



RoHS Compliant
Tx1490/Rx1550 nm Bi-direction Single-mode Transceiver
Small Form Pluggable (SFP+), with Diagnostic Monitoring
10G BASE-ZW/ZR Ethernet



Features

- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- Up to 80km transmission on SMF with 20dB margin including TDP
- Temperature stabilized 1490nm EML laser and APD receiver
- Class 1 laser product complies with EN 60825-1

Ordering Information

PART NUMBER	VOLTAGE	TEMPERATURE	Distance
LG48-H3U-TC-N49-GA	3.3V	-5°C to 75 °C	80km
LG48-H3U-TJ-N49-GA	3.3V	-5°C to 85 °C	80km

Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Internal Transceiver Temperature	-5 to 85	± 3	°C	Internal
Internal Transceiver Voltage	3.14 to 3.46	± 0.1	V	
Bias Current	0 to 120	± 10%	mA	
TX Power	1 to +5	± 3	dB	
RX average Power	-23 to -10	± 3	dB	



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Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_s	-40	85	°C	
Operating Relative Humidity	RH	0	85	%	
Supply Voltage	V_{cc}	0	3.6	V	
Input Voltage	V_{in}	0	V_{cc}	V	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case operating Temperature	T_c	-5	85	°C	-5~75°C for LG48-H3U-TC-N55-GA
Supply Voltage	V_{cc}	3.14	3.46	V	
Supply Current	$I_{TX} + I_{RX}$		600	mA	
Power Consumption	P		2.0	W	



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Transmitter Electro-optical Characteristics

Vcc = 3.14 V to 3.46 V, Over Operating Case Temperature.

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	B		10.3125		Gbps	
Output Optical Power	P_{out}	+1	---	+5	dBm	
Extinction Ratio	ER	8.2			dB	
Center Wavelength	λ_c	1480	---	1500	nm	
Spectrum Width	$\Delta \lambda$			1	nm	
Side mode Suppression ratio	SSR_{min}	30			dB	
Dispersion Tolerance				1600	ps/nm	
Transmitter and Dispersion Penalty	TDP			4	dB	80km
Relative Intensity Noise	RIN	---	---	-128	dB/Hz	
Optical Return Loss	ORL	21	---	---	dB	
Output Eye			Compliant with IEEE802.3ae			
Differential Input Impedance	Z_d		100		Ω	
Differential Input Voltage Swing	V_{DIFF}	300		1200	mVpp	
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}	---	---	10	μs	
TX_DISABLE Negate Time	t_{on}	---	---	1	ms	
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	



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Receiver Electro-optical Characteristics

V_{CC} = 3.14 V to 3.46 V, Over Operating Case Temperature.

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	<i>B</i>		10.3125		Gbps	
Operating Center Wavelength	λ_C	1540	---	1560	nm	
Optical Input Power-maximum	<i>P_{IN}</i>	-6	---	---	dBm	BER < 10 ⁻¹²
Receiver Sensitivity@10.3125Gbps	<i>P_{IN}</i>	---	---	-23	dBm	BER < 10 ⁻¹²
Loss of Signal-Asserted	<i>P_A</i>	-38	---	---	dBm	Note1,2
Loss of Signal-Deasserted	<i>P_D</i>	---	---	-25	dBm	Note1,2
Differential Output Impedance	<i>Z_d</i>	---	100	---	Ω	
Differential Output Voltage	<i>V_{DIFF}</i>	350	---	700	mVpp	
Receiver Loss of Signal Output Voltage-Low	<i>RX_LOS_L</i>	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	<i>RX_LOS_H</i>	2.4	---	V _{CC}	V	
Receiver Loss of Signal Assert Time (off to on)	<i>t_{A,RX_LOS}</i>	---	---	100	μ s	
Receiver Loss of Signal Assert Time (on to off)	<i>t_{D,RX_LOS}</i>	---	---	100	μ s	

