The RX_LOS is high (logic "1") when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Pin Assignment



Pin Descriptions

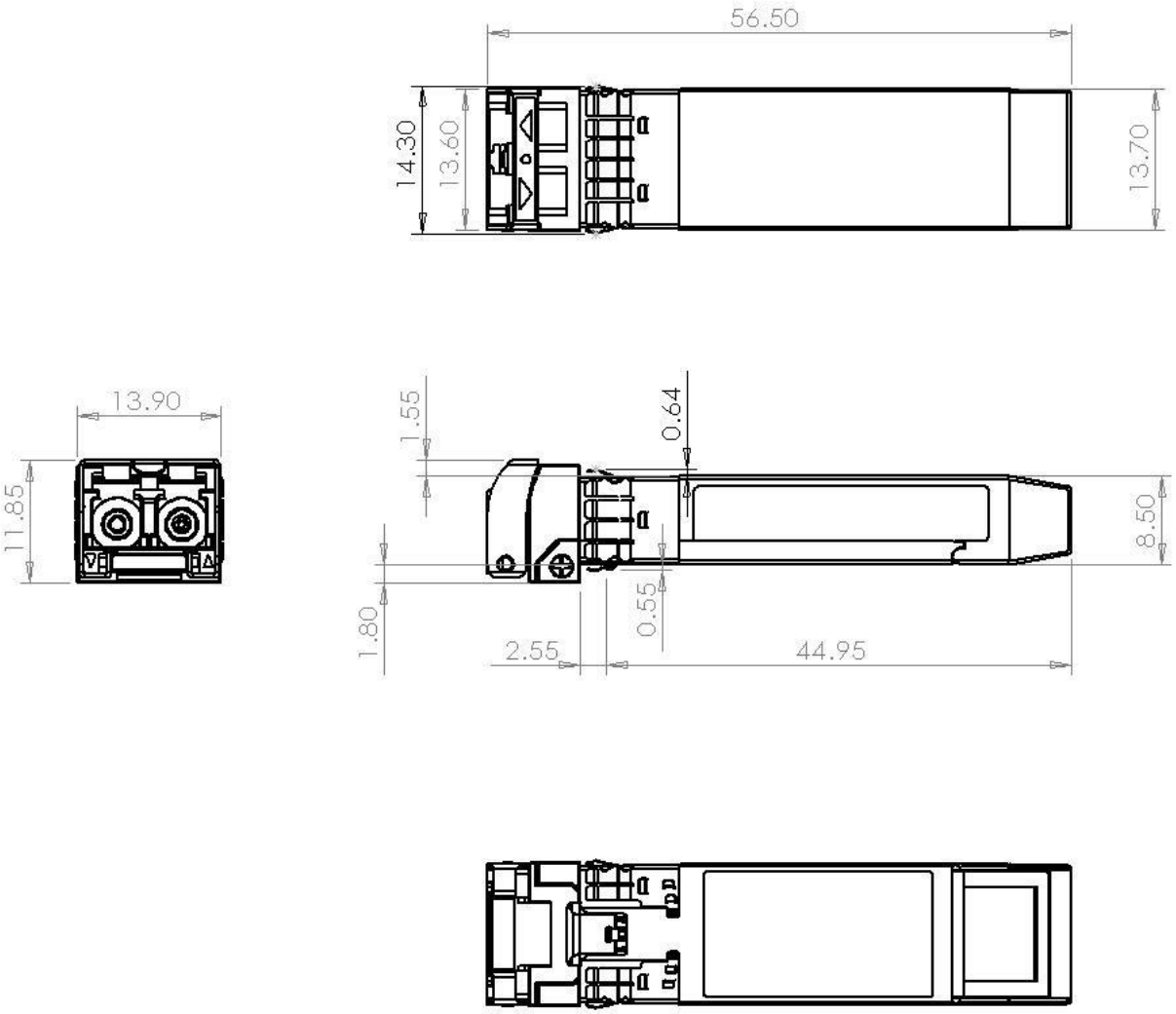
Pin	*Signal Name*	*Description*
1	TGND	Transmitter Ground
2	TX_FAULT	Transmit Fault

3	TX_DISABLE	Transmit Disable
4	MOD_DEF(2)	SDA Serial Data Signal
5	MOD_DEF(1)	SCL Serial Clock Signal
6	MOD_DEF(0)	TTL Low
7	RATE SELECT	Open Circuit
8	RX_LOS	Receiver Loss of Signal, TTL High, Open collector
9	RGND	Receiver Ground
10	RGND	Receiver Ground
11	RGND	Receiver Ground
12	RX-	Receive Data Bar, Differential PECL, ac coupled
13	RX+	Receive Data, Differential PECL, ac coupled
14	RGND	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	TGND	Transmitter Ground
18	TX+	Transmit Data, Differential PCEL, ac coupled
19	TX-	Transmit Data Bar, Differential PCEL, ac coupled
20	TGND	Transmitter Ground

Note:

1. Module ground pins GND are isolated from the module case.
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Dimensions



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE 0±2mm UNLESS OTHERWISE SPECIFIED

Ordering Information

Model Number	Part Number	Reach	Input/Out	Signal Detect	Voltage	Temperature
ASFP-1G-eLX	OP6C-S20-13-C	20km	AC/AC	TTL	3.3V	0°C to 70 °C

Note: All information contained in this document is subject to change without notice.