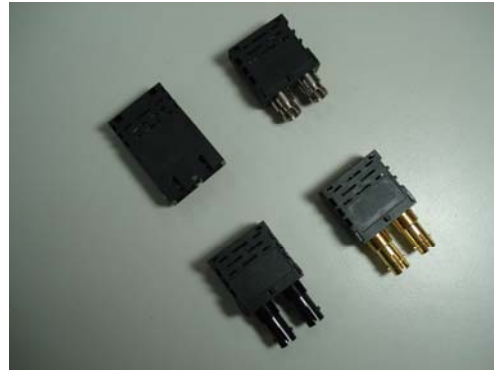


## Multimode 1.25Gbps Optical Transceiver

### Features

- 850nm VCSEL transmitter
- Intermediate and long reach
- Industrial standard 1x9 pin footprint
- Duplex SC/ST/FC single mode connector interface
- Receptacle or Pigtailed
- Receiver signal detect function
- Wide dynamic rang receiver with AGC
- PECL/LVPECL logic interface, DC or AC coupling
- Single supply 5V/3.3V
- Low power consumption
- RoHS available



### Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	
<b>Transmitter</b>						
Data Rate (NRZ)	B	-	1250	-	Mb/s	
Optical Output Power (avg.) <sup>(1) (2) (3)</sup>						
-1	P <sub>o</sub>	-10	-	-5	dBm	
-2	P <sub>o</sub>	-5	-	0	dBm	
Extinction Ratio	ER	9	-	-	dB	
Optical Wavelength	$\lambda_c$	830	850	860	nm	
Spectral Width (RMS)	$\Delta\lambda$	-	-	0.85	nm	
Output Rise Time (20-80%)	t <sub>r</sub>	-	-	0.26	ns	
Output Fall Time (20-80%)	t <sub>f</sub>	-	-	0.26	ns	
Data Input <sup>(6)</sup>	DC Coupled	V <sub>IL</sub>	V <sub>CC</sub> -1.810	-	V <sub>CC</sub> -1.475	V
		V <sub>IH</sub>	V <sub>CC</sub> -1.165	-	V <sub>CC</sub> -0.880	V
	AC Coupled (Differential)	V <sub>I</sub>	0.25	-	1.6	V
Supply Voltage	V <sub>CC</sub>	3.10 4.75	3.3 5.0	3.50 5.25	V	
Supply Current	I <sub>CC</sub>	-	-	110	mA	
<b>Receiver</b>						
Data Rate (NRZ)	B	-	1250	-	Mb/s	
Optical Input (avg.) Sensitivity <sup>(1) (5)</sup>	P <sub>IN</sub>	-	-	-20	dBm	
Saturation	P <sub>SAT</sub>	-3	0	-	dBm	
Optical Wavelength	$\lambda$	770	850	860	nm	
Output Rise Time (20-80%)	t <sub>r</sub>	-	-	0.4	ns	
Output Fall Time (20-80%)	t <sub>f</sub>	-	-	0.4	ns	
Data Output <sup>(6)</sup>	DC Coupled	V <sub>OL</sub>	V <sub>CC</sub> -1.840	-	V <sub>CC</sub> -1.62	V
		V <sub>OH</sub>	V <sub>CC</sub> -1.045	-	V <sub>CC</sub> -0.88	V
	AC Coupled (Differential)	V <sub>I</sub>	0.6	-	1.8	V
Signal Detect Asserted (avg.)	P <sub>A</sub>	-	-	-20	dBm	
Signal Detect Deasserted (avg.)	P <sub>D</sub>	-25	-	-	dBm	
Hysteresis	P <sub>HYS</sub>	-	2	-	dB	

## Multimode 1.25Gbps Optical Transceiver

Supply Voltage	V <sub>CC</sub>	3.10 4.75	3.3 5.0	3.50 5.25	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) Eye mask diagram is compliant to IEEE802.3z Eye Diagram.
- (5) 2<sup>7</sup> -1 PRBS, BER= 10<sup>-12</sup>.
- (6) Compatible with LVPECL and PECL logic levels.
- (7) 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-TR85MM 3 -**  V    **9**  **1**    -- G for RoHs compliant

