



**RoHS compliant**  
**TX-1310/RX-1270 nm Single-mode Bi-directional,**  
**SMF 30km without Host FEC / 40km with Host FEC**  
**SFP LC Simplex Connector, 25G Ethernet/CPRI**



**Features**

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- Link distance up to 30km without host FEC /40km with host FEC over single mode fiber

**Ordering Information**

PART NUMBER	TX/RX	TEMPERATURE	LD Type	Distance
LG38-J3M-TC-B31	1310/1270	0°C to 70 °C	1310 DFB	30km without host FEC
LG38-J3M-TJ-B31	1310/1270	-20°C to 85 °C	1310 DFB	40km with host FEC
LG38-J3M-TI-B31	1310/1270	-40°C to 85 °C	1310 DFB	

**Diagnostics**

Parameter	Range	Accuracy	Unit	Calibration
Internal Transceiver Temperature	-20 to 85	± 3	°C	Internal
Internal Transceiver Voltage	3.1 to 3.5	± 0.1	V	
Bias Current	0 to 80	± 10%	mA	
TX Power	0 to +6	± 3	dBm	
RX average Power	-18 to -6	± 3	dBm	



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### Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	$T_S$	-40	85	°C	
Supply Voltage	$V_{CC}$	-0.5	4.0	V	
Input Voltage	$V_{IN}$	-0.5	$V_{CC}$	V	

### Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case operating Temperature	$T_C$	0	70	°C	-20~85°C for LG38-J3M-TJ-B31 -40~85°C for LG38-J3M-TI-B31
Supply Voltage	$V_{CC}$	3.14	3.46	V	
Supply Current	$I_{TX} + I_{RX}$		300	mA	
Power Consumption	$P$	---	1.5	W	



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**Transmitter Electro-optical Characteristics**

$V_{CC} = 3.1\text{ V to }3.5\text{ V}, T_C = 0\text{ }^\circ\text{C to }70\text{ }^\circ\text{C}$

$(T_C = -20\text{ }^\circ\text{C to }85\text{ }^\circ\text{C for LG38-J3M-TJ-B31 \& } T_C = -40\text{ }^\circ\text{C to }85\text{ }^\circ\text{C for LG38-J3M-TI-B31})$

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit Rate	$B$	24	25.78	26.5	Gbps	
Output Optical Power	$P_{out}$	0	---	+6	dBm	Average
Extinction Ratio	$ER$	3.5	---	---	dB	
Center Wavelength	$\lambda_C$	1300	1310	1320	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1	nm	
Side Mode Suppression Ratio	$SMSR$	30			dB	
Max. $P_{out}$ TX-DISABLE Asserted	$P_{OFF}$	---	---	-45	dBm	
Differential Input Voltage	$V_{DIFF}$	180		850	mV	
Transmit Fault Output-Low	$TX\_FAULT_L$	0.0	---	0.5	V	
Transmit Fault Output-High	$TX\_FAULT_H$	2.4	---	$V_{CC}$	V	
TX_DISABLE Assert Time	$t_{off}$	---	---	100	$\mu s$	
TX_DISABLE Negate Time	$t_{on}$	---	---	2	ms	
Time to initialize, include reset of TX_FAULT	$t_{init}$	---	---	300	ms	
TX_FAULT from fault to assertion	$t_{fault}$	---	---	1	ms	
TX_DISABLE time to start reset	$t_{reset}$	10	---	---	$\mu s$	



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**Receiver Electro-optical Characteristics**

$V_{CC} = 3.1\text{ V to }3.5\text{ V}, T_C = 0^\circ\text{C to }70^\circ\text{C}$

