PRODUCT SPECIFICATION

Part No.:	AC-SFBL-34G1-40/AC-SFBL-43G1-40	
Description:	1.25G SFP Transceiver, BIDI TX1310nm/RX1490nm 40km 1.25G SFP Transceiver, BIDI TX1490nm/RX1310nm 40km	
Release Date	Rev.	Revision Change Description
2015/06/07	A0	New Release
2020/12/28	A1	Template Update

Features

- Up to 1.25Gbps bi-directional data links
- DFB laser transmitter and PIN photo detector for 40km transmission
- BIDI LC/UPC type pluggable optical interface
- Hot-pluggable SFP footprint
- Metal enclosure, for lower EMI
- Compatible with RoHS
- +3.3V single power supply
- Operating case temperature:
- Standard : 5 to +70°C
- Industrial : -40 to +85°C

Application

- Gigabit Ethernet
- Switched Backplane Applications
- Switch to Switch interface
- Switched backplane applications
- Router/Server interface
- Other optical transmission systems

Standard

- Gigabit Ethernet
- Compliant with SFF-8472
- Switched Backplane Applications
- Router/Server Interface

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Specification

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Signal Input Voltage		0	Vcc	V
Operating Humidity	-	5	95	%
Receiver Damage Threshold		5		dBm

Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	0		+70	°C
	Industrial		-40		+85	°C
Power Supply Voltage		Vcc	3.135	3.30	3.465	V
Power Supply Current		Icc			300	mA
Power Supply Noise Rejection					100	mVp-p
Transmission Distance					40	KM
Data Rate				1.25		Gbps
Coupled Fiber		Single mode fiber				9/125um SMF

Optical and Electrical Characteristics

Parameter		Symbol	Min	Typical	Max	Unit	Notes
Transmitter							
Total Supply Current		Icc			A	mA	1
TX Disable	Disable		2.0		Vcc	V	
	Enable		0		0.8	V	
TX Fault	Fault		2.0		Vcc	V	
	Normal		0		0.8	V	
Receiver							
LOS Output Voltage-		High	2.0		Vcc	V	
		Low	0		0.8	V	
Total Supply Current		Icc			B	mA	1

Note:

1. A (TX) + B (RX) = 300mA (Not include termination circuit) .

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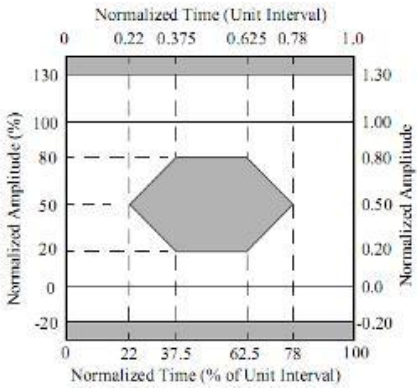
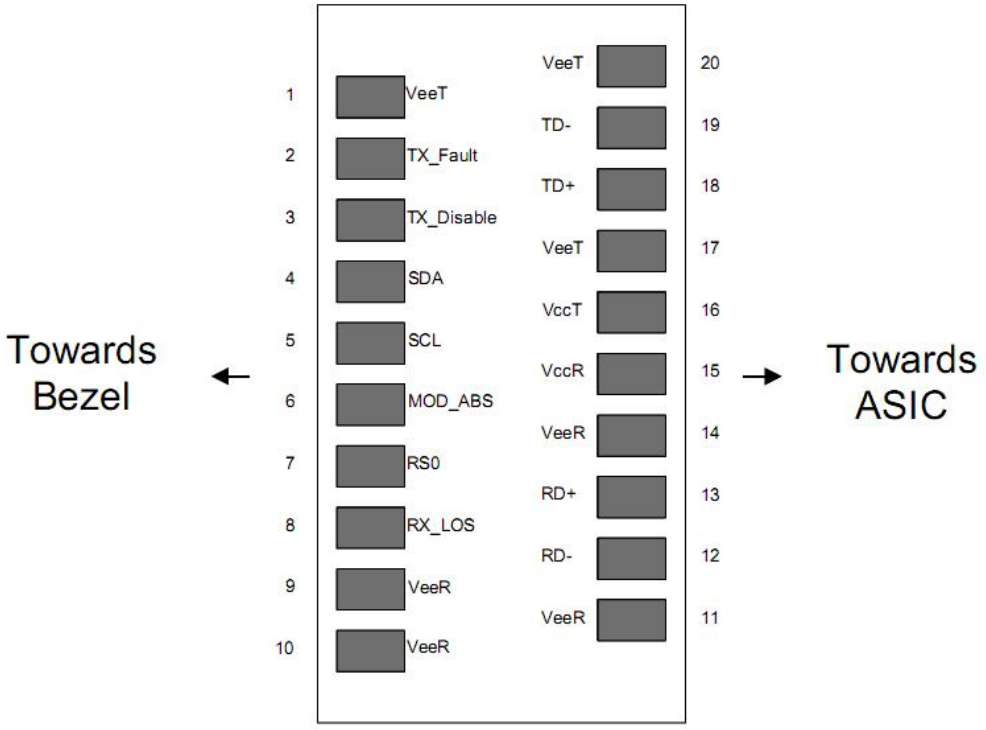
Optical transmitter Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Launched Power (avg.)		Pout	-5		0	dBm	
Center Wavelength		λc	1290	1310	1330	nm	AC-SFBL-34G1-40
			1470	1490	1510	nm	AC-SFBL-43G1-40
Side Mode Suppression Ratio		SMSR	30			dB	
Extinction Ratio		ER	9			dB	
Spectrum Bandwidth(-20dB)		σ			1	nm	
Data Input Swing Differential		V_{IN}	180		1200	mV	1
Relative Intensity Noise		RIN	90	100	110	ohm	
Output Eye Diagram		Complies with IEEE802.3z eye masks when filtered					
Optical receiver Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Receiver Sensitivity		S			-24	dBm	2
Wavelength Range		λc	1470	1490	1510	nm	AC-SFBL-34G1-40
			1290	1310	1330	nm	AC-SFBL-43G1-40
Optical Power Input Overload		P_{in-max}	-1			dBm	
Data Output Swing Differential		V_{out}	600	800	1000	mV	
LOS	Optical De-assert	Pd			-26	dBm	3
	Optical Assert	Pa	-40				
LOS hysteresis			0.5	2	6	dB	

