

**RoHS Compliant**  
**1310 nm Single-mode Transceiver**  
**Small Form Pluggable (SFP+), with Diagnostic Monitoring**  
**10G BASE-LW/LR 10G Ethernet, 1200-SM-LL-L 10G Fiber channel**



### Features

- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

### Ordering Information

PART NUMBER	VOLTAGE	TEMPERATURE	Distance
JD1310-SFP-LC.S10	3.3V	-25°C to 85 °C	10km

### Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Internal Transceiver Temperature	-40 to 95	± 3	°C	Internal
Internal Transceiver Voltage	3.1 to 3.5	± 0.1	V	
Bias Current	0 to 120	± 10%	%	
TX Power	-9 to +2	± 3	dB	
RX average Power	-16 to 0	± 3	dB	

### 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	$T_c$	-10	70	°C	
		-25	85		
Supply Voltage	$V_{cc}$	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$		350	mA	
Power Consumption	$P$	---	1.25	W	

### Transmitter Electro-optical Characteristics for

$V_{CC} = 3.1\text{ V to }3.5\text{ V}, T_C = -10^\circ\text{C to }70^\circ\text{C} \text{ \& } T_C = -25^\circ\text{C to }85^\circ\text{C}$

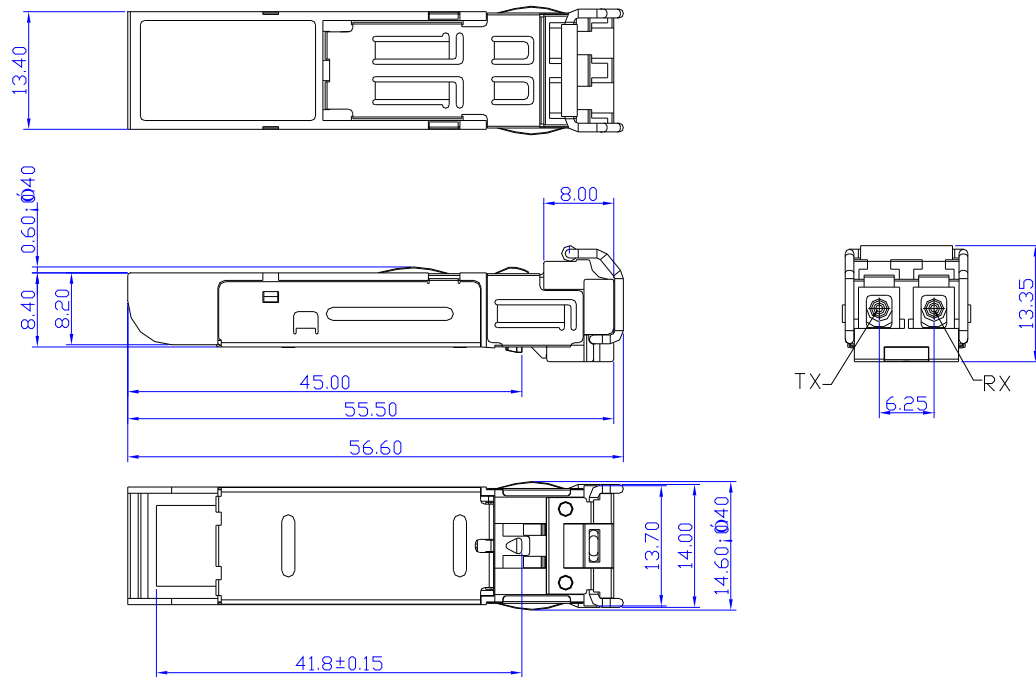
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	$B$		10.3125		Gbps	
Output Optical Power	$P_{out}$	-6	---	0.5	dBm	
Optical Modulation Amplitude	$OMA$	-5.2			dBm	
Extinction Ratio	$ER$	3.5			dB	
Center Wavelength	$\lambda_C$	1290	1310	1330	nm	
Spectrum Width	$\Delta \lambda$			1	nm	
Side mode Suppression ratio	$SSR_{min}$	30			dB	
Transmitter and Dispersion Penalty	$TDP$			3.2	dB	
Relative Intensity Noise	$RIN$	---	---	-128	dB/Hz	
Output Eye			Compliant with IEEE802.3ae			
Max. $P_{out}$ TX-DISABLE Asserted	$P_{OFF}$	---	---	-35	dBm	
Differential Input Impedance	$Z_d$		100		$\Omega$	
Differential Input Voltage Swing	$V_{DIFF}$	180		700	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	$t_{off}$	---	---	10	$\mu s$	
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	$\mu s$	
TX_DISABLE time to start reset	$t_{reset}$	10	---	---	$\mu s$	

