



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

CS4T3-24H-3S-Tx-L



DESCRIPTION

The CS4T3-24H-3S-Tx-L bi-directional SFP (Small Form Pluggable) transceivers are designed for use in 1.25Gbps links up to 10km over a single strand single-mode fiber.

FEATURES

- RoHS Compliant
- Compliant with IEEE802.3ah 1000BASE-BX10-D 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: 1490 DFB

APPLICATIONS

- Single-mode core fiber backbone links up to 10km
- 1000Base-BX

PRODUCT OVERVIEW

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

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 _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-3S-TC-L |
| | | -40 | 85 | | CS4T3-24H-3S-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 | % | |

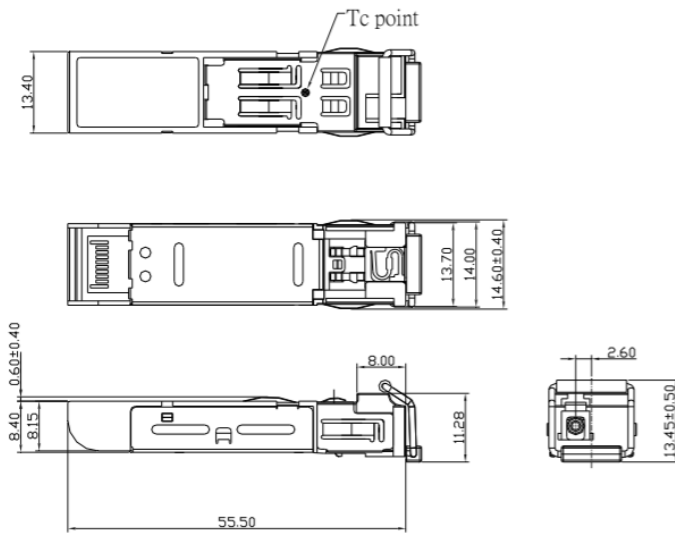
TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 3.1V to 3.5V, T_C = 0°C to 70°C, -40°C to 85°C)

| 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 | λ _C | 1480 | - | 1500 | nm | |
| Spectral Width (-20dB) | Δλ | | | 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°C to 70°C, -40°C to 85°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 | λ _C | 1260 | - | 1360 | nm | |
| Optical Return Loss | ORL | 14 | - | - | dB | λ=1260~1360nm |
| Optical Isolation | ISO | - | - | -45 | dB | λ=1480~1500nm |
| 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 _L | 0 | - | 0.5 | V | |
| Receiver Loss of Signal Output Voltage-High | RX_LOS _H | 2.4 | - | V _{CC} | V | |

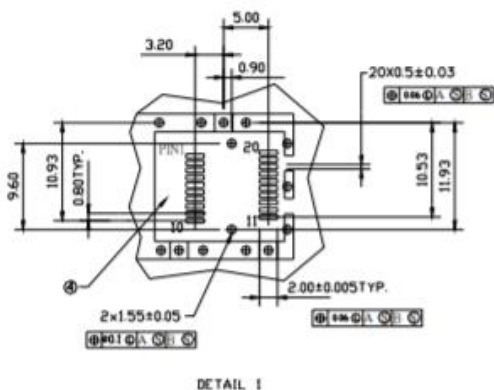
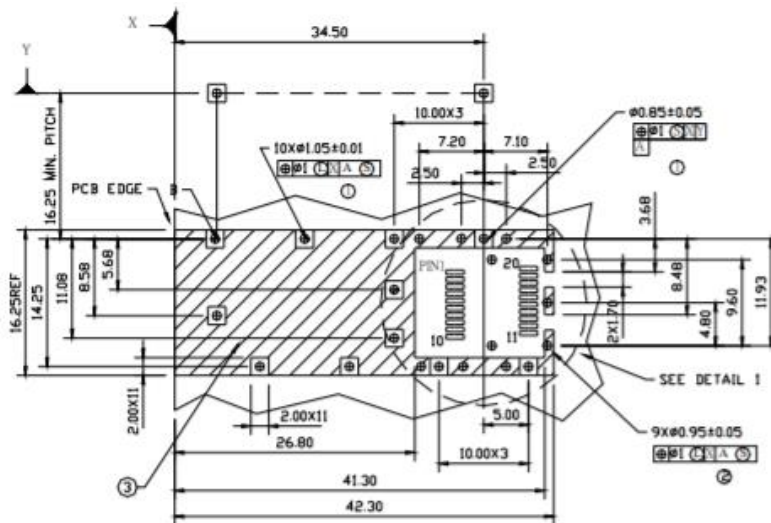
DIMENSIONS



DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

SFP HOST BOARD MECHANICAL LAYOUT



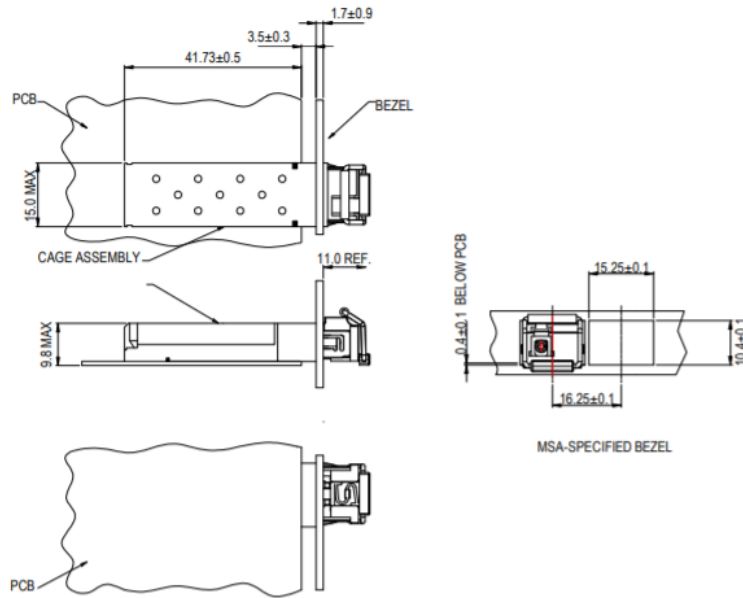
DETAIL I

LEGEND

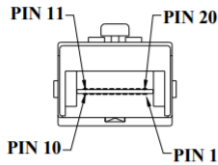
1. PADS AND VIAS ARE CHASSIS GROUND
2. THROUGH HOLES, PLATING OPTIONAL
3. HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT (EXCEPT CHASSIS GROUND)
4. AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

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 |

ADDITIONAL NOTES

- Avoid eye or skin exposure to laser radiations.
- The device is sensitive to electro-static discharge (ESD). The device should be handled with ESD proof tools. To assemble the device on PCB, proper grounding is required to prevent ESD.
- Specifications are subject to change without notice.



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