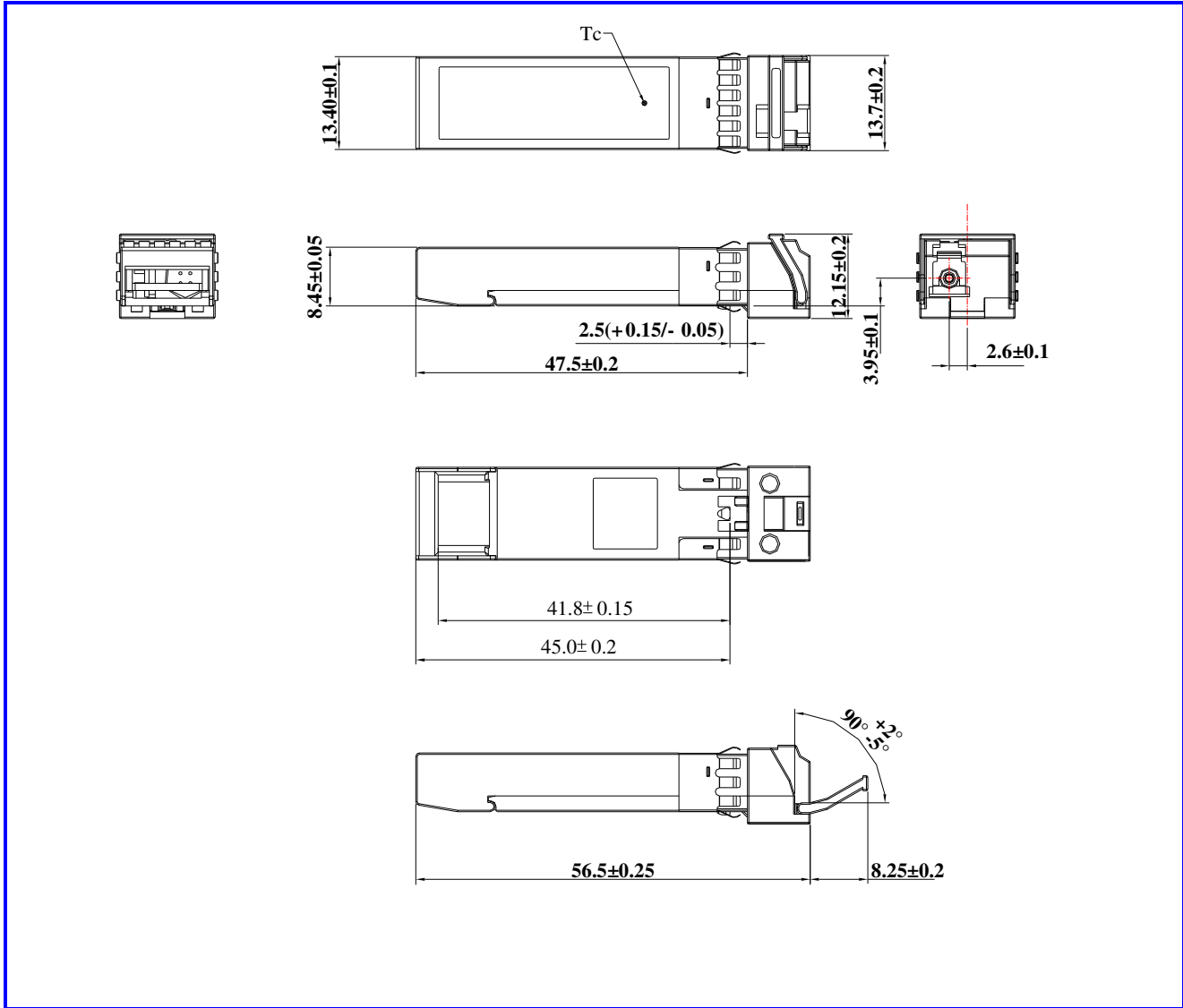
$(T_C = -20^\circ\text{C to }85^\circ\text{C for LG38-J3M-TJ-B31 \& } T_C = -40^\circ\text{C to }85^\circ\text{C for LG38-J3M-TI-B31)}$

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	$B$	24	25.78	26.5	Gbps	
Receiver Sensitivity(OmA)	$P_{IN}$	---	---	-13	dBm	BER=10e-12
Receiver Sensitivity(OmA)	$P_{IN}$	---	---	-18	dBm	BER=5e-5
Operating Center Wavelength	$\lambda_C$	1260	---	1280	nm	
Optical Return Loss	$ORL$	14	---	---	dB	
Loss of signal -Deasserted	$P_D$	---	---	-18	dBm	
Loss of signal -Asserted	$P_A$	-30	---	---	dBm	
Differential Output Voltage	$V_{DIFF}$	300	---	800	mV	
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	
Receiver Loss of Signal Assert Time (off to on)	$t_{A,RX\_LOS}$	---	---	100	$\mu\text{s}$	
Receiver Loss of Signal Assert Time (on to off)	$t_{D,RX\_LOS}$	---	---	100	$\mu\text{s}$	

