



# 1.25Gbps TX:1310nm/RX:1490nm SMF 10km BiDi SFP LC Optical Transceiver

Model No. CS3T4-24H-3S-Tx-L

## FEATURES

- RoHS Compliant
- Compliant with IEEE802.3ah 1000BASE-BX10-U Standard
- Compliant with SFF8472 Digital Diagnostic Standard
- Industry standard small form pluggable (SFP) package
- Hot pluggable
- Class 1 laser product compliant with EN 60825-1
- LD Type: 1310 FP
- Distance: 10km



## 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	-12 to 0	±3 dB	dBm	
RX Power	-21 to -3	±3 dB	dBm	

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
Storage Temperature	T <sub>S</sub>	-40	85	°C	
Supply Voltage	V <sub>CC</sub>	-0.5	4.0	V	
Input Voltage	V <sub>IN</sub>	-0.5	V <sub>CC</sub>	V	

## RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTES
Case Operating Temperature	T <sub>C</sub>	0	70	°C	CS3T4-24H-3S-TC-L
		-40	85		CS3T4-24H-3S-TI-L
Supply Voltage	V <sub>CC</sub>	3.1	3.5	V	
Supply Current	I <sub>TX</sub> + I <sub>RX</sub>	-	300	mA	
Relative Humidity (Non-condensing)	RH	5	95	%	

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**TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS ( $V_{CC} = 3.1V$  to  $3.5V$ ,  $T_C = 0^{\circ}C$  to  $70^{\circ}C$ ,  $-40^{\circ}C$  to  $85^{\circ}C$ )**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Output Optical Power 9/125um fiber	$P_{out}$	-9	-	-3	dBm	Average
Extinction Ratio	ER	6	-	-	dB	
Center Wavelength	$\lambda_c$	1260	-	1360	nm	
Spectral Width (RMS)	$\Delta\lambda$		Table 1		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 <sub>L</sub>	0.0	-	0.5	V	
Transmit Fault Output-High	TX_FAULT <sub>H</sub>	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	us	
TX_DISABLE time to start reset	t_reset	10	-	-	us	

**Table 1**

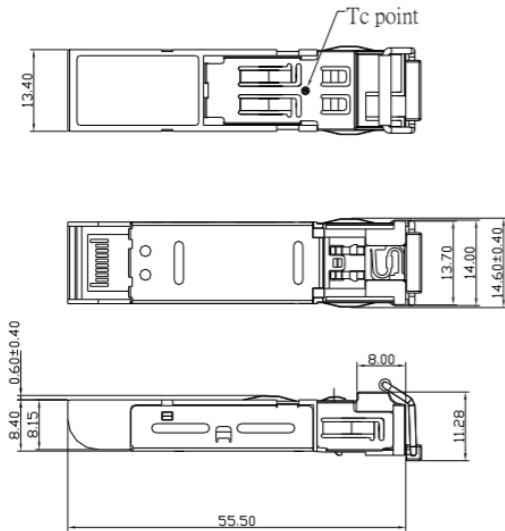
Center Wavelength (nm)	Maximum RMS spectral width (nm)
1260	2.09
1270	2.52
1280	3.13
1286	3.50
1290	
1297	
1329	
1340	
1343	3.06
1350	
1360	

**RECEIVER ELECTRO-OPTICAL CHARACTERISTICS ( $V_{CC} = 3.1V$  to  $3.5V$ ,  $T_C = 0^{\circ}C$  to  $70^{\circ}C$ ,  $-40^{\circ}C$  to  $85^{\circ}C$ )**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTES
Optical Input Power-Maximum	$P_{IN}$	-3	-	-	dBm	PRBS7, BER< $10^{-12}$
RX Sensitivity	$P_{IN}$	-	-	-21	dBm	PRBS7, BER< $10^{-12}$
RX Sensitivity as OMA	$P_{IN}$	-	-	-19.7	dBm	PRBS7, BER< $10^{-12}$
Operating Center Wavelength	$\lambda_c$	1480	-	1500	nm	
Optical Return Loss	ORL	14	-	-	dB	$\lambda=1480\sim1500nm$
Optical Isolation	ISO	-	-	-45	dB	$\lambda=1260\sim1360nm$
LOS Deasserted	$P_D$	-	-	-21	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 <sub>L</sub>	0	-	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS <sub>H</sub>	2.4	-	$V_{CC}$	V	



