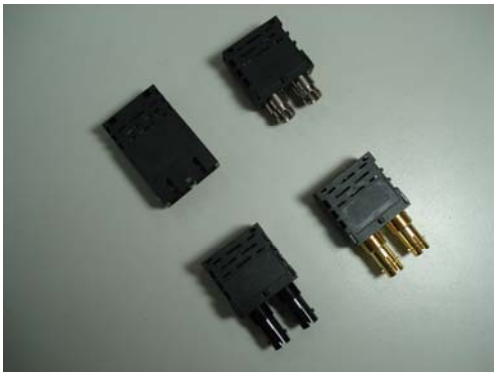
# Multimode 266Mbps 1300nm Optical Transceiver

## Features

- 1300nm LED Transmitter / InGaAs PIN receiver
- Industrial standard 1x9 pin footprint
- Duplex SC/ST/FC single mode connector interface
- Receiver signal detect function
- PECL/LVPECL logic interface, DC or AC coupling
- Single supply 5V or 3.3V
- RoHS available



## Specifications

| Parameter | | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| Data Rate (NRZ) | | B | 10 | 266 | 320 | Mb/s |
| Optical Output Power (avg.) (1) (2) (4) | | $P_o$ | -19 | -16 | - | dBm |
| Optical Wavelength (25°C) | | $\lambda_C$ | 1280 | - | 1340 | nm |
| Spectral Width (25°C) | | $\Delta\lambda$ | - | - | 170 | nm |
| Extinction Ratio | | ER | 10 | - | - | dB |
| Output Rise Time (10-90%) | | $t_r$ | - | 1.5 | 2.5 | ns |
| Output Fall Time (10-90%) | | $t_f$ | - | 1.8 | 2.5 | ns |
| Data Input (5) | DC Coupled | $V_{IL}$<br>$V_{IH}$ | $V_{CC}$ -1.810<br>$V_{CC}$ -1.165 | -<br>- | $V_{CC}$ -1.475<br>$V_{CC}$ -0.880 | V<br>V |
| | AC Coupled (Differential) | $V_I$ | 0.3 | - | 1.6 | V |
| Supply Voltage | | $V_{CC}$ | 3.10<br>4.75 | 3.3<br>5.0 | 3.50<br>5.25 | V |
| Supply Current | | $I_{CC}$ | - | - | 110 | mA |
| **Receiver** | | | | | | |
| Data Rate (NRZ) | | B | 10 | 155 | 250 | Mb/s |
| Optical Input (avg.) Sensitivity (1) (4) | | $P_{IN}$ | - | - | -32 | dBm |
| Optical Wavelength | | $\lambda$ | 1100 | 1300 | 1600 | nm |
| Output Rise Time (10-90%) | | $t_r$ | - | 1.3 | 2.5 | ns |
| Output Fall Time (10-90%) | | $t_f$ | - | 1.6 | 2.5 | ns |
| Data Output (5) | DC Coupled | $V_{OL}$<br>$V_{OH}$ | $V_{CC}$ -1.840<br>$V_{CC}$ -1.045 | -<br>- | $V_{CC}$ -1.62<br>$V_{CC}$ -0.88 | V<br>V |
| | AC Coupled (Differential) | $V_I$ | 0.6 | - | 1.8 | V |
| Signal Detect Asserted (avg.) | | $P_A$ | - | - | -32 | dBm |
| Signal Detect Deasserted (avg.) | | $P_D$ | -45 | - | - | dBm |
| Hysteresis | | $P_{HYS}$ | - | 3 | - | dB |
| Supply Voltage | | $V_{CC}$ | 3.10<br>4.75 | 3.3<br>5.0 | 3.50<br>5.25 | V |
| Supply Current | | $I_{CC}$ | - | - | 100 | mA |

Notes：

(1) With 0.275 NA, 62.5/125μm fiber.
(2) Driven with a differential signal.
(3) Eye mask diagram is compliant to ITU-T G.957 Eye Diagram.
(4) $2^{23}$ -1 PRBS, BER= $10^{-10}$.
(5) Compatible with LVPECL and PECL logic levels.

