

## Multimode 1.25Gbps 2X10 SFF Transceiver

### Features

- LC duplex receptacle
- Standard 2 x 10 footprint
- 850nm VCSEL transmitter with automatic power control
- Laser bias and power monitor
- AC or DC coupled LVPECL/PECL compatible data input and output
- Transmitter disable input
- PECL or TTL signal detect output
- Single 3.3V or 5V power supply



### Specifications

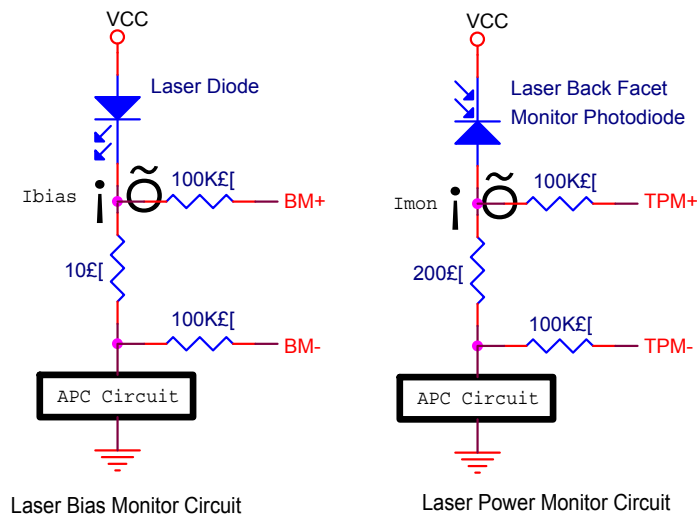
Parameter		Symbol	Min.	Typ.	Max.	Unit
<b>Transmitter</b>						
Data Rate (NRZ)		B	-	1250	-	Mb/s
Optical Output Power (avg.) <sup>(1) (2) (3)</sup>		P <sub>o</sub>	-9.5	-	-3	dBm
Extinction Ratio <sup>(2)</sup>		ER	9	-	-	dB
Optical Wavelength <sup>(2)</sup>		λ <sub>c</sub>	830	850	860	nm
Spectral Width (RMS) <sup>(2)</sup>		Δλ	-	-	0.85	nm
Output Rise Time (20-80%) <sup>(2)</sup>		t <sub>r</sub>	-	-	0.26	ns
Output Fall Time (20-80%) <sup>(2)</sup>		t <sub>f</sub>	-	-	0.26	ns
Data Input <sup>(7)</sup>	DC Coupled	V <sub>IL</sub> V <sub>IH</sub>	V <sub>CC</sub> -1.810 V <sub>CC</sub> -1.165	- -	V <sub>CC</sub> -1.475 V <sub>CC</sub> -0.880	V V
	AC Coupled (Differential)	V <sub>I</sub>	0.25	-	1.6	V
Tx Disable Input		V <sub>DIL</sub> V <sub>DIH</sub>	0 2	- -	0.8 V <sub>CC</sub>	V V
Laser Bias Monitor (BM) <sup>(8)</sup>		BM	-	0.1	-	mA/mV
Laser Power Monitor (TPM) <sup>(8)</sup>		TPM	-	5	-	μA/mV
Supply Voltage		V <sub>CC</sub>	3.10 4.75	3.3 5.0	3.50 5.25	V V
Supply Current		I <sub>CC</sub>	-	-	110	mA
<b>Receiver</b>						
Data Rate (NRZ)		B	-	1250	-	Mb/s
Optical Input Sensitivity (avg.) <sup>(1) (2) (5)</sup>		P <sub>IN</sub>	-	-	-17	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>	-	-	0.4	ns
Output Fall Time (20-80%)		t <sub>f</sub>	-	-	0.4	ns
Data Output <sup>(7)</sup>	DC Coupled	V <sub>OL</sub> V <sub>OH</sub>	V <sub>CC</sub> -1.840 V <sub>CC</sub> -1.045	- -	V <sub>CC</sub> -1.62 V <sub>CC</sub> -0.88	V V
	AC Coupled (Differential)	V <sub>I</sub>	0.6	-	1.8	V
Signal Detect Asserted (avg.)		P <sub>A</sub>	-	-	-17	dBm
Signal Detect Deasserted (avg.)		P <sub>D</sub>	-27	-	-	dBm

