

Specification

1x9 Form Factor

Duplex ST Receptacle

Optical Transceivers

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



Ordering Information

TSP - D_xAK6 - T2S



Temperature
1 : +0 ~ +70°C
2 : -40 ~ +85°C

Model Name	Voltage	Device type	Interface	SD/LOS	Temperature	Distance
TSP-D1AK6-T2S	3.3V	DFB / PIN	DC / DC Coupling	PECL	+0 ~+70°C	120km
TSP-D2AK6-T2S					-40 ~+85°C	

Features

- Compliant with 155Mbps ATM and SONET OC-3 / SDH STM-1
- Industry Standard 1x9 Footprint
- ST Duplex Connector
- Single Power Supply 3.3V
- Differential LVPECL Inputs and Outputs
- Compatible with Solder and Aqueous Wash Processes
- Class 1 Laser Product Complies with IEC / EN 60825-1

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	T _s	-40	--	85	°C
Supply Voltage	VCC	-0.5	--	4	V
Input Voltage	V _{IN}	-0.5	--	VCC	V
Output Current		--	--	50	mA
Operating Current	I _{cc}	--	--	400	mA
Soldering Temperature (10 seconds on leads only)	T _{sold}	--	--	260	°C

Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	VCC	3.1	3.3	3.5	V
Operating Case temperature (TSP-D1AK6-T2S)	Top	0	--	70	°C
Operating Case temperature (TSP-D2AK6-T2S)		-40	--	85	
Data Rate		50	155	200	Mb/s

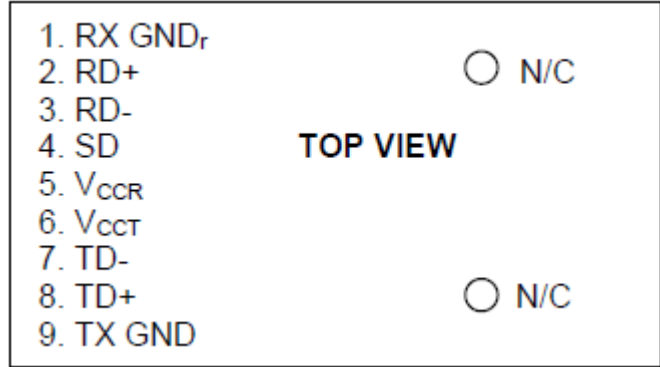
Transmitter Specifications ($V_{CC} = 3.1 \sim 3.5V$; $T_{op} = -40 \sim 85^{\circ}C$)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Output Optical Power	P_o	0	--	+5	dBm
Extinction Ratio	ER	10	--	--	dB
Center Wavelength	λ	1530	1550	1570	nm
Spectral Width (-20dB)	$\sigma\lambda$	--	--	1	nm
Side Mode Suppression Ratio	SMSR	30	--	--	dB
Rise/Fall time (10-90%)	T_r / T_f	--	1	2	ns
Output Eye	Compliant with Telcordia GR-253-CORE Issue 3 and ITU-T recommendation G-957				
Electrical Characteristics					
Power Supply Current	I_{CC}	--	--	180	mA
Transmitter Data Input Voltage - High	$V_{IH} - V_{CC}$	-1.1	--	-0.74	V
Transmitter Data Input Voltage - Low	$V_{IL} - V_{CC}$	-2.0	--	-1.58	V
Transmitter Data Input Differential Voltage	V_{DIFF}	0.3	--	1.6	V

Receiver Specifications ($V_{CC} = 3.1 \sim 3.5V$; $T_{op} = -40 \sim 85^{\circ}C$)

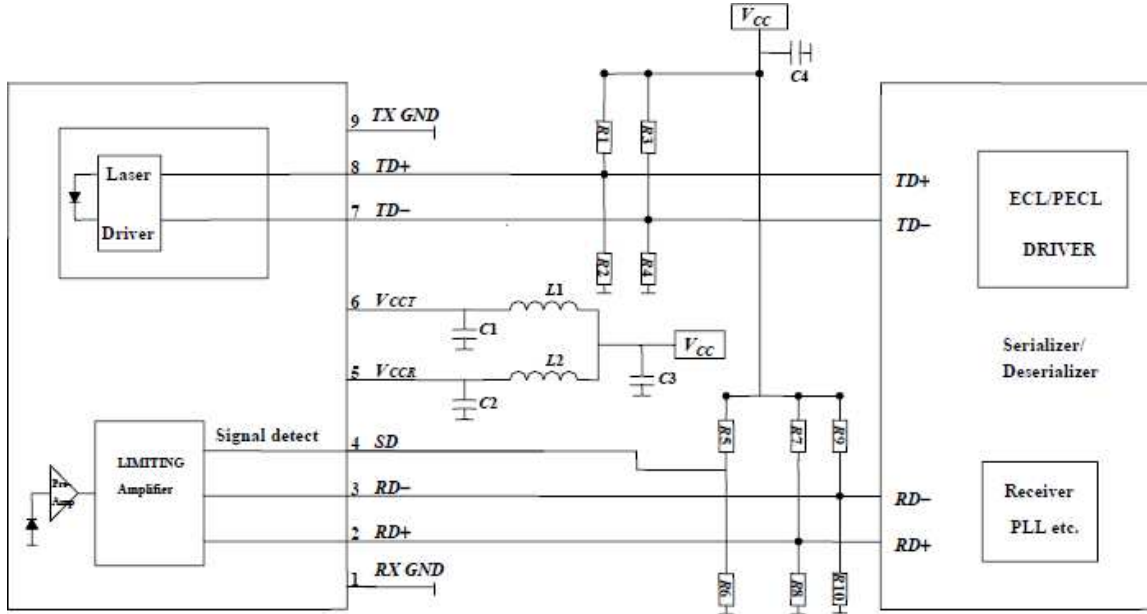
Parameter	Symbol	Min	Typ	Max	Unit
Optical Characteristics					
Optical Input Power-maximum	P_{max}	0	--	--	dBm
Sensitivity (PRBS= $2^{23}-1$; $BER \leq 10^{-10}$)	Sens	--	--	-35	dBm
Operating Center Wavelength	λ	1260	--	1610	nm
Signal Detect – Asserted	PSA	--	--	-35	dBm
Signal Detect – De-asserted	PSD	-45	--	--	dBm
Signal Detect – Hysteresis	PSH	1.0	--	--	dB
Electrical Characteristics					
Power Supply Current	I_{cc}	--	--	100	mA
Signal Detect Output Voltage - High	$V_{OH} - V_{CC}$	-1.1	--	-0.74	V
Signal Detect Output Voltage - Low	$V_{OL} - V_{CC}$	-2.0	--	-1.58	V
Data Output Rise/Fall time (10-90%)	T_r / T_f	--	1	2	ns
Data Output Voltage - High	$V_{OH} - V_{CC}$	-1.1	--	-0.74	V
Data Output Voltage - Low	$V_{OL} - V_{CC}$	-2.0	--	-1.58	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	VCCR	Receiver Power Supply
6	VCCT	Transmitter Power Supply
7	TD-	Transmitter Data In Bar
8	TD+	Transmitter Data In
9	TX GND	Transmitter Signal Ground

