RoHS Compliant
TX-1490/RX-1310 nm Single-mode Bi-directional (15 dB margin)
SFP LC Simplex Connector, with Diagnostic Monitoring
IEEE 802.3ah 1000BASE-BX

Features

- RoHS Compliant
- IEEE802.3ah 1000BASE-BX10 application
- Compliant with SFF8472 Digital Diagnostic Standard
- Industry standard small form pluggable (SFP) package
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

Ordering Information

PART NUMBER	TX/RX	TEMPERATURE	LD Type	Distance
GB4931-SFP-LC.S20	1490/1310	0°C to 70 °C	1490 DFB	20km
GB4931-SFP-LC.S20(WT)	1490/1310	-40°C to 85 °C	1490 DFB	20km

Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-40 to 95	± 3	°C	External
Voltage	3.0 to 3.6	± 0.1	V	
Bias Current	0 to 100	± 10%	mA	
TX Power	-11 to 0	± 3 dB	dBm	
RX Power	-23 to –3	± 3 dB	dBm	

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	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case Operating Temperature	T_C	0 -40	70 85	°C	
Supply Voltage	*Vcc*	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	300	mA	
Relative Humidity(Non-condensing)	*RH*	5	95	%	

Transmitter Electro-optical Characteristics

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

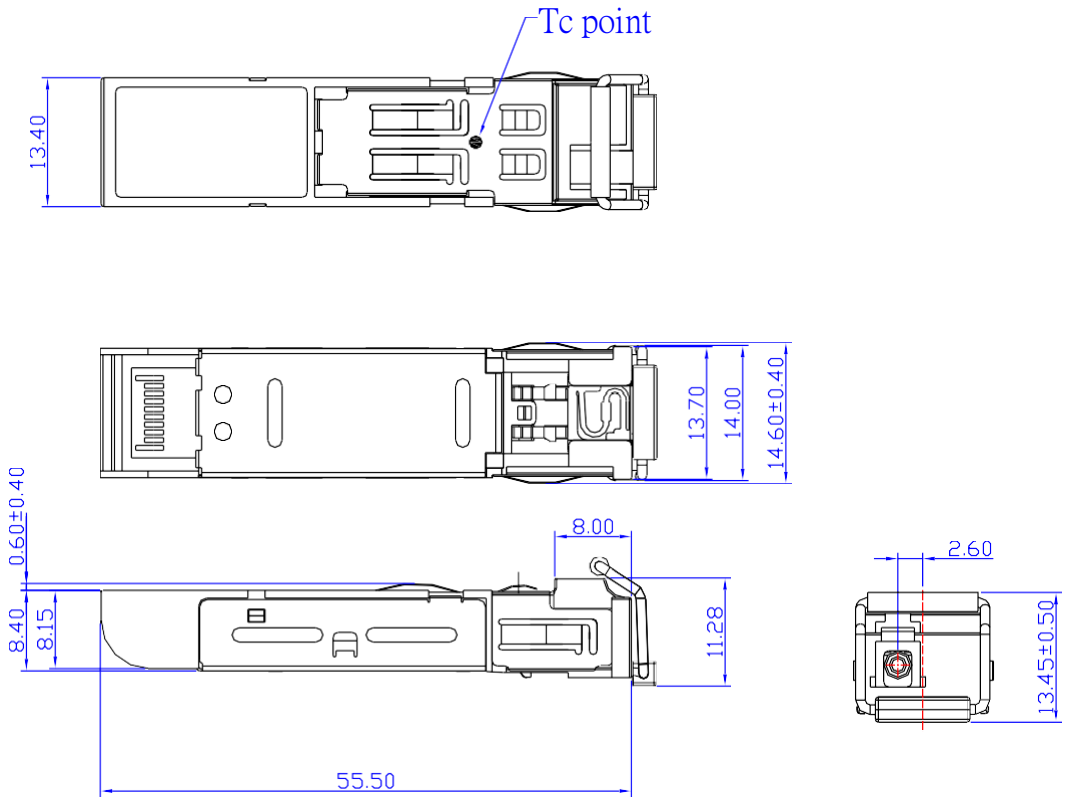
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Output Optical Power 9/125 µm fiber	P_{out}	–8	---	–2	dBm	Average
Extinction Ratio	*ER*	9	---	---	dB	
Center Wavelength	λ_C	1480	1490	1500	nm	
Spectral Width (RMS)	$\Delta\lambda$	---	---	1.0	nm	
Rise/Fall Time, (20–80%)	$T_{r,f}$	---	---	260	ps	
Relative Intensity Noise	*RIN*	---	---	–120	dB/Hz	
Total Jitter	*TJ*	---	---	227	ps	
Output Eye			Compliant with IEEE802.3z			
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	–45	dBm	
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	
Transmit Fault Output-Low	TX_FAULT_L	0.0	---	0.5	V	
Transmit Fault Output-High	TX_FAULT_H	2.4	---	V_{CC}	V	
Time to initialize, include reset of TX_FAULT	*t_init*	---	---	300	ms	
TX_FAULT from fault to assertion	*t_fault*	---	---	100	µs	
TX_DISABLE time to start reset	*t_reset*	10	---	---	µs	