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

**Data Coupling & SD Output Level :**

Sym bol	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

R for receptacle  
 P for pigtailed

**Supply Voltage :**  
 5 : 5V  
 3 : 3.3V

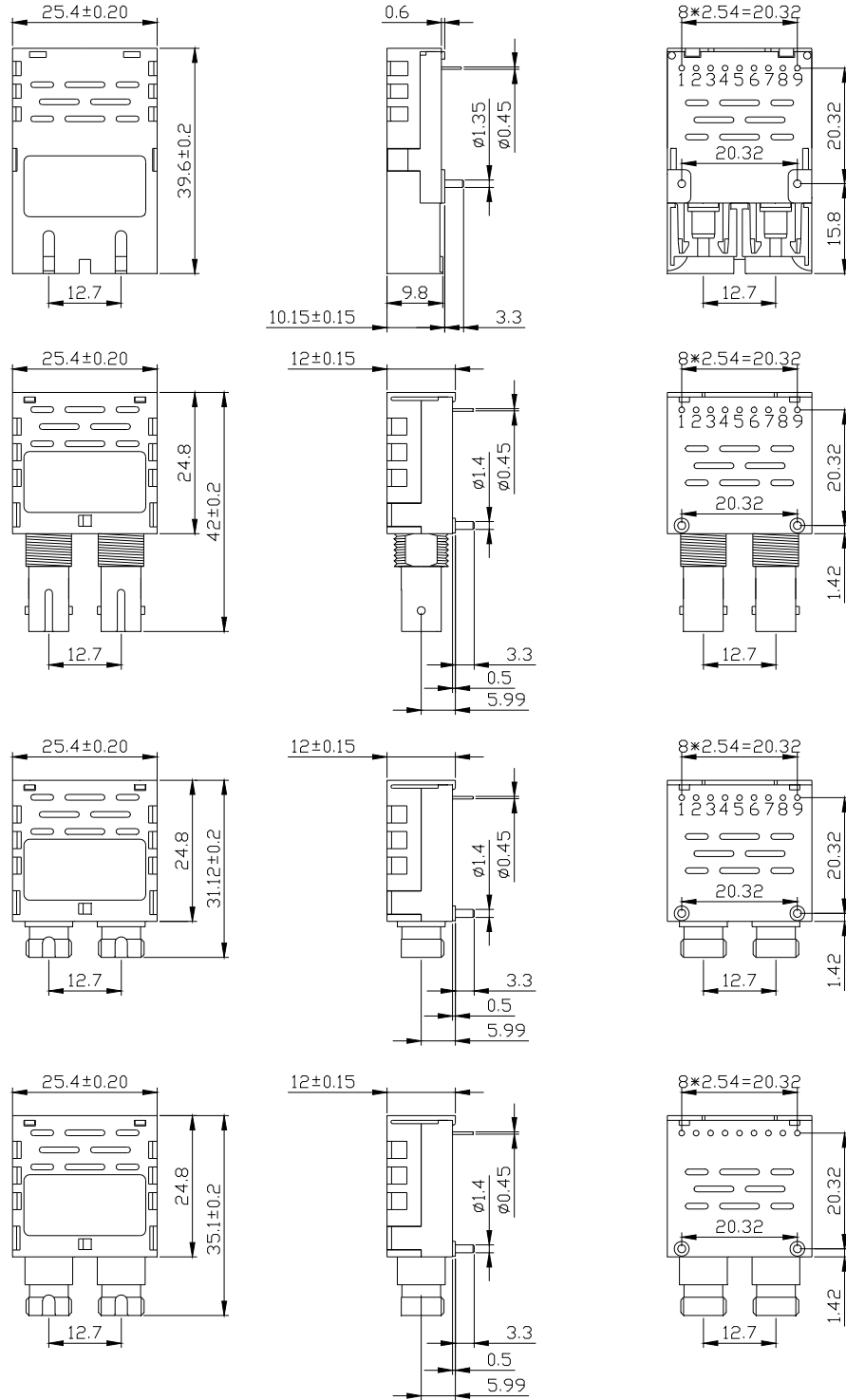
**Connector Type :**  
 SC : SC Connector  
 FC : FC Connector  
 ST : ST Connector