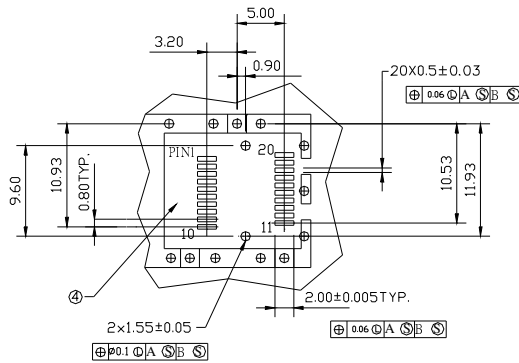
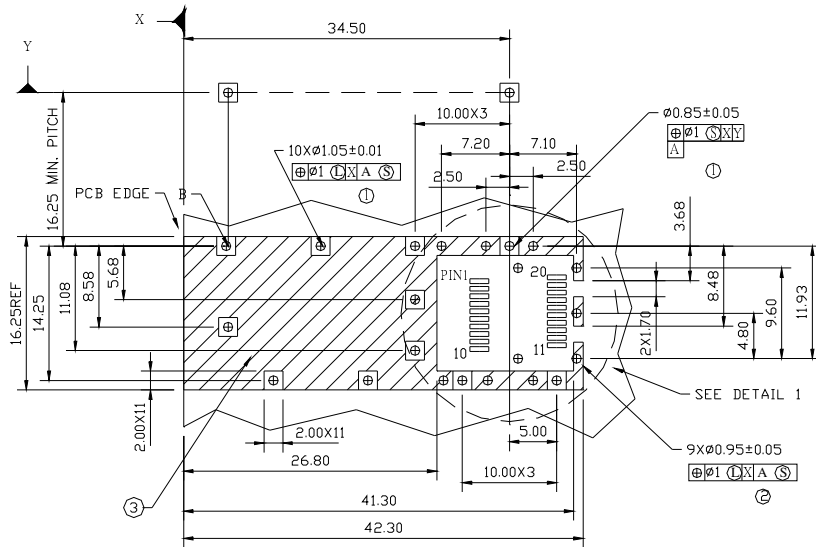
**I2C Electrical Characteristics**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
High-Level Input Voltage SDA, SCL	$V_{IH}$	$0.7*V_{CC}$	---	$V_{CC}+0.3$	V	
Low-Level Input Voltage SDA, SCL	$V_{IL}$	-0.3	---	$0.3*V_{CC}$	V	
SCL Clock Frequency	fSCL	0	---	400	kHz	
Serial Interface Clock Holdoff "Clock Stretching"	$T_{\text{clock\_hold}}$	---	---	500	$\mu\text{s}$	

