



1.25Gbps TX:1490nm/RX:1310nm SMF 60km BiDi SFP LC Optical Transceiver

Model No. CS4T3-24H-3U-Tx-L

FEATURES

- RoHS Compliant
- Compliant with IEEE802.3ah 1000BASE-BX application
- 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: 1490 DFB
- Distance: 60km



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 | -5 to +5 | ±3 dB | dBm | |
| RX Power | -23 to -3 | ±3 dB | dBm | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | MIN | MAX | UNIT | NOTES |
|---------------------|-----------------|------|-----------------|------|-------|
| 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 | UNIT | NOTES |
|------------------------------------|-----------------------------------|-----|-----|------|-------------------|
| Case Operating Temperature | T _C | 0 | 70 | °C | CS4T3-24H-3U-TC-L |
| | | -40 | 85 | | CS4T3-24H-3U-TI-L |
| Supply Voltage | V _{CC} | 3.1 | 3.5 | V | |
| Supply Current | I _{TX} + I _{RX} | - | 300 | mA | |
| Relative Humidity (Non-condensing) | RH | 5 | 95 | % | |

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

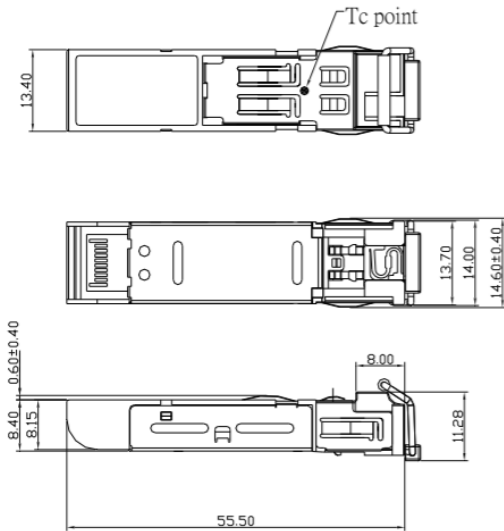
| PARAMETER | SYMBOL | MIN | TYP. | MAX | UNIT | NOTES |
|---|---------------------------|------|------|----------|-------|---------|
| Output Optical Power 9/125um fiber | P_{out} | -2 | - | +4 | dBm | Average |
| Extinction Ratio | ER | 7 | - | - | dB | |
| Center Wavelength | λ_c | 1480 | - | 1500 | nm | |
| Spectral Width (-20dB) | $\Delta\lambda$ | | | 0.88 | 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 | us | |
| TX_DISABLE time to start reset | t_{reset} | 10 | - | - | us | |

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} | 0 | - | - | dBm | PRBS7, BER<10 ⁻¹² |
| RX Sensitivity | P_{IN} | - | - | -25 | dBm | PRBS7, BER<10 ⁻¹² |
| Operating Center Wavelength | λ_c | 1260 | - | 1360 | nm | |
| Optical Return Loss | ORL | 14 | - | - | dB | $\lambda=1260\sim1360nm$ |
| Optical Isolation | ISO | - | - | -45 | dB | $\lambda=1480\sim1500nm$ |
| LOS Deasserted | P_D | - | - | -25 | 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 | |



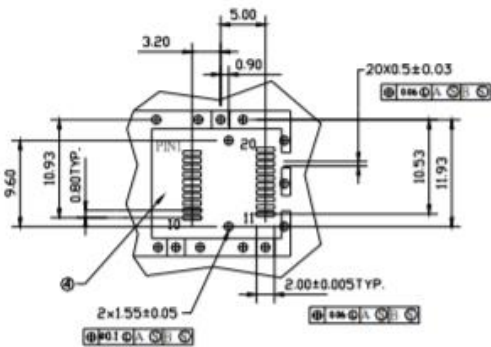
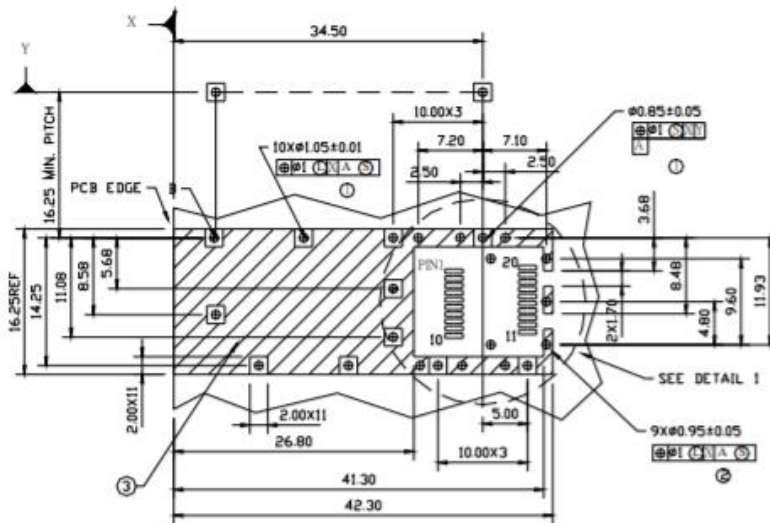
DIMENSIONS



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

SFP HOST BOARD MECHANICAL LAYOUT



DETAIL I

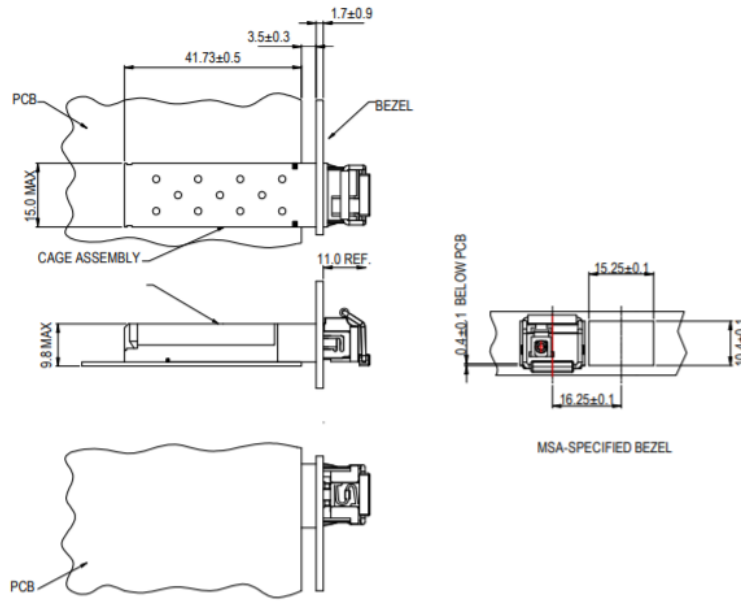
LEGEND

- 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)

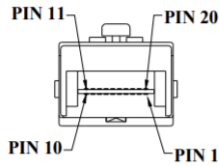
DIMENSIONS ARE IN MILLIMETERS



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

| PART NUMBER | OPERATING TEMPERATURE |
|--------------------|------------------------------|
| CS4T3-24H-3U-TC-L | 0°C to 70°C |
| CS4T3-24H-3U-TI-L | -40°C to 85°C |

Note: The specifications subject to change without notice.