

## Specification

### 1x9 Form Factor

Duplex SC Receptacle

### Optical Transceivers

STM-1 / OC-3 / 100BASE  
155Mbit/s

## Ordering Information

**T S P - D x A A 2 - 6 B M**

**Voltage/Temperature**

1:3.3V/+0 °C~ +70 °C

2:3.3V/-40 °C~ +85 °C

Model Name	Voltage	Device type	Interface	SD	Temperature	Distance
TSP-D1AA2-6BM	3.3V	FP / PIN	DC / DC Coupling	LVPECL	+0°C~+70°C	90km
TSP-D2AA2-6BM					-40°C~+85°C	

## Features

- ROHS-6 Compliant
- Industry Standard 1x9 Footprint
- Laser wavelength 1310nm FP LD
- Single 3.3 Power Supply
- LVPECL Signal Output
- Wave Solderable and Aqueous Washable
- Uncooled Laser Diode with MQW structure
- Complies with Telcordia (Bellcore) GR-468-CORE
- Up to reach 90 km Transmission Distance

## Applications

- Fast Ethernet
- SONET/SDH
- Routers
- Switches

## Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Storage temperature	$T_s$	-40		85	°C
Supply voltage	$V_{CC}$	0		4.5	V
Soldering Temperature	-	-		260	°C
Input voltage	$V_{IN}$	GND		$V_{CC}$	V
Output Current	$I_{out}$	0		30	mA

## Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}$	3.15	3.3	3.45	V
Operating Case temperature ( TSP-D1AA2-6BM )	$T_c$	0		70	°C
Operating Case temperature ( TSP-D2AA2-6BM )		-40		85	
Data Rate			155		Mbps
Power Supply Current	$I_{CC}$			180	mA

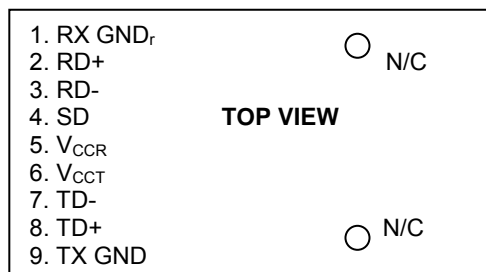
**Transmitter Specifications** (  $V_{CC}=3.15V\sim 3.45V$  ;  $T_C= 0^{\circ}C\sim 70^{\circ}C$  /  $T_C= -40^{\circ}C\sim 85^{\circ}C$  )

Parameter	Symbol	Min	Typ	Max	Unit
<b>Optical Characteristics</b>					
Output Optical Power	$P_{out}$	0		+5	dBm
Extinction Ratio	ER	10			dB
Center Wavelength	$\lambda_c$	1275	1310	1345	nm
Spectral Width (RMS)	$\sigma$			2.5	nm
Relative Intensity Noise	RIN			-116	dB/Hz
Output Eye	Compliant with ITU-T G.957				
<b>Electrical Characteristics</b>					
Data Input Voltage-High	$V_{IH}-V_{CC}$	-1.16		-0.88	V
Data Input Voltage-Low	$V_{IL}-V_{CC}$	-1.81.0		-1.48	V

**Receiver Specifications** (  $V_{CC}=3.15V\sim 3.45V$  ;  $T_C= 0^{\circ}C\sim 70^{\circ}C$  /  $T_C= -40^{\circ}C\sim 85^{\circ}C$  )

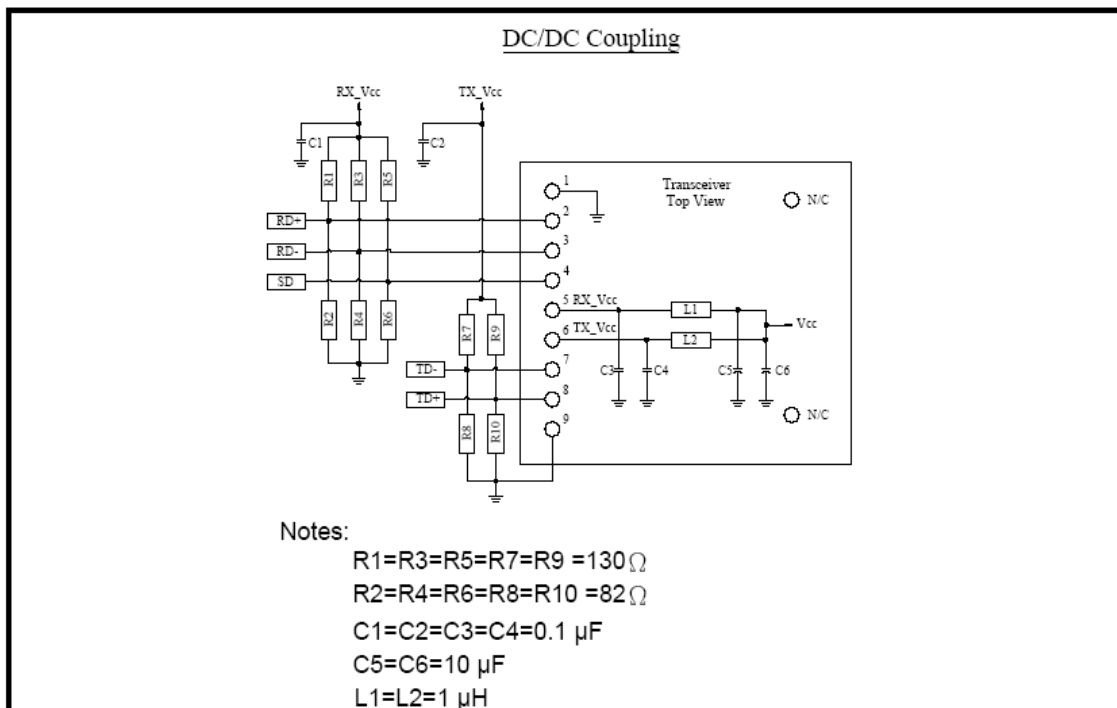
Parameter	Symbol	Min	Typ	Max	Unit
<b>Optical Characteristics</b>					
Optical Input Power-maximum	$P_{SATIN}$	-3			dBm
Receiver Sensitivity ( PRBS= $2^{23}-1$ ; BER $\leq 10^{-10}$ )	$P_{SAN}$			-37	dBm
Operating Center Wavelength	$\lambda_c$	1260		1600	nm
Signal Detect – Asserted	$P_{SA}$			-37	dBm
Signal Detect – De-asserted	$P_{SD}$	-45			dBm
Signal Detect - Hysteresis	$P_{LH}$	0.5		5	dB
<b>Electrical Characteristics</b>					
Data Output Voltage-High	$V_{OH}-V_{CC}$	-1.025		-0.88	V
Data Output Voltage-Low	$V_{OL}-V_{CC}$	-1.81		-1.62	V
Signal Detect Output Voltage-High	$V_{OH}-V_{CC}$	-1.025		-0.88	V
Signal Detect Output Voltage-Low	$V_{OL}-V_{CC}$	-1.81		-1.62	V

