

# Fiber Channel 2.125Gbps Multimode 2x5 SFF Optical Transceiver

## Features

- 2.125Gb/s Fiber Channel application
- LC duplex receptacle
- Standard 2 x 5 footprint
- 850nm VCSEL transmitter with automatic power control
- AC coupled LVPECL compatible data input and output
- Transmitter disable input
- PECL or TTL signal detect output
- Single 3.3V power supply



## Specifications

| Parameter                                           | Symbol           | Min. | Typ.  | Max.            | Unit              |
|-----------------------------------------------------|------------------|------|-------|-----------------|-------------------|
| <b>Transmitter</b>                                  |                  |      |       |                 |                   |
| Data Rate (NRZ)                                     | B                | -    | 2.125 | -               | Gb/s              |
| Optical Output Power (avg.) <sup>(1) (2) (3)</sup>  | P <sub>O</sub>   | -9.5 | -     | -3              | dBm               |
| Extinction Ratio                                    | ER               | 9    | -     | -               | dB                |
| Optical Wavelength                                  | λ <sub>C</sub>   | 830  | 850   | 860             | nm                |
| Spectral Width (RMS)                                | Δλ               | -    | -     | 0.85            | nm                |
| Output Rise Time (20-80%)                           | t <sub>r</sub>   | -    | -     | 150             | ps                |
| Output Fall Time (20-80%)                           | t <sub>f</sub>   | -    | -     | 150             | ps                |
| Data Differential Input Voltage                     | V <sub>I</sub>   | 500  | -     | 2400            | mV <sub>p-p</sub> |
| Tx Disable Input                                    | V <sub>DIL</sub> | 0    | -     | 0.8             | V                 |
|                                                     | V <sub>DIH</sub> | 2    | -     | V <sub>CC</sub> |                   |
| Supply Voltage                                      | V <sub>CC</sub>  | 2.97 | 3.3   | 3.63            | V                 |
| Supply Current                                      | I <sub>CC</sub>  | -    | -     | 110             | mA                |
| <b>Receiver</b>                                     |                  |      |       |                 |                   |
| Data Rate (NRZ)                                     | B                | -    | 2.125 | -               | Gb/s              |
| Optical Input Sensitivity (avg.) <sup>(1) (5)</sup> | P <sub>IN</sub>  | -    | -     | -15             | dBm               |
| Saturation                                          | P <sub>SAT</sub> | -3   | 0     | -               | dBm               |
| Optical Wavelength                                  | λ                | 770  | 850   | 860             | nm                |
| Output Rise Time (20-80%)                           | t <sub>r</sub>   | -    | -     | 150             | ps                |
| Output Fall Time (20-80%)                           | t <sub>f</sub>   | -    | -     | 150             | ps                |
| Data Differential Output Voltage                    | V <sub>O</sub>   | 600  | -     | 1200            | mV <sub>p-p</sub> |
| Signal Detect Asserted (avg.)                       | P <sub>A</sub>   | -    | -     | -15             | dBm               |
| Signal Detect Deasserted (avg.)                     | P <sub>D</sub>   | -27  | -     | -               | dBm               |
| Signal Detect Hysteresis                            | P <sub>HYS</sub> | 0.5  | 2     | -               | dB                |
| Supply Voltage                                      | V <sub>CC</sub>  | 2.97 | 3.3   | 3.63            | V                 |
| Supply Current                                      | I <sub>CC</sub>  | -    | -     | 100             | mA                |

### Notes :

- (1) With 0.275 NA, 62.5/125μm fiber.
- (2) Driven with a differential signal.
- (3) Class 1 eye safe per FDA and IEC.
- (4) Transmitter eye mask diagram is compliant to FC-PI-2 Eye Diagram.
- (5) 2<sup>7</sup> -1 PRBS, BER= 10<sup>-12</sup>.
- (6) The transmitter output should not be viewed directly.

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## Absolute Maximum Ratings

| Parameter             |    | Min. | Max.   | Unit    |
|-----------------------|----|------|--------|---------|
| Operating Temperature | -1 | 0    | 70     | °C      |
|                       | -2 | -40  | 85     | °C      |
| Storage Temperature   |    | -40  | 100    | °C      |
| Lead Soldering Limits |    | -    | 240/10 | °C /sec |
| Supply Voltage        |    | -0.2 | 4      | V       |