### Receiver Electro-optical Characteristics

$V_{CC} = 3.1\text{ V to }3.5\text{ V}$ ,  $T_C = -10\text{ }^\circ\text{C to }70\text{ }^\circ\text{C}$  &  $T_C = -25\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$

PARAMETER	SYMB	MIN	TYP.	MAX	UNITS	NOTE
<b>L</b>						
Data Rate	$B$		10.3125		Gbps	
Optical Input Power-maximum	$P_{IN}$	0.5	---	---	dBm	BER < $10^{-12}$
Receiver Sensitivity	$P_{IN}$	---	---	-14.4	dBm	BER < $10^{-12}$
Receiver Sensitivity(OMA)	$P_{IN}$	---	---	-12.6	dBm	BER < $10^{-12}$
Stressed Receiver Sensitivity(OMA)	$P_{IN}$	---	---	-10.3	dBm	BER < $10^{-12}$
Operating Center Wavelength	$\lambda_C$	1260	---	1355	nm	
Optical Return Loss	$ORL$	12	---	---	dB	
Loss of Signal-Asserted	$P_A$	-30	---	---	dBm	
Loss of Signal-Deasserted	$P_D$	---	---	-17	dBm	
Differential Output Impedance	$Z_d$	---	100	---	$\Omega$	
Differential Output Voltage	$V_{DIFF}$	350	---	850	mV	
Receiver Loss of Signal Output Voltage-Low	$RX\_LO$ $S_L$	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	$RX\_LO$ $S_H$	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	$\mu\text{s}$	

## Dimensions

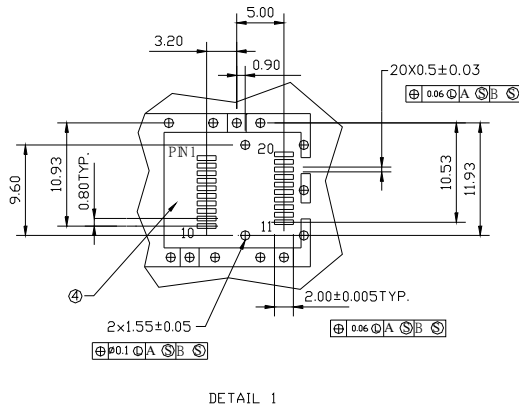
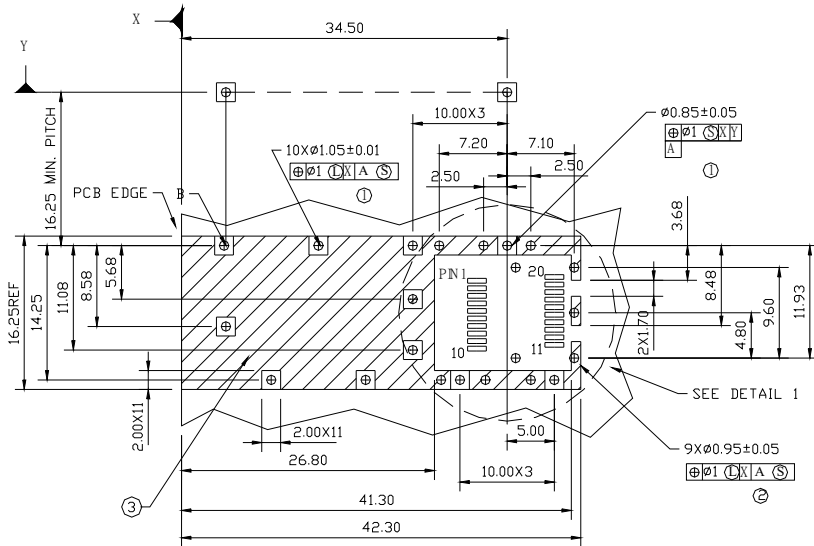