### Pin Definition and Descriptions



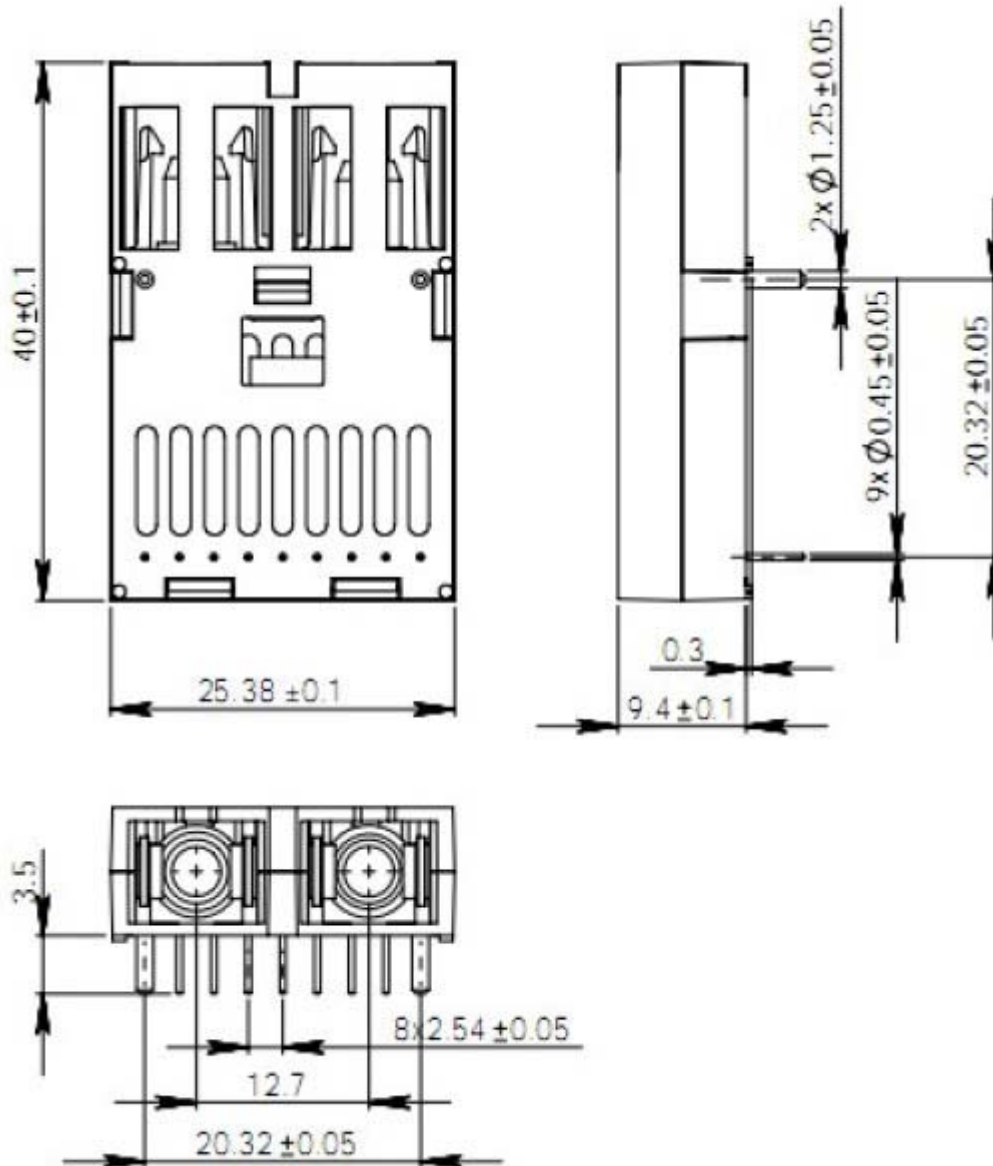
Pin	Name	Description
1	RX GND	Receiver Signal Ground
2	RD+	Receiver Data Out
3	RD-	Receiver Data Out Bar
4	SD	Signal Detect
5	V <sub>CCR</sub>	Receiver Power Supply
6	V <sub>CCT</sub>	Transmitter Power Supply
7	TD-	Transmitter Data In Bar
8	TD+	Transmitter Data In
9	TX GND	Transmitter Signal Ground

### Recommended Circuit Diagram



Mechanical Outlines

( Unit : mm)



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