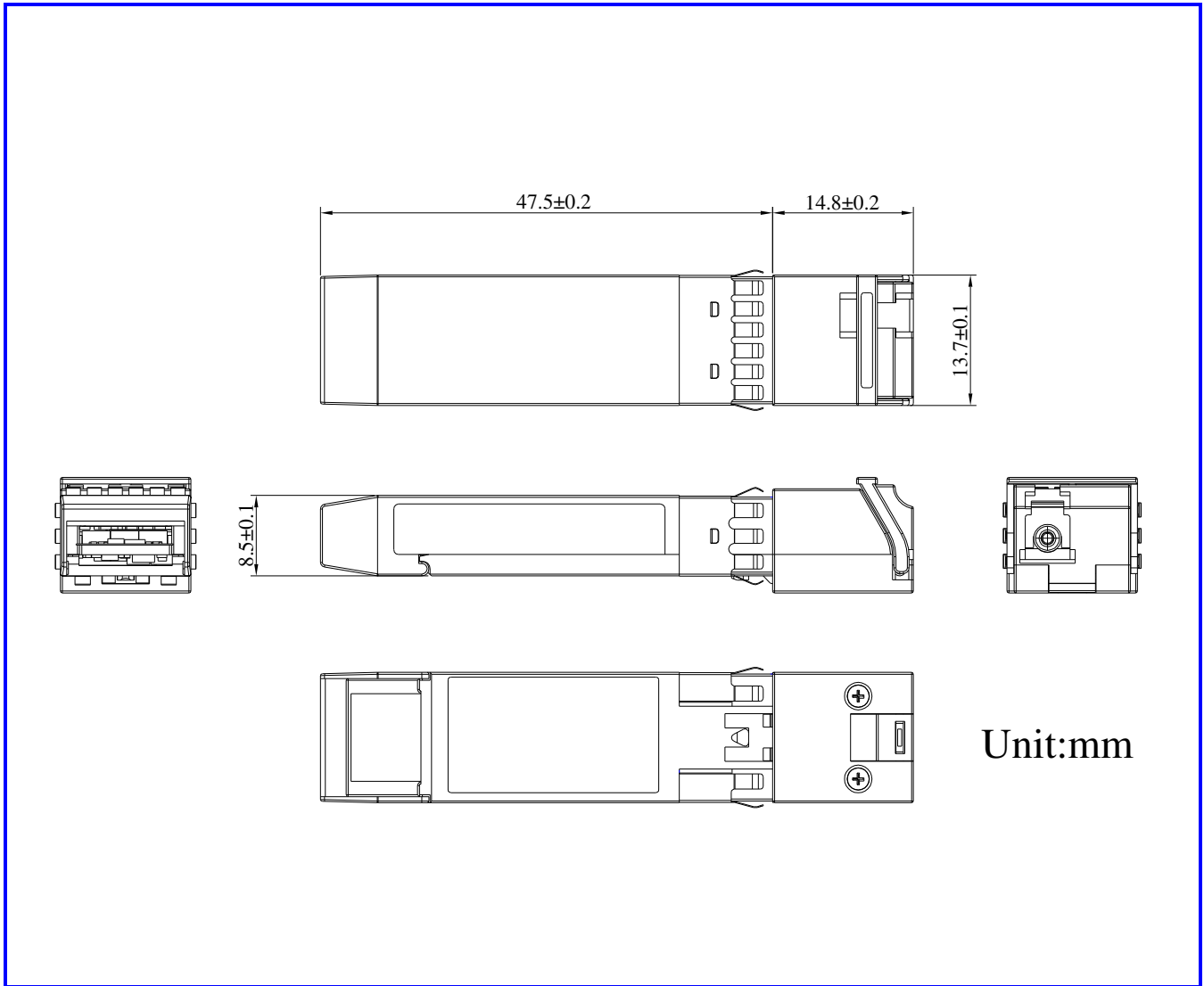
Note1. Rx_Los will be connected to a PHY