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Signal Detect Hysteresis	$P_{HYS}$	-	2	-	dB
Supply Voltage	$V_{CC}$	3.10	3.3	3.50	V
		4.75	5.0	5.25	V
Supply Current	$I_{CC}$	-	-	100	mA

Notes :

- (1) With 0.275 NA, 62.5/125 $\mu$ m fiber.
- (2) Compliant to IEEE802.3z Gigabit Ethernet 1000BASE-SX.
- (3) Class 1 eye safe per FDA and IEC.
- (4) Transmitter eye mask diagram is compliant to IEEE802.3z Eye Diagram.
- (5)  $2^7$  -1 PRBS, BER=  $10^{-12}$ .
- (6) The transmitter output should not be viewed directly.
- (7) Compatible with PECL and LVPECL logic levels.
- (8) The figure below shows the laser bias monitor and power monitor equivalent circuit.



### Absolute Maximum Ratings

Parameter		Min.	Max.	Unit
Operating Temperature	-1	0	70	$^{\circ}$ C
	-2	-40	85	$^{\circ}$ C
Storage Temperature		-40	100	$^{\circ}$ C
Lead Soldering Limits		-	240/10	$^{\circ}$ C /sec
Supply Voltage	5V	-0.2	7	V
	3.3V	-0.2	4	V



## Multimode 1.25Gbps 2X10 SFF Transceiver

### Ordering Information

SNS-T R 8 5 M M 3 - 1 V L C  K R 1

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

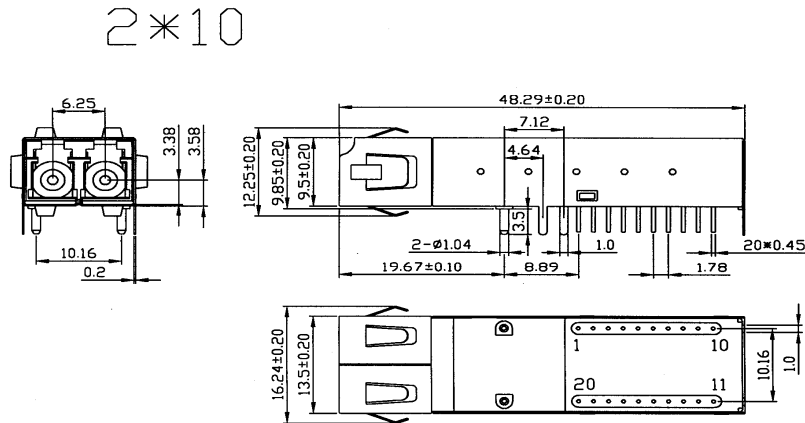
### Maximum Reach for 1000BASE-SX

Fiber Type	Modal Bandwidth @ 850nm (min. overfilled launch) (MHz·km)	Recommended Maximum Reach <sup>(Note)</sup> (meters)
62.5 $\mu$ m MMF	160	220
62.5 $\mu$ m MMF	200	275
50 $\mu$ m MMF	400	500
50 $\mu$ m MMF	500	550

Note : Maximum reach as defined by IEEE 802.3z Gigabit Ethernet 1000BASE-SX standard.