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	P_{IN}	–2	---	---	dBm	PRBS7, BER < 10^{-12}
RX Sensitivity	P_{IN}	---	---	–23	dBm	PRBS7, BER < 10^{-12}
Operating Center Wavelength	λ_C	1260	---	1360	nm	
Optical Return Loss	*ORL*	14	---	---	dB	λ=1260~1360nm
Optical isolation	ISO	---	---	-45	dB	λ=1480~1500nm
LOS Deasserted	P_D	---	---	–23	dBm	
LOS Asserted	P_A	–35	---	---	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)	$T_{r,f}$	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low	RX_LOS_L	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS_H	2.4	---	V_{CC}	V	

Dimensions



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE 0.2mm UNLESS OTHERWISE SPECIFIED

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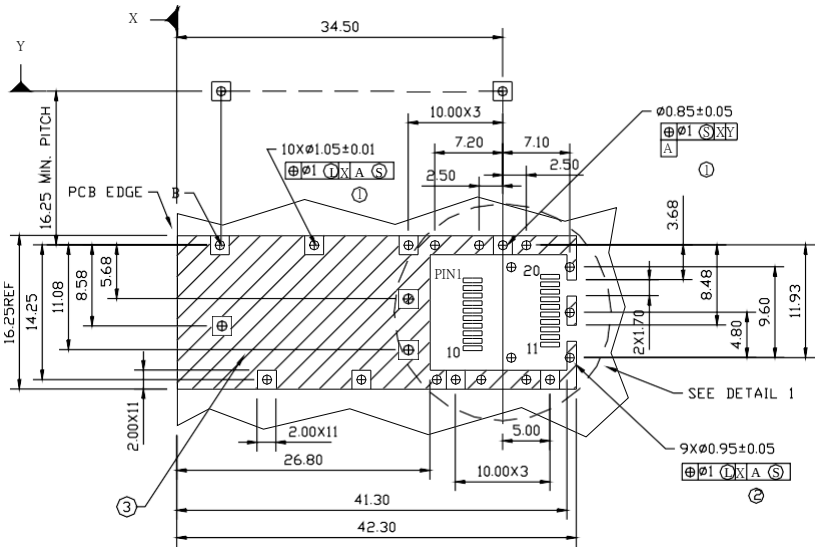
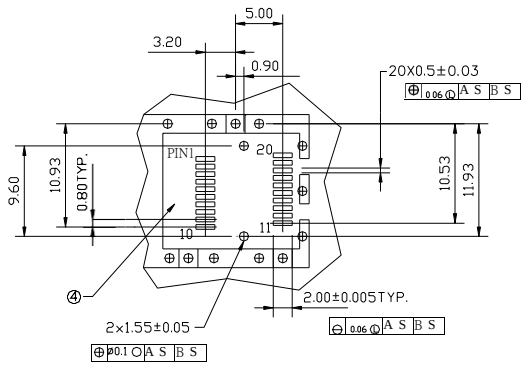
SFP host board mechanical layout