Notes:

1. Measure at 2^7-1 NRZ PRBS pattern.
2. Measured with Light source 1490nm(1310nm), ER=9dB; BER =<10^-12 @PRBS=2^7-1 NRZ.
3. When LOS de-asserted, the RX data+/- output is signal output.



Pin Descriptions



Pin	Signal Name	Description	Notes
1	V_{EET}	Transmitter Ground	
2	TX FAULT	Transmitter Fault Indication	Note 1
3	TX DISABLE	Transmitter Disable	Note 2
4	SDA	SDA Serial Data Signal	
5	SCL	SCL Serial Clock Signal	
6	MOD_ABS	Module Absent. Grounded within the module	
7	RS0	Not Connected	
8	LOS	Loss of Signal	Note 3
9	V_{EER}	Receiver ground	
10	V_{EER}	Receiver ground	
11	V_{EER}	Receiver ground	
12	RD-	Inv. Received Data Out	Note 4
13	RD+	Received Data Out	Note 4
14	V_{EER}	Receiver ground	
15	V_{CCR}	Receiver Power Supply	
16	V_{CCT}	Transmitter Power Supply	
17	V_{EET}	Transmitter Ground	
18	TD+	Transmit Data In	Note 5
19	TD-	Inv. Transmit Data In	Note 5
20	V_{EET}	Transmitter Ground	

Notes:

1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low

state, the output will be pulled to less than 0.8V.

2) Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

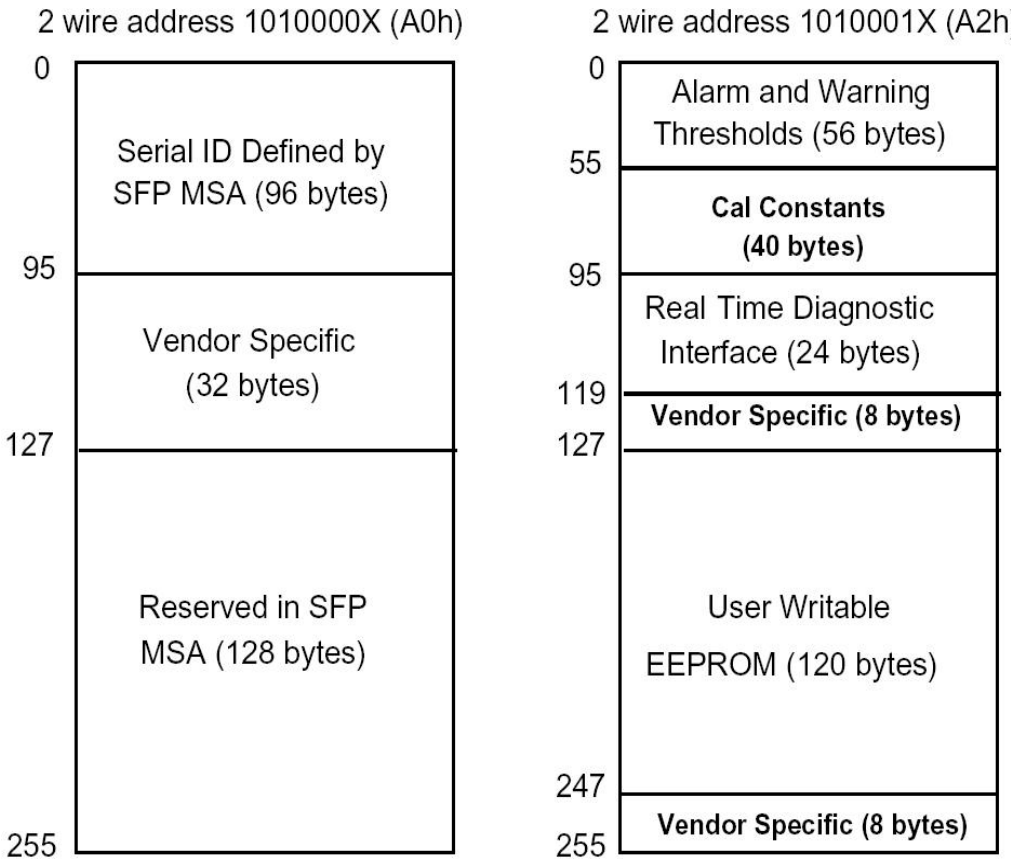
3) LOS is open collector output. Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

4) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.

5) TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

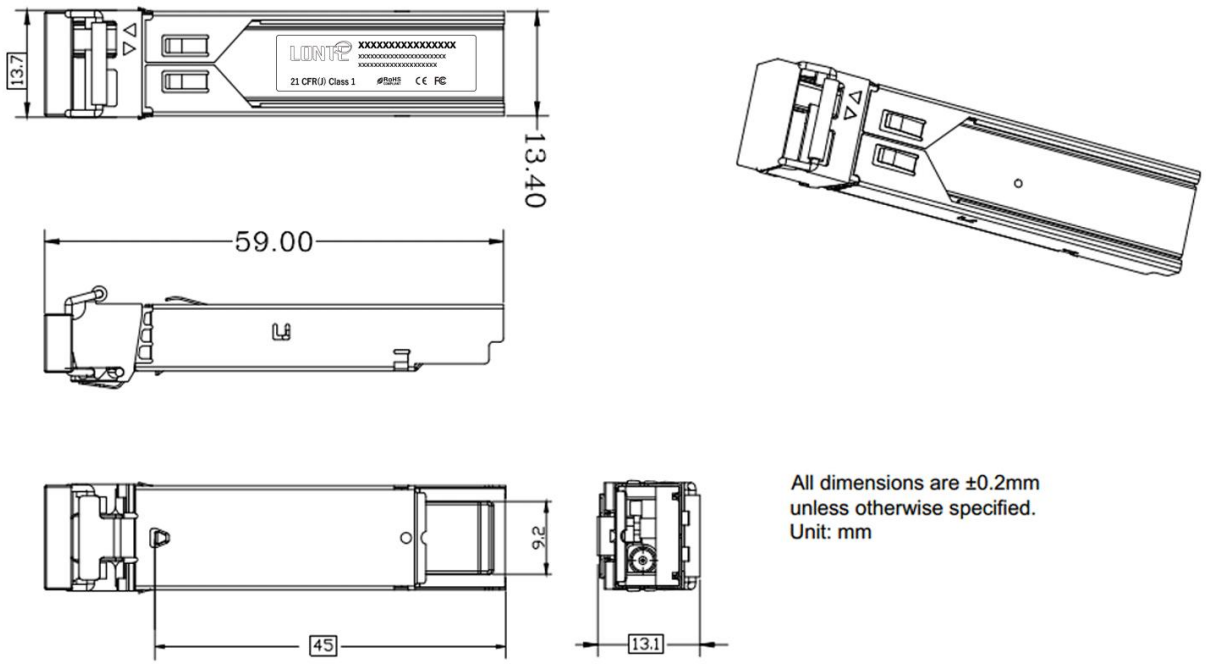
Digital Diagnostic Memory Map

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).The diagnostic information with internal calibration or external calibration all are implemented, including received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring.The digital diagnostic memory map specific data field defines as following.



Package Outline

Dimensions are in millimeters. All dimensions are ±0.2mm unless otherwise specified. (Unit: mm)



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000V for other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product
EMC	EN61000-3	Comply with standard

Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (℃)	Reach (km)	DDM
AC-SFBL-34G1-40	SFP	1.25	1310	-5~-0	PIN	＜-24	0~70	40	Y
AC-SFBL-43G1-40	SFP	1.25	1490	-5~-0	PIN	＜-24	0~70	40	Y
AC-SFBL-34G1-40F	SFP	1.25	1310	-5~-0	PIN	＜-24	-40~85	40	Y
AC-SFBL-43G1-40F	SFP	1.25	1490	-5~-0	PIN	＜-24	-40~85	40	Y