# Multimode 1.25Gbps 2X10 SFF Transceiver

## Outline Drawing



UNIT : mm

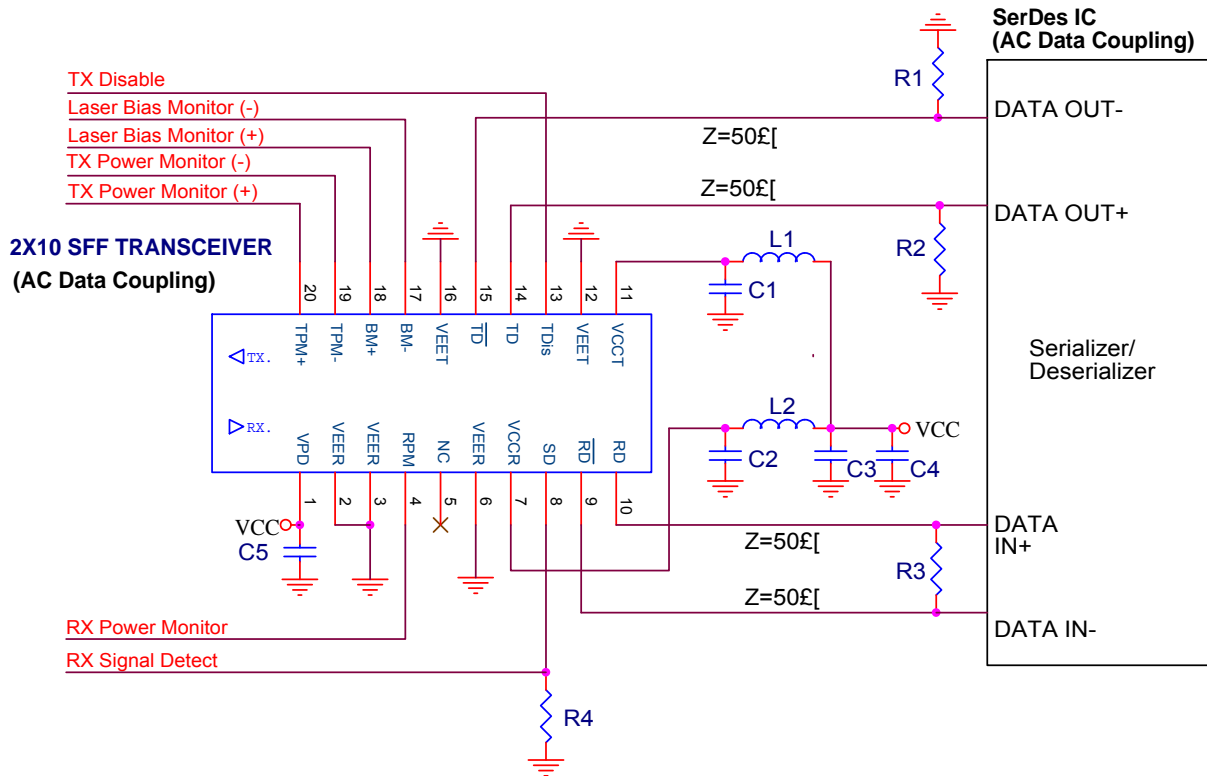
### Pinout Description

Pin No.	Symbol	Description
1	V <sub>PD</sub>	Receiver PD Bias Supply
2	V <sub>EER</sub>	Receiver Ground
3	V <sub>EER</sub>	Receiver Ground
4	NC	No Connection
5	NC	No Connection
6	V <sub>EER</sub>	Receiver Ground
7	V <sub>CCR</sub>	Receiver Power Supply
8	SD	Receiver Signal Detect
9	RD-	Receiver Data Out (Inverted)
10	RD+	Receiver Data Out
11	V <sub>CCT</sub>	Transmitter Power Supply
12	V <sub>EET</sub>	Transmitter Ground
13	TDis	Input Logic Low Level to Switch Laser "ON" Input Logic High Level to Switch Laser "OFF"
14	TD+	Transmitter Data in
15	TD-	Transmitter Data In (Inverted)
16	V <sub>EET</sub>	Transmitter Ground
17	BM-	Laser Diode Bias Current Monitor-Negative End
18	BM+	Laser Diode Bias Current Monitor-Positive End
19	TPM-	Transmitter Power Monitor-Negative End
20	TPM+	Transmitter Power Monitor-Positive End