**Tx Output Power Grade :**  
 (refer to Specifications)  
 1 : -1  
 2 : -2

# Multimode 1.25Gbps Optical Transceiver

## Outline Drawing

UNIT : mm



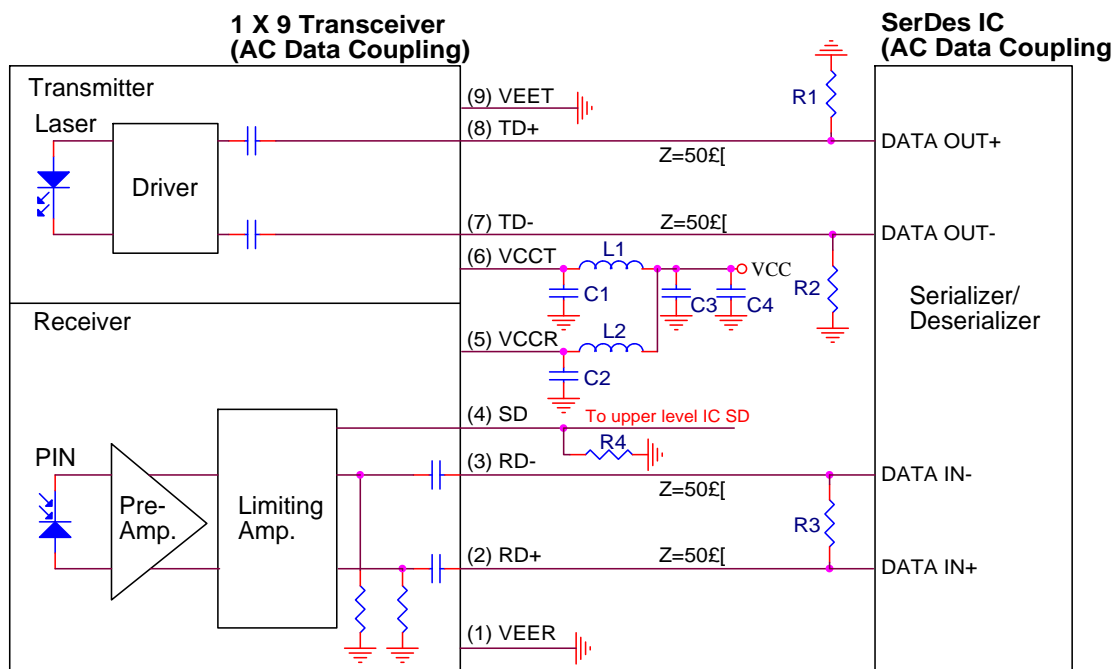
# Multimode 1.25Gbps Optical Transceiver

## 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 :

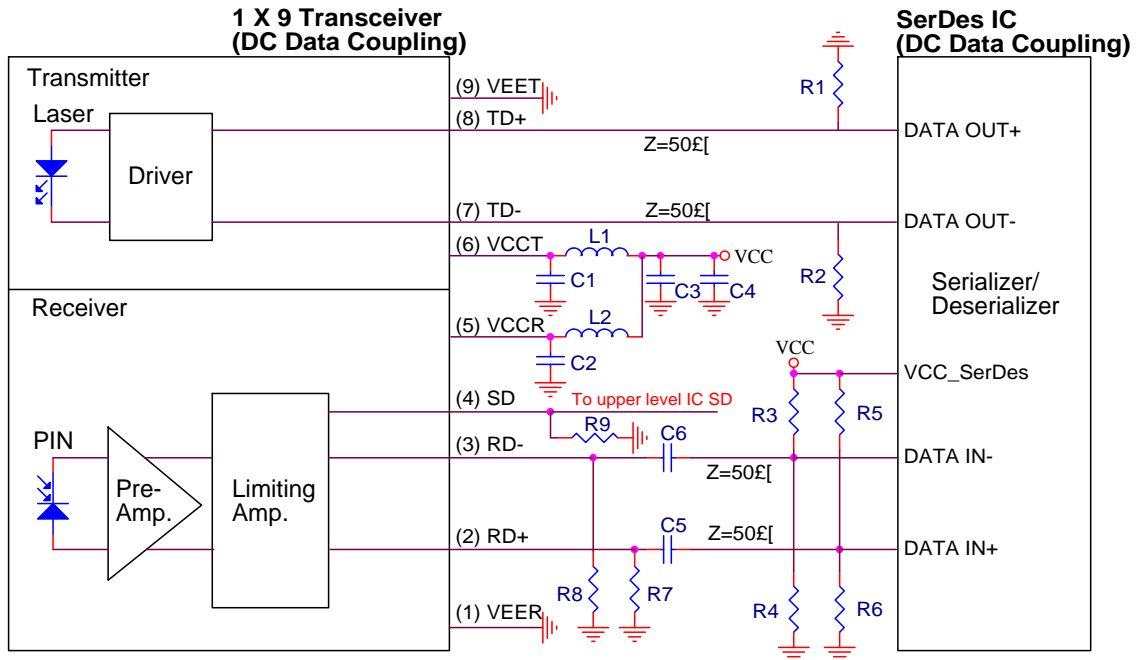


$L1=L2=1\text{ }\mu\text{H}$  or ferrite bead  
 $C1=C2=C3=0.1\text{ }\mu\text{F}$   
 $C4=10\text{ }\mu\text{F}$   
 $R1, R2, R3$  depends on SerDes IC specification.  
 (Consult the SerDes IC application information)  
 $R4=510\text{ }\Omega$

**NOTE<sub>i</sub>G**  
 1. Transmission line characteristic impedance  $Z=50\text{ }\Omega$ .  
 2.  $R1, R2, R3$  as close to SerDes IC as possible.

# Multimode 1.25Gbps Optical Transceiver

Recommended DC Coupling Interface Circuit :



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

NOTE:G  
 1. Transmission line characteristic impedance  $Z=50\text{Ω}$ .  
 2.  $R1, R2, R3, R4, R5, R6$  as close to SerDes IC as possible.  
 3.  $R7, R8$  as close to 1X9 Transceiver as possible.