



## 850 nm Multi-mode Transceiver Small Form Pluggable (SFP), with Diagnostic Monitoring 2500Base Ethernet



### Features

- RoHS compliant
- 2500Base Ethernet application
- 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    |
|------------------|---------|----------------|
| LM28-F3S-TI-N-EA | 3.3V    | -10°C to 85 °C |
| LM28-F3S-TI-N-EB | 3.3V    | -40°C to 85 °C |

### Transmit distance

| Fiber Type(MMF)           | Distance |
|---------------------------|----------|
| OM1(62.5/125um,200MHz.km) | 75m      |
| OM2(50/125um,500MHz.km)   | 160m     |
| OM3(50/125um,2000MHz.km)  | 400m     |
| OM4(50/125um,4700MHz.km)  | 500m     |



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### 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<br>-40 | 85<br>85 | °C    |      |
| Bit rate                   | $B$               |            | 3125     | Mbps  |      |
| Supply Voltage             | $V_{CC}$          | 3.135      | 3.465    | V     |      |
| Supply Current             | $I_{TX} + I_{RX}$ | ---        | 300      | mA    |      |



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**Transmitter Electro-optical Characteristics**

| PARAMETER                                     | SYMBOL          | MIN  | TYP. | MAX      | UNITS   | NOTE |
|-----------------------------------------------|-----------------|------|------|----------|---------|------|
| Output Optical Power                          | $P_{out}$       | -7.5 | ---  | -1       | dBm     |      |
| Extinction Ratio                              | $ER$            | 6    | ---  | ---      | dB      |      |
| Center Wavelength                             | $\lambda_C$     | 830  | 850  | 860      | nm      |      |
| Spectral Width (RMS)                          | $\Delta\lambda$ | ---  | ---  | 0.85     | nm      |      |
| Max. $P_{out}$ TX-DISABLE Asserted            | $P_{OFF}$       | ---  | ---  | -35      | dBm     |      |
| Differential Input Voltage                    | $V_{DIFF}$      | 300  | ---  | 1200     | 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   | ---  | ---      | $\mu s$ |      |



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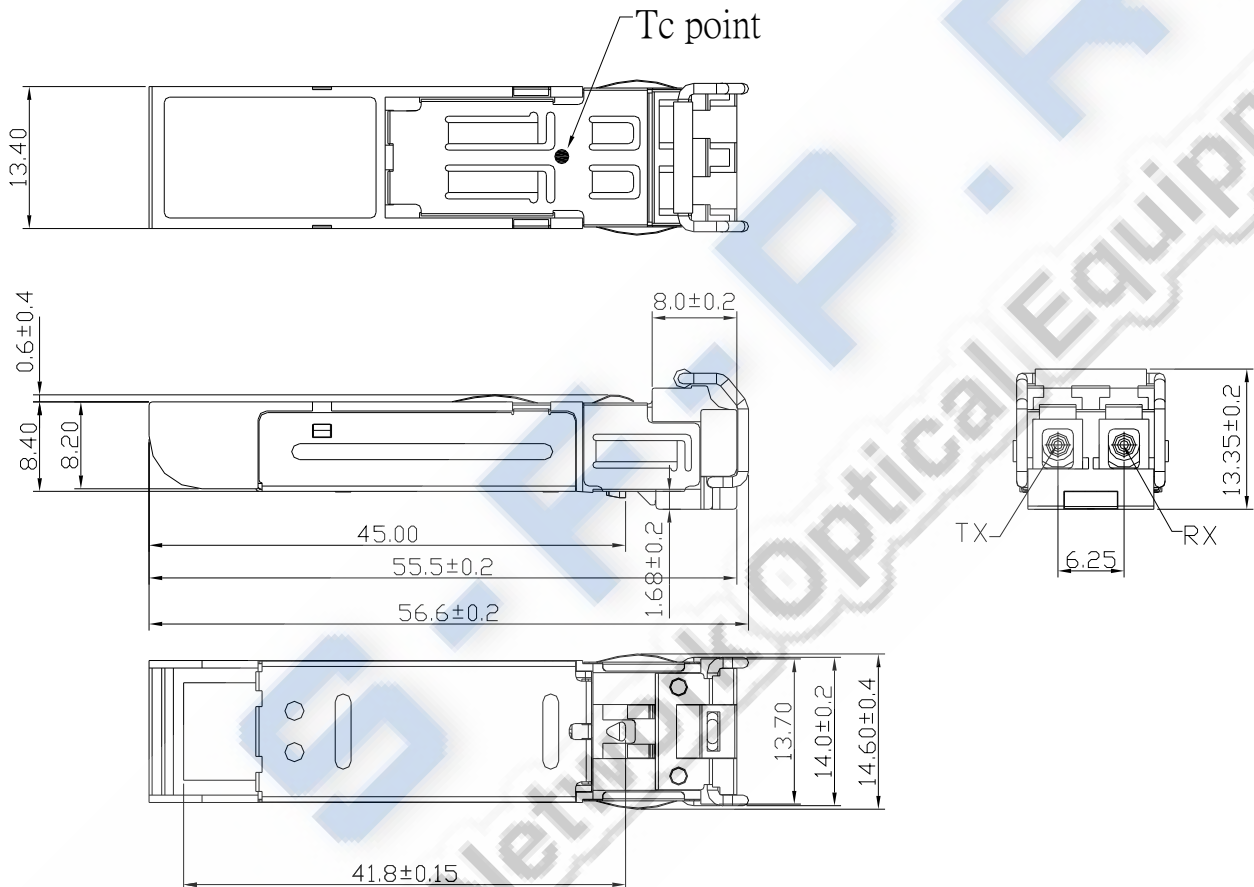
### Receiver Electro-optical Characteristics