Note2. RX_Los signal shall be static changed in transition, not make it glitch pulse



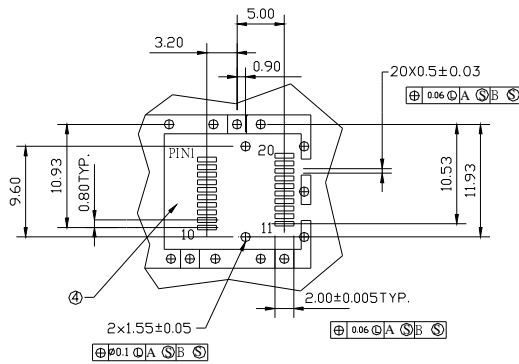
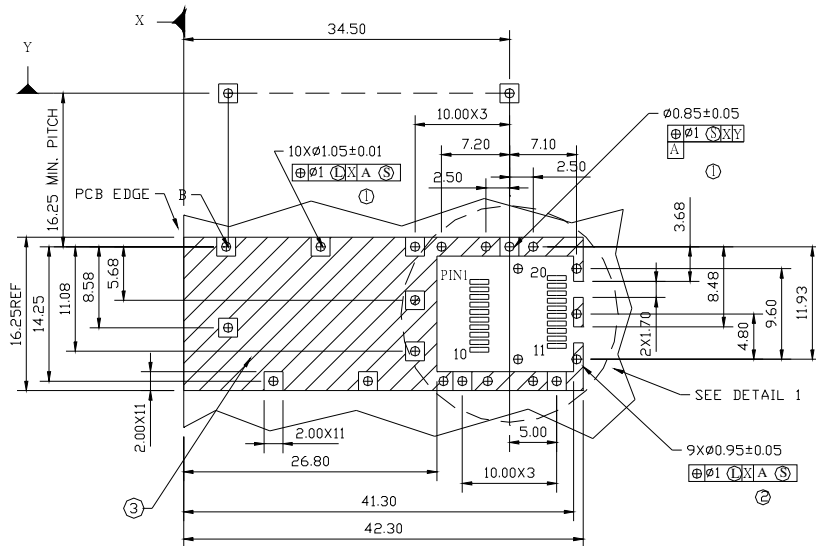
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Dimensions