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## Application Notes

Recommended AC Coupling Interface Circuit :



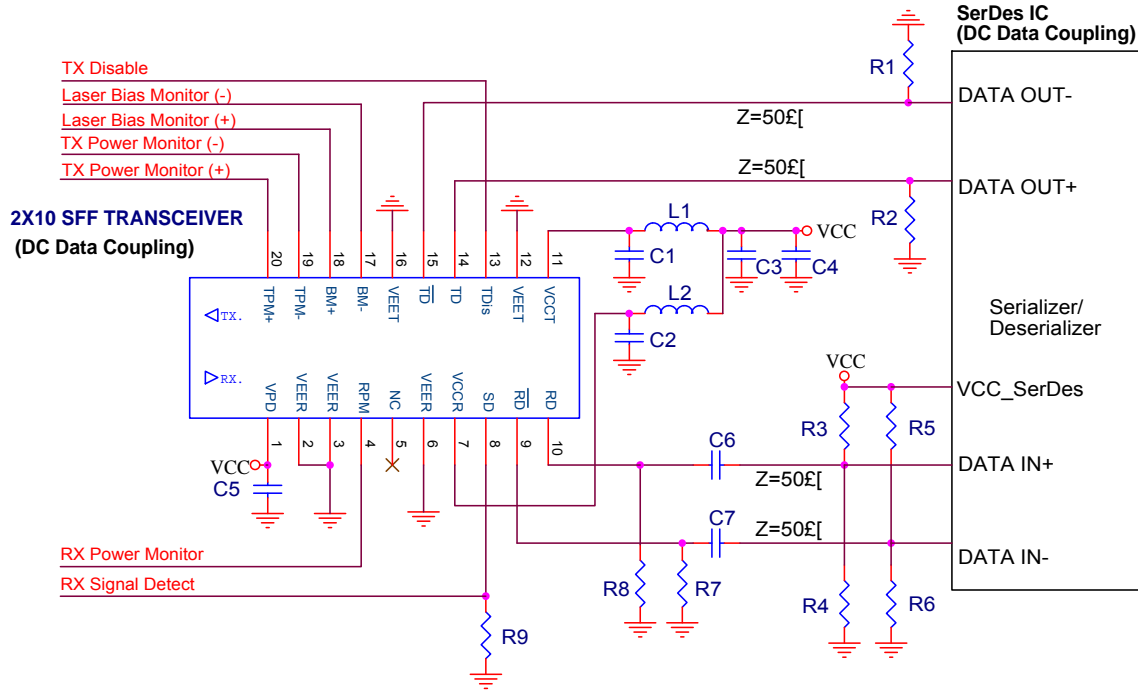
$L1=L2=1\mu\text{gH}$  or ferrite bead  
 $C1=C2=C3=0.1\mu\text{gF}$   
 $C4=10\mu\text{gF}$   
 $C5=1\mu\text{gF}$   
 $R1, R2, R3$  depends on SerDes IC specification.  
 (Consult the SerDes IC application information)  
 $R4=510\Omega$

### NOTE<sub>i</sub>G

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

# Multimode 1.25Gbps 2X10 SFF Transceiver

Recommended DC Coupling Interface Circuit :



$L1=L2=1\mu\text{gH}$  or ferrite bead  
 $C1=C2=C3=C6=C7=0.1\mu\text{gF}$   
 $C4=10\mu\text{gF}$   
 $C5=1\mu\text{gF}$   
 $R1, R2, R3, R4, R5, R6$  depends on SerDes IC specification.  
 (Consult the SerDes IC application information)  
 $R7=R8=270\Omega$  (VCC=3.3V)  
 $=510\Omega$  (VCC=5V)  
 $R9=510\Omega$

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