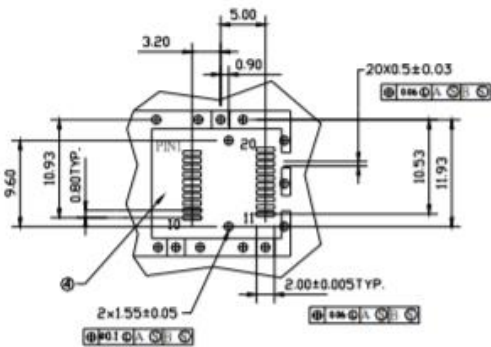
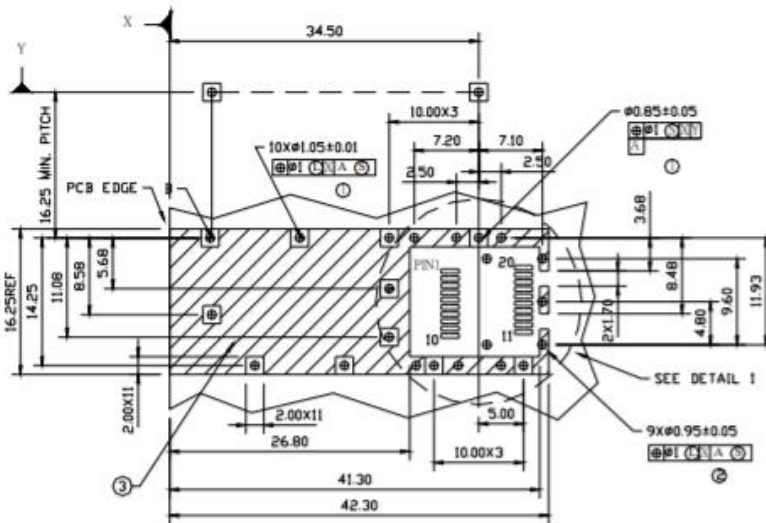
**DIMENSIONS**



**DIMENSIONS ARE IN MILLIMETERS**

**ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED**

**SFP HOST BOARD MECHANICAL LAYOUT**



DETAIL I

**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**

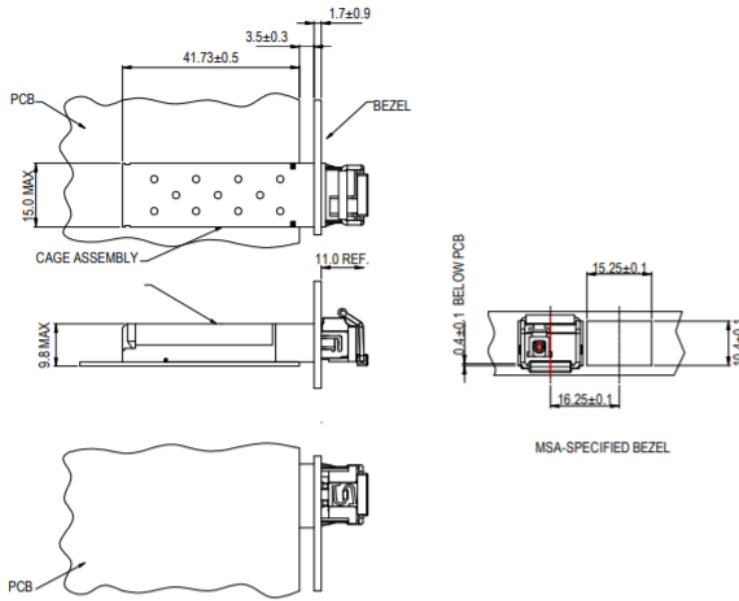
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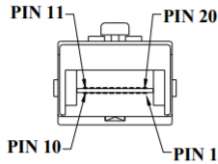
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## ASSEMBLY DRAWING (unit: mm)



## PIN ASSIGNMENT



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



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**ORDERING INFORMATION**

<b>PART NUMBER</b>	<b>OPERATING TEMPERATURE</b>
CS3T4-24H-3S-TC-L	0°C to 70°C
CS3T4-24H-3S-TI-L	-40°C to 85°C

**Note:** The specifications subject to change without notice.

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