| PARAMETER                                       | SYMBOL          | MIN | TYP. | MAX      | UNITS   | NOTE                                  |
|-------------------------------------------------|-----------------|-----|------|----------|---------|---------------------------------------|
| Optical Input Power-maximum                     | $P_{IN}$        | 0   | ---  | ---      | dBm     | BER < 10 <sup>-12</sup>               |
| Receiver Sensitivity                            | $P_{IN}$        | --- | ---  | -13.5    | dBm     | @830~860nm<br>BER < 10 <sup>-12</sup> |
| Operating Center Wavelength                     | $\lambda_C$     | 770 | ---  | 860      | nm      |                                       |
| Loss of Signal-Asserted                         | $P_A$           | -14 | ---  | ---      | dBm     |                                       |
| Loss of Signal-Deasserted                       | $P_D$           | --- | ---  | -30      | dBm     |                                       |
| Differential Output Voltage                     | $V_{DIFF}$      | 400 | ---  | 1200     | mV      |                                       |
| 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       |                                       |
| Receiver Loss of Signal Assert Time (off to on) | $t_{A,RX\_LOS}$ | --- | ---  | 100      | $\mu s$ |                                       |
| Receiver Loss of Signal Assert Time (on to off) | $t_{D,RX\_LOS}$ | --- | ---  | 100      | $\mu s$ |                                       |

### Diagnostics

| Parameter    | Range      | Accuracy   | Unit | Calibration |
|--------------|------------|------------|------|-------------|
| Temperature  | -40 to 85  | $\pm 3$    | °C   | Internal    |
| Voltage      | 3.1 to 3.5 | $\pm 0.1$  | V    |             |
| Bias Current | 0 to 25    | $\pm 10\%$ | mA   |             |
| TX Power     | -7.5 to -1 | $\pm 3$ dB | dBm  |             |
| RX Power     | -13.5 to 0 | $\pm 3$ dB | dBm  |             |

## Dimensions

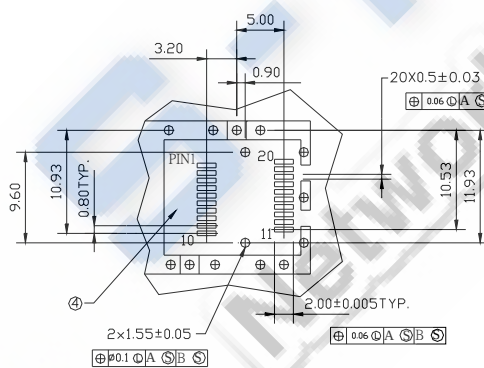
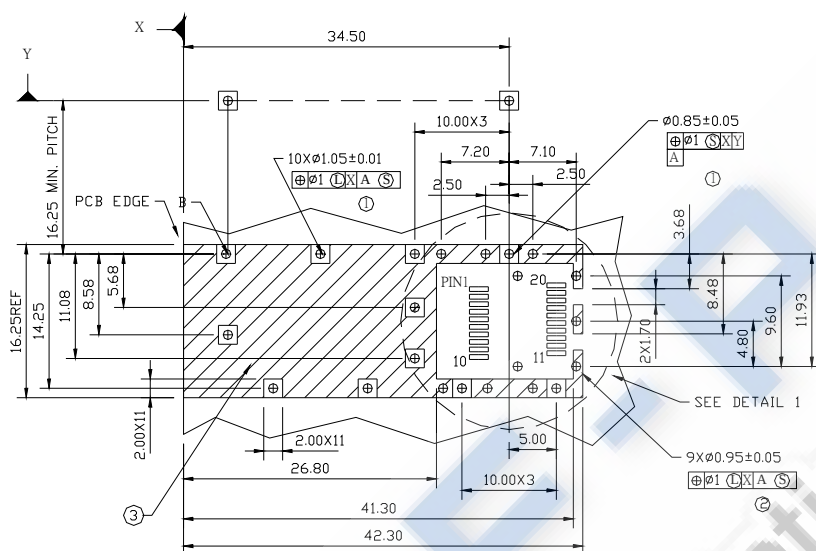