Unit:mm

SFP host board mechanical layout



DETAIL 1

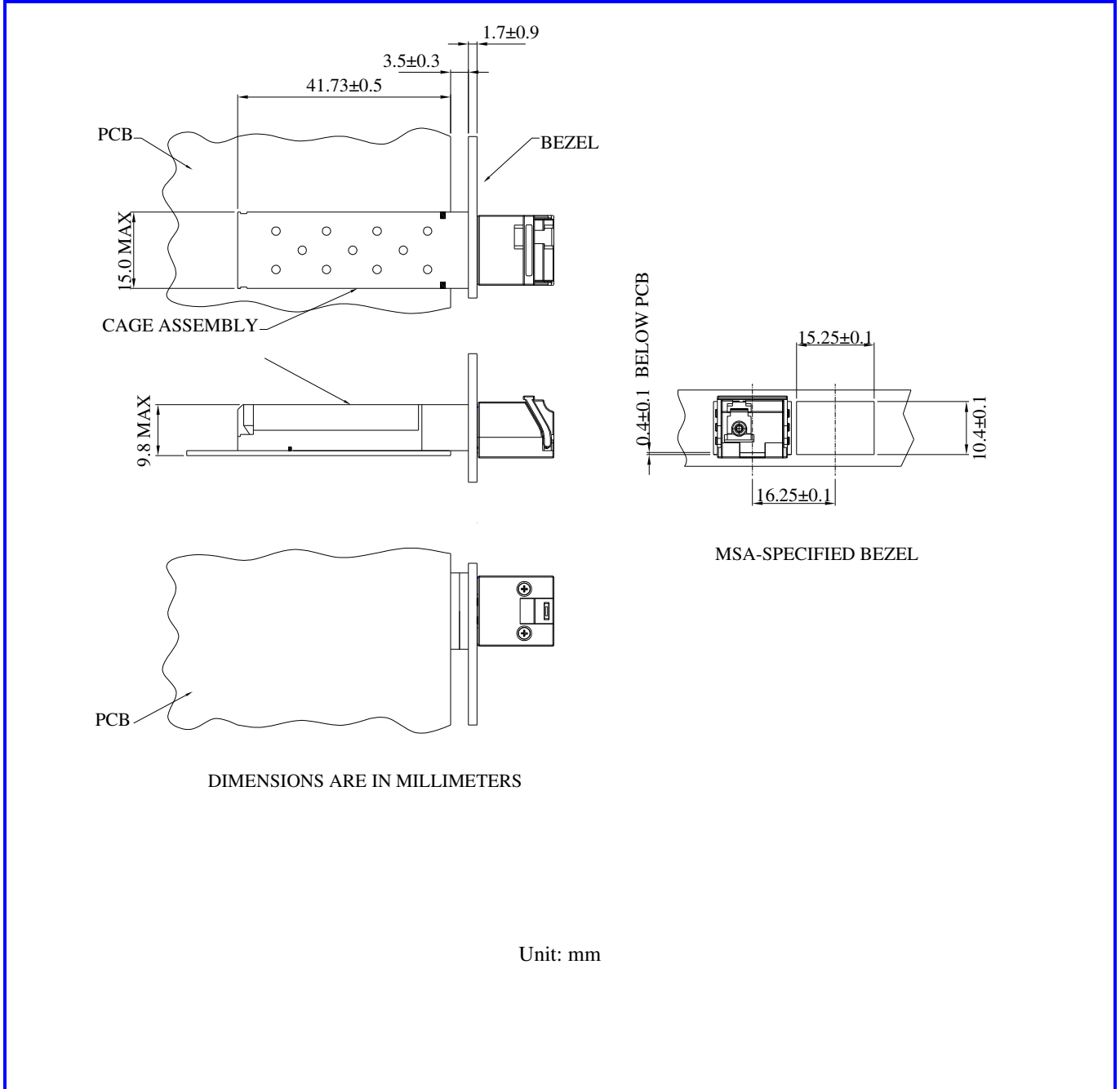
LEGEND

- 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

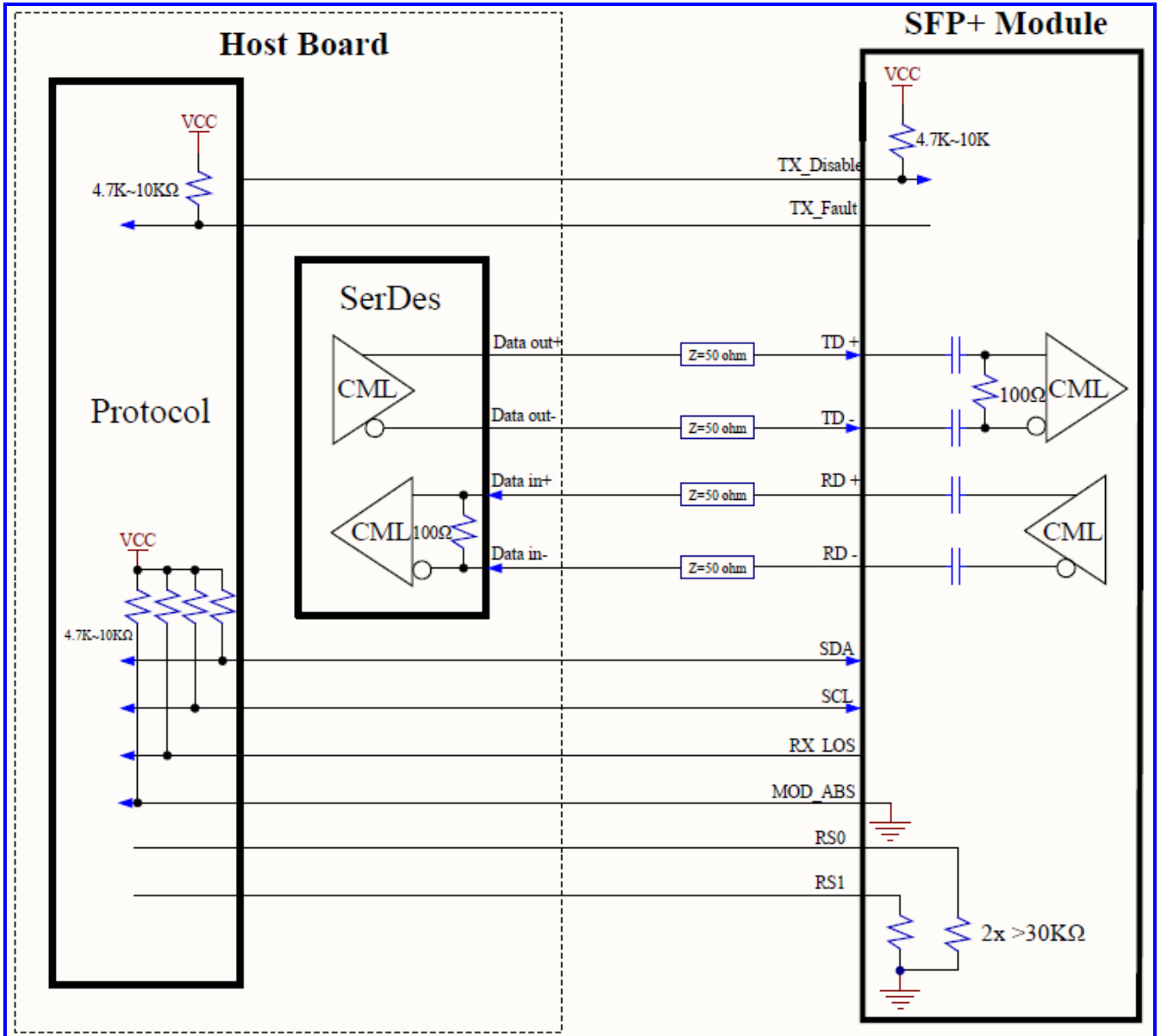
Assembly Drawing





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Recommended Interface Circuit

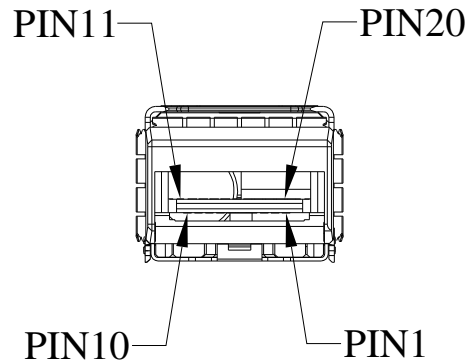




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Pin Assignment

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	$RS0$	RX Rate Select, No function implemented
8	RX_LOS	Receiver Loss of Signal, TTL High, open collector
9	$RS1$	TX Rate Select, No function implemented
10	R_{GND}	Receiver Ground
11	R_{GND}	Receiver Ground
12	$RX-$	Receive Data out Bar, ac coupled
13	$RX+$	Receive Data out, 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 in, ac coupled
19	$TX-$	Transmit Data in Bar, ac coupled
20	T_{GND}	Transmitter Ground



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Eye Safety Mark

The LG4 series single-mode transceiver is a class 1 laser product. It complies with EN 60825-1 and FDA 21 CFR 1040.10 and 1040.11. In order to meet laser safety requirements the transceiver shall be operated within the Absolute Maximum Ratings.

Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

Required Mark

**Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11**

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