(6) The transmitter output should not be viewed directly.

## 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 | 5V | -0.2 | 7 | V |
| | 3.3V | -0.2 | 4 | V |

## Ordering Information

**SNS-TR13M2A - 1 S □ □ □ 9 R 1 □ □ □** -- G for RoHS

**Operating Temperature Range：**
1：0 ~ 70°C
2：-40 ~ 85°C

**Data Coupling & SD Output Level：**

| Symbol | Tx Coupling | Rx Coupling | SD |
|---|---|---|---|
| C | AC | DC | PECL |
| D | AC | DC | TTL |
| E | AC | AC | PECL |
| F | AC | AC | TTL |
| G | DC | DC | PECL |
| H | DC | DC | TTL |
| I | DC | AC | PECL |
| J | DC | AC | TTL |

**Supply Voltage：**
5：5V
3：3.3V

**Connector Type：**
SC：SC Connector
FC：FC Connector
ST：ST Connector

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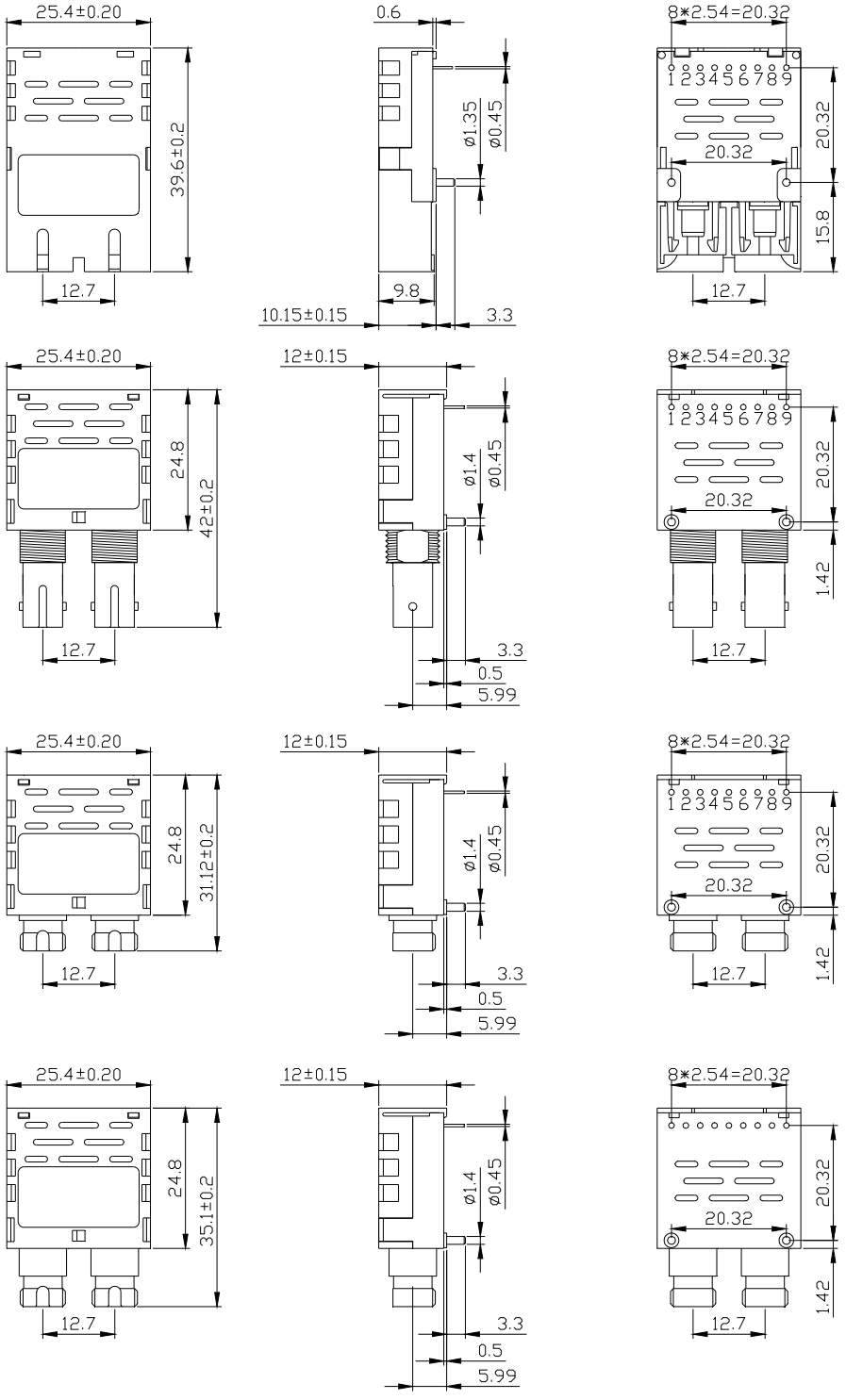
**Outline Drawing**