Dimensions



SFP host board mechanical layout



DETAIL 1

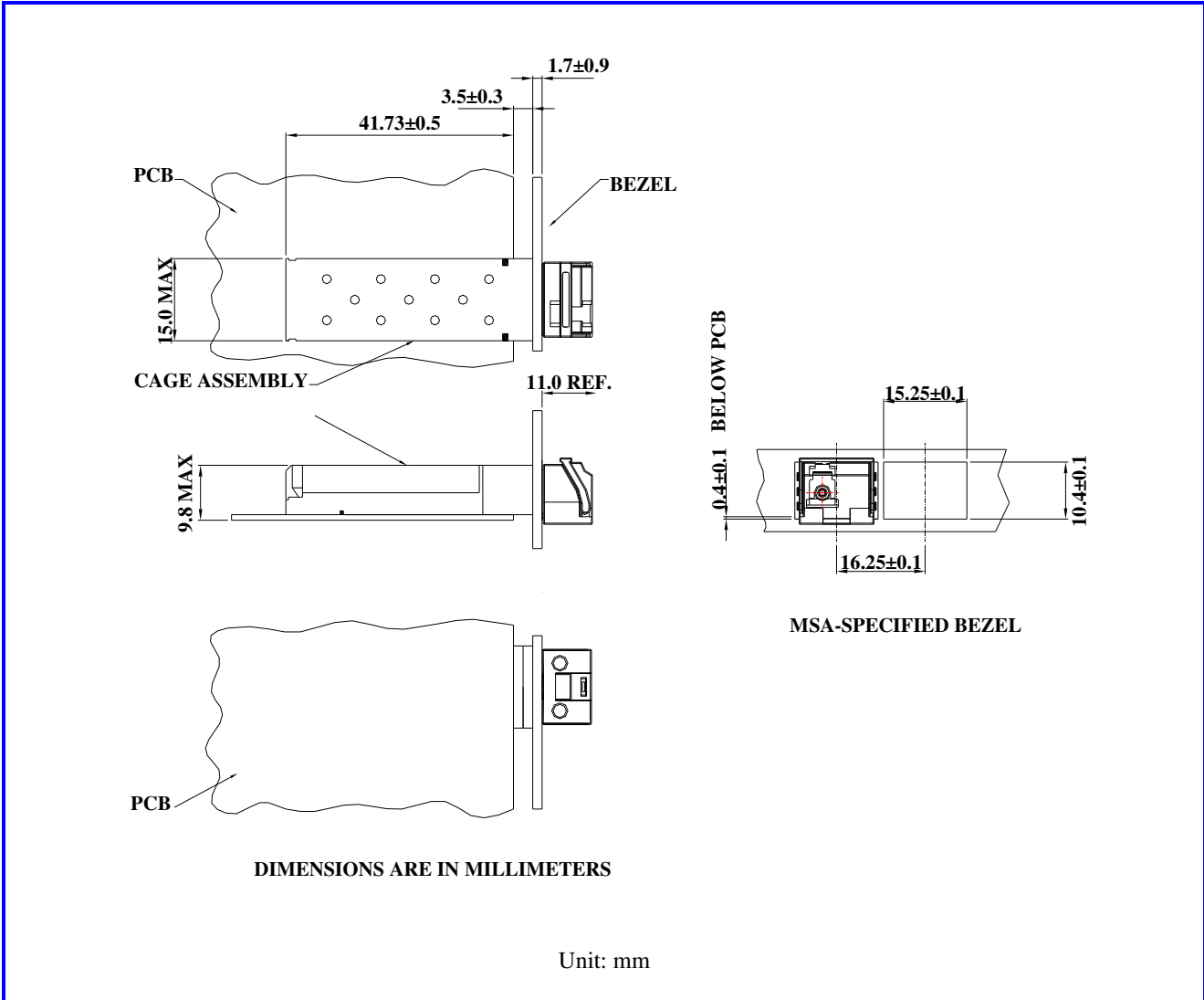
LEGEND

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

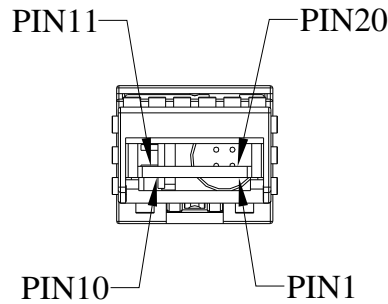




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**Pin Assignment**

Pin-Out



Pin	Signal Name	Description
1	<i>T<sub>GND</sub></i>	Transmit Ground
2	<i>TX_FAULT</i>	Transmit Fault
3	<i>TX_DISABLE</i>	Transmit Disable
4	<i>SDA</i>	SDA Serial Data Signal
5	<i>SCL</i>	SCL Serial Clock Signal
6	<i>MOD_ABS</i>	Internal connected to ground
7	<i>RS0</i>	Rate select 0, not used
8	<i>RX_LOS</i>	Receiver Loss of Signal, LVTTTL High, open collector
9	<i>RS1</i>	Rate select 1, not used
10	<i>R<sub>GND</sub></i>	Receiver Ground
11	<i>R<sub>GND</sub></i>	Receiver Ground
12	<i>RX-</i>	Receive Data Bar, ac coupled
13	<i>RX+</i>	Receive Data, ac coupled
14	<i>R<sub>GND</sub></i>	Receiver Ground
15	<i>V<sub>CCR</sub></i>	Receiver Power Supply
16	<i>V<sub>CCT</sub></i>	Transmitter Power Supply
17	<i>T<sub>GND</sub></i>	Transmitter Ground
18	<i>TX+</i>	Transmit Data, ac coupled
19	<i>TX-</i>	Transmit Data Bar, ac coupled
20	<i>T<sub>GND</sub></i>	Transmitter Ground

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