**DIMENSIONS ARE IN MILLIMETERS**

**ALL DIMENSIONS ARE ± 0.1mm UNLESS OTHERWISE SPECIFIED**

Unit: mm

## SFP host board mechanical layout



DETAIL 1

### LEGEND

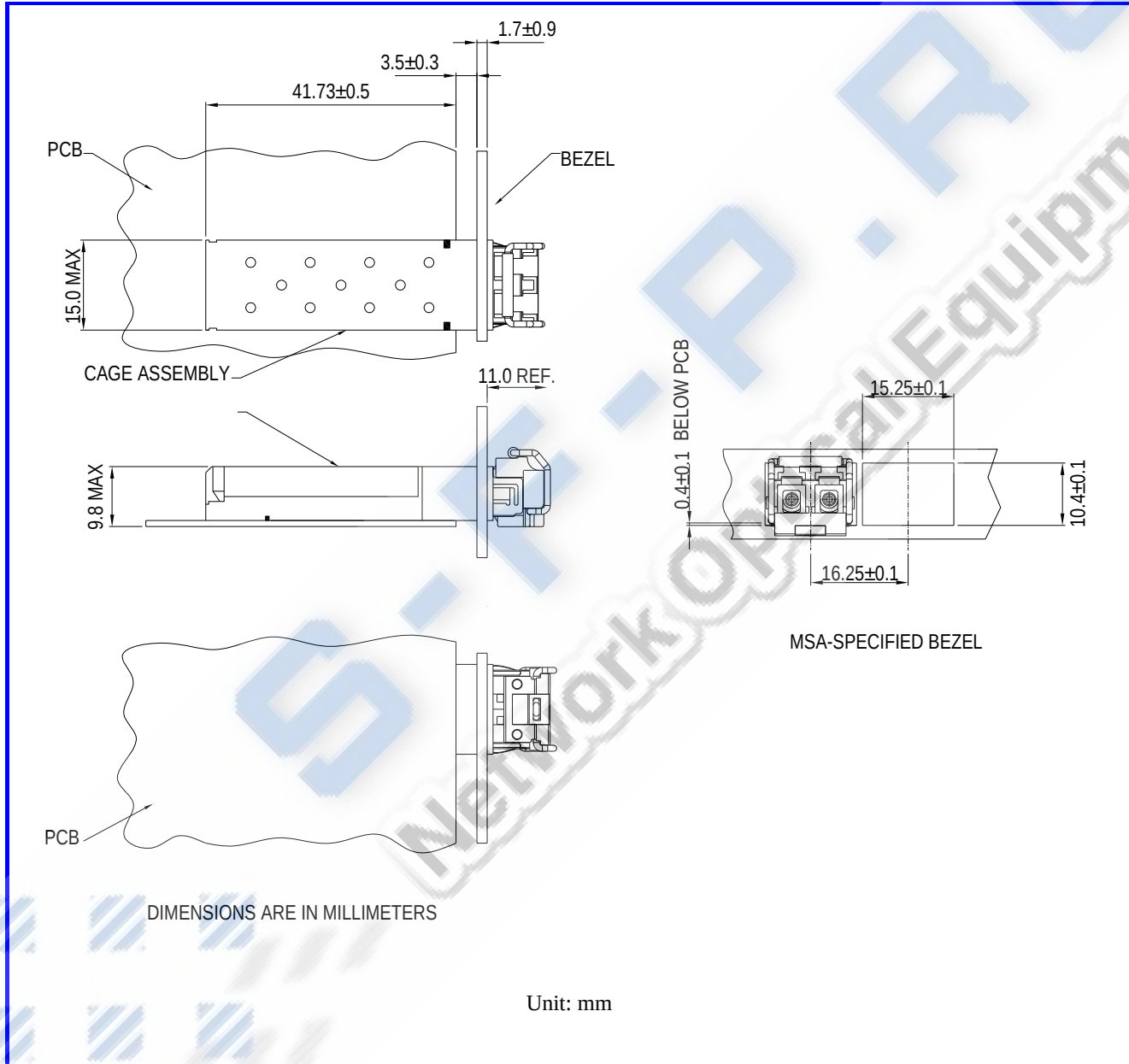
- 1.PADS AND VIAS ARE CHASSIS GROUND
- 2.THROUGH HOLES, PLATING OPTIONAL
- 3.HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
- 4.AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

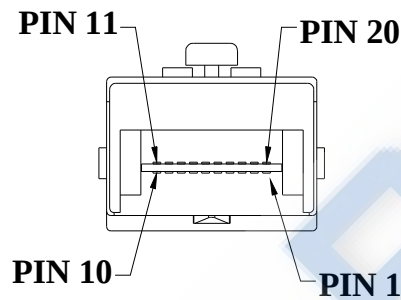


### Assembly drawing



## 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   | $RATE\_SELECT$ | 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                                |

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