UNIT：mm



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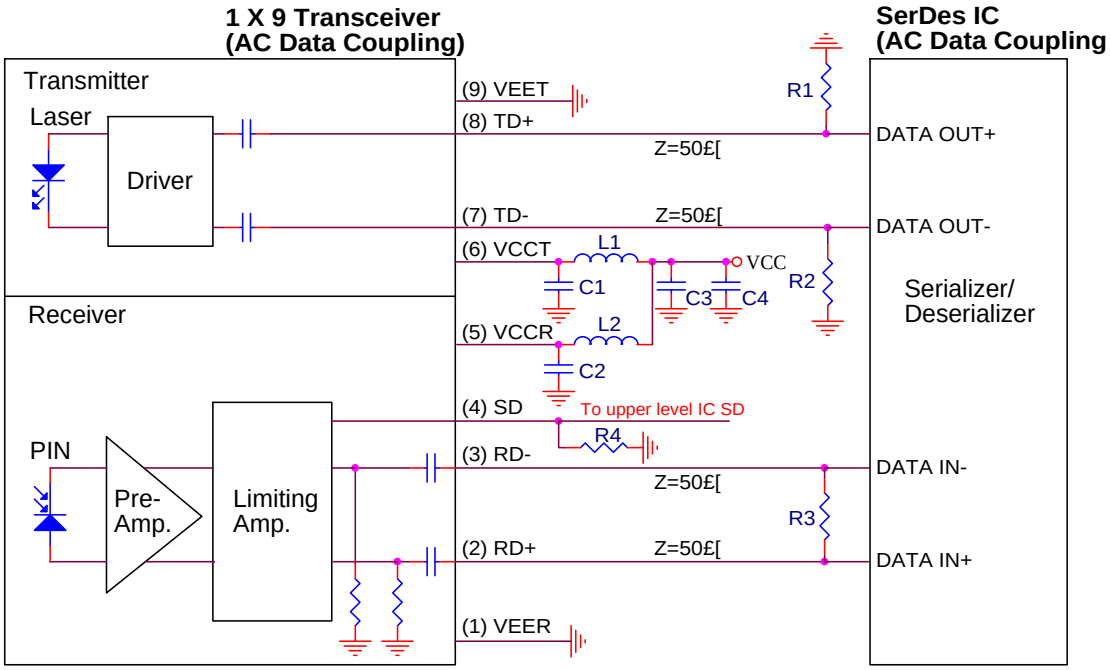
## Pinout Description