## Ordering Information

**T R 8 5 M M 3 - 1 V L C 3 A R 1 □ □**

**Operating Temperature Range :**

1 : 0 ~ 70°C

2 : -40 ~ 85°C

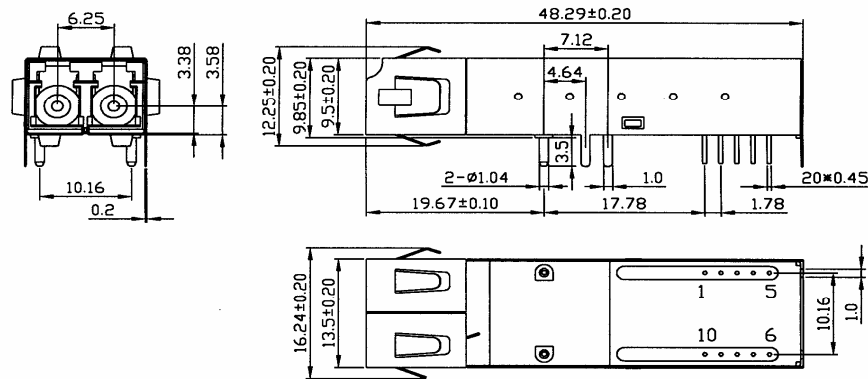
**Data Coupling & SD Output Level :**

| Symbol | Tx Coupling | Rx Coupling | SD   |
|--------|-------------|-------------|------|
| E      | AC          | AC          | PECL |
| F      | AC          | AC          | TTL  |

# Fiber Channel 2.125Gbps Multimode 2x5 SFF Optical Transceiver

## Outline Drawing

2\*5



UNIT : mm

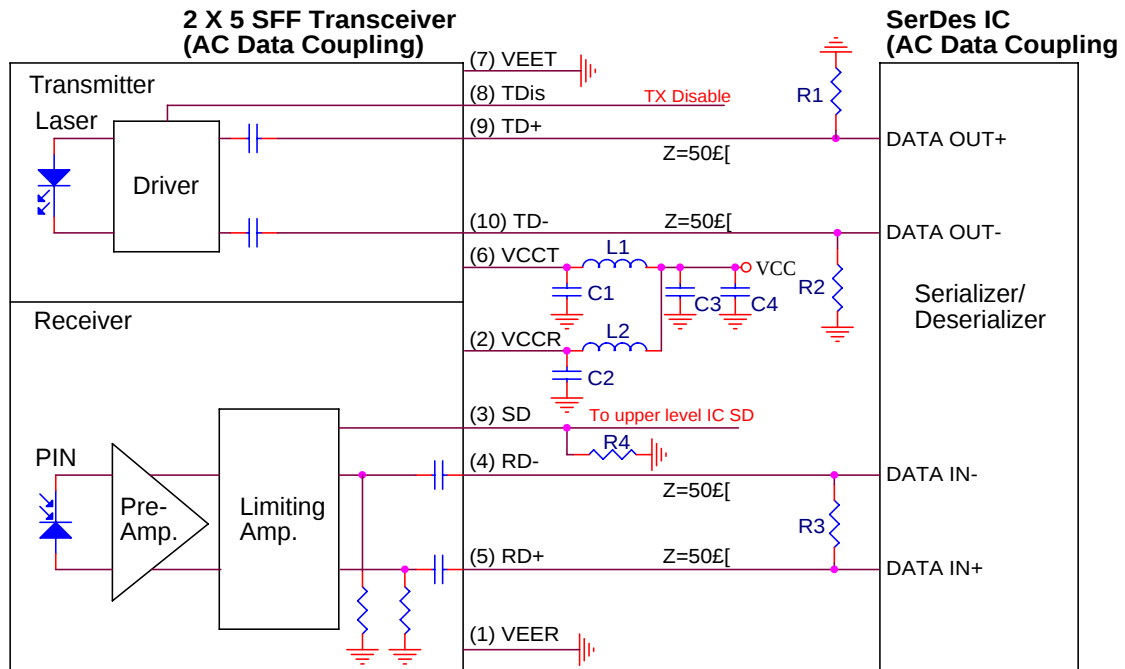
## Pinout Description

| Pin No. | Symbol           | Description                                                                                |
|---------|------------------|--------------------------------------------------------------------------------------------|
| 1       | V <sub>EER</sub> | Receiver Ground                                                                            |
| 2       | V <sub>CCR</sub> | Receiver Power Supply                                                                      |
| 3       | SD               | Receiver Signal Detect                                                                     |
| 4       | RD-              | Receiver Data Out (Inverted)                                                               |
| 5       | RD+              | Receiver Data Out                                                                          |
| 6       | V <sub>CCT</sub> | Transmitter Power Supply                                                                   |
| 7       | V <sub>EET</sub> | Transmitter Ground                                                                         |
| 8       | TDis             | Input Logic Low Level to Switch Laser "ON"<br>Input Logic High Level to Switch Laser "OFF" |
| 9       | TD+              | Transmitter Data in                                                                        |
| 10      | TD-              | Transmitter Data In (Inverted)                                                             |

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## Application Notes

Recommended Interface Circuit :



L1=L2=1 $\mu$ H or ferrite bead  
C1=C2=C3=0.1 $\mu$ F  
C4=10 $\mu$ F  
R1, R2, R3 depends on SerDes IC specification.  
(Consult the SerDes IC application information)  
R4=510 $\Omega$

NOTE:G  
1. Transmission line characteristic impedance Z=50 $\Omega$ .  
2. R1, R2, R3 as close to SerDes IC as possible.

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