**DIMENSIONS ARE IN MILLIMETERS**

**ALL DIMENSIONS ARE  $\pm 0.2$ mm UNLESS OTHERWISE SPECIFIED**

Unit: mm

**SFP host board mechanical layout**



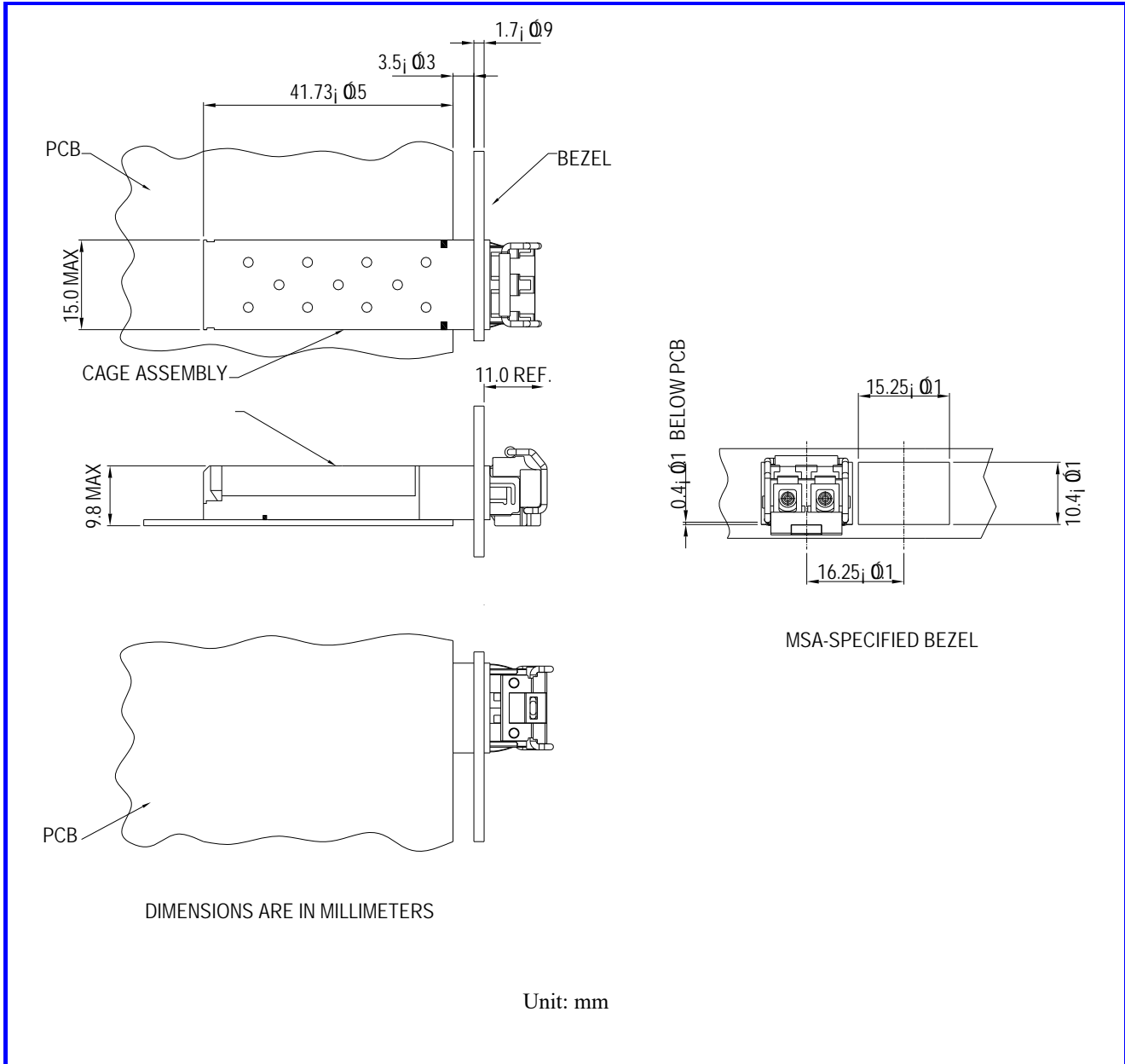
**LEGEND**

- 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

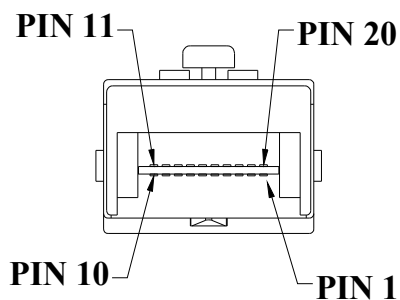
Unit: mm

**Assembly drawing**



## 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
8	$RX\_LOS$	Receiver Loss of Signal, TTL High, open collector
9	$RS1$	TX Rate Select
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



## Eye Safety Mark

The JD 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.