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | $V_{EER}$ | Receiver Ground |
| 2 | RD+ | Receiver Data Out |
| 3 | RD- | Receiver Data Out (Inverted) |
| 4 | SD | Receiver Signal Detect |
| 5 | $V_{CCR}$ | Receiver Power Supply (5V/3.3V) |
| 6 | $V_{CCT}$ | Transmitter Power Supply (5V/3.3V) |
| 7 | TD- | Transmitter Data In (Inverted) |
| 8 | TD+ | Transmitter Data in |
| 9 | $V_{EET}$ | Transmitter Ground |

## Application Notes

Recommended AC Coupling Interface Circuit：

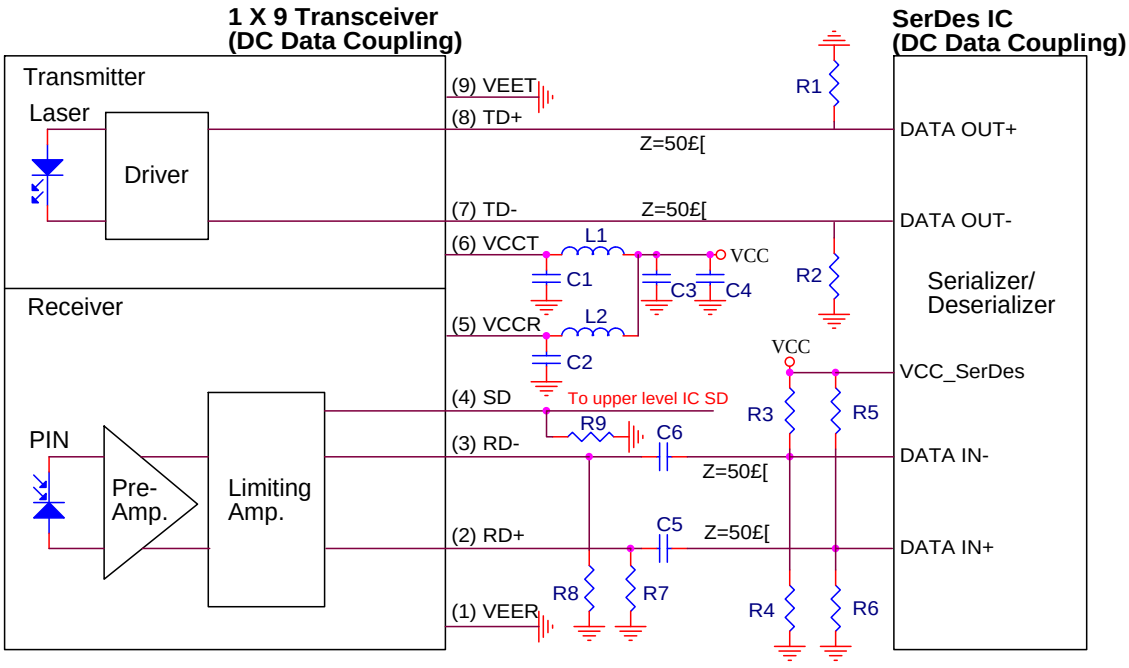



L1=L2=1£gH or ferrite bead
C1=C2=C3=0.1£gF
C4=10£gF
R1, R2, R3 depends on SerDes IC specification.
(Consult the SerDes IC application information)
R4=510£[

NOTE¡G
1. Transmission line characteristic impedance Z=50£[.
2. R1, R2, R3 as close to SerDes IC as possible.

# Multimode 266Mbps 1300nm Optical Transceiver

Recommended DC Coupling Interface Circuit：




L1=L2=1£gH or ferrite bead
C1=C2=C3=C5=C6=0.1£gF
C4=10£gF
R1, R2, R3, R4, R5, R6 depends on SerDes IC specification. (Consult the SerDes IC application information)
R7=R8=270£[ (VCC=3.3V)
=510£[ (VCC=5V)
R9=510£[

NOTE¡G
1. Transmission line characteristic impedance Z=50£[.
2. R1, R2, R3, R4, R5, R6 as close to SerDes IC as possibl
3. R7, R8 as close to 1X9 Transceiver as possible.