DETAIL 1

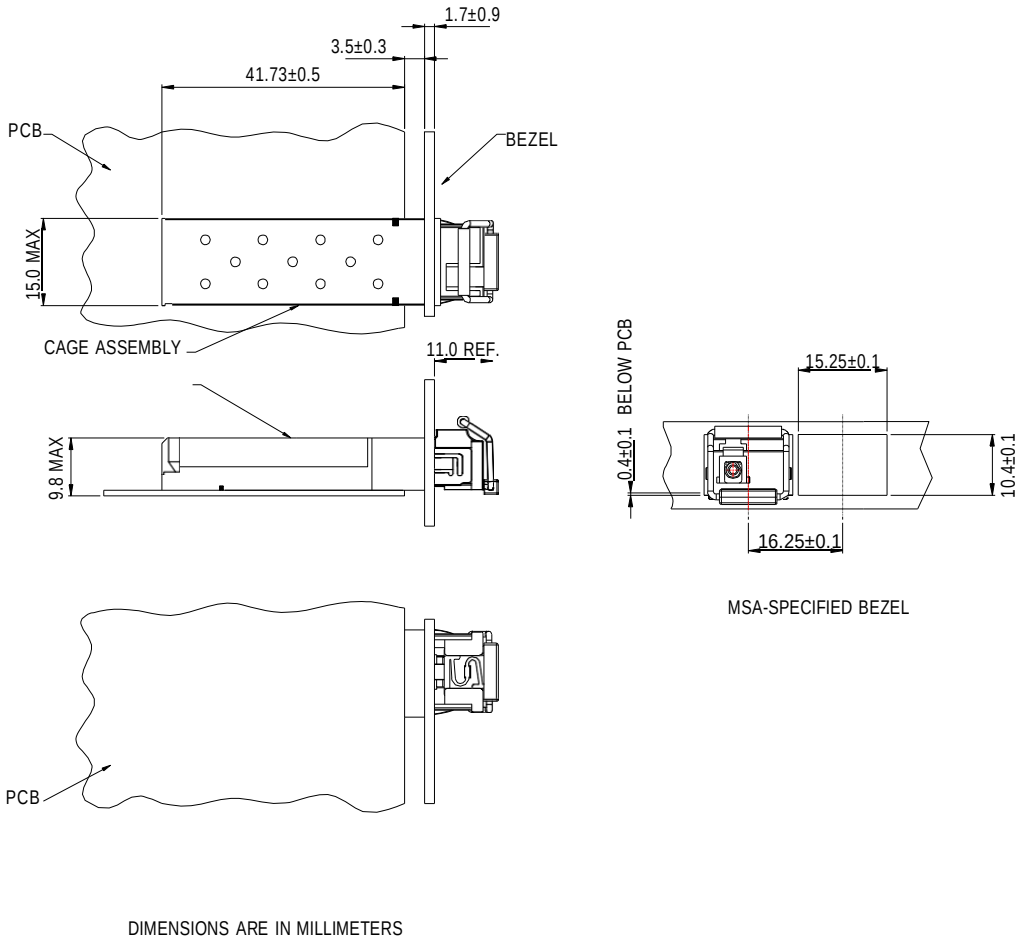
LEGEND

1. PADS AND VIAS ARE CHASSIS GROUND
2. THROUGH HOLES, PLATING OPTIONAL
3. HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
4. AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

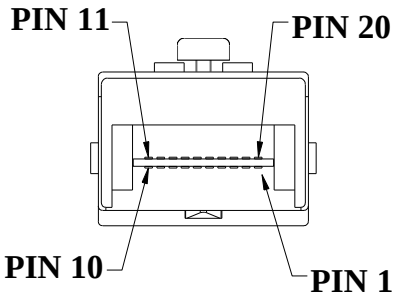
Assembly drawing



Unit: mm

Pin Assignment

Pin-Out



Pin	Signal Name	Description
1	T_{GND}	Transmit 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	R_{GND}	Receiver Ground
10	R_{GND}	Receiver Ground
11	R_{GND}	Receiver Ground
12	*RX–*	Receive Data Bar, Differential , ac coupled
13	*RX+*	Receive Data, Differential , ac coupled
14	R_{GND}	Receiver Ground
15	V_{CCR}	Receiver Power Supply
16	V_{CCT}	Transmitter Power Supply
17	T_{GND}	Transmitter Ground
18	*TX+*	Transmit Data, Differential , ac coupled
19	*TX–*	Transmit Data Bar, Differential , ac coupled
20	T_{GND}	Transmitter Ground

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