Recommended Circuit Diagram



$$C1/C2/C4 = 0.1 \mu F$$

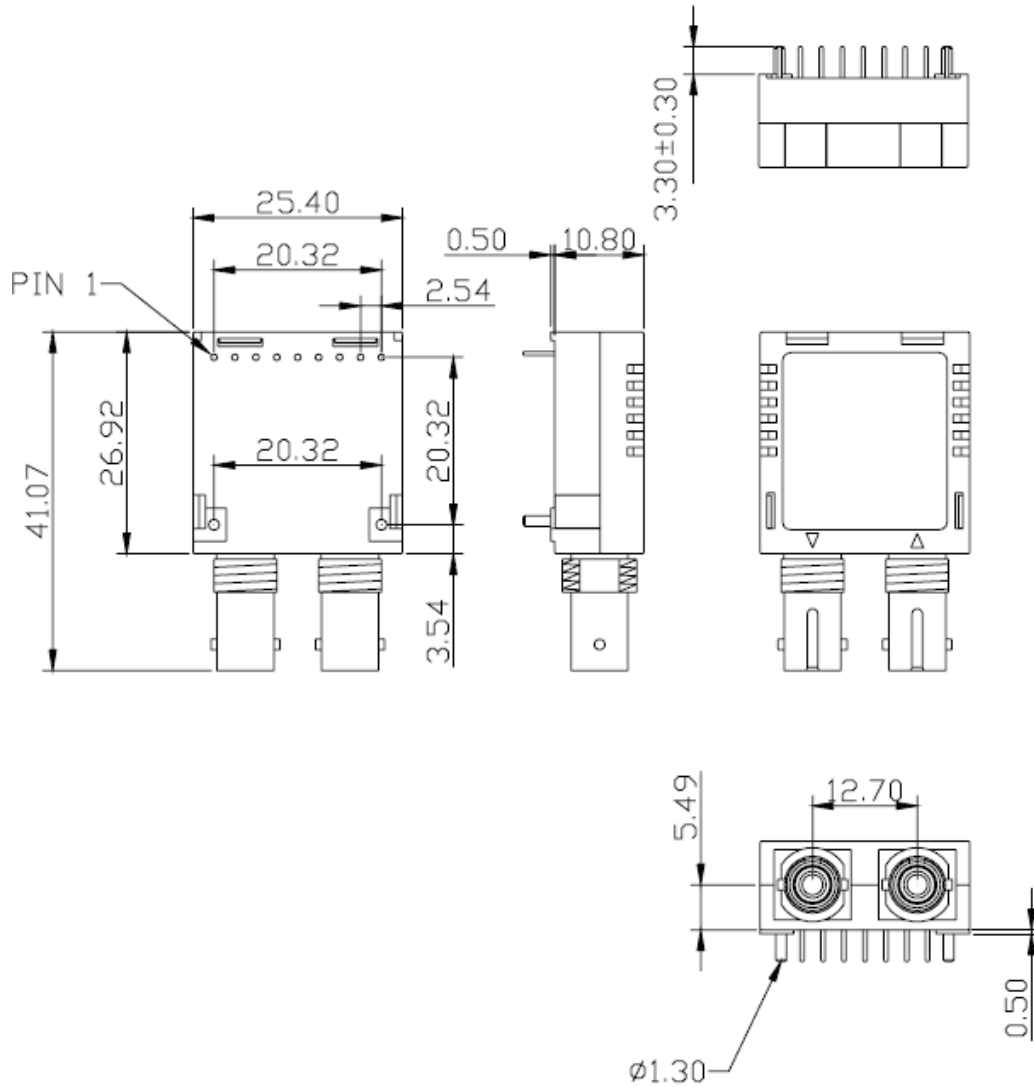
$$L1/L2 = 1 \mu H$$

$$R1/R3/R5/R7/R9 = 130 \Omega$$

$$C3 = 4.7 \mu F$$

$$R2/R4/R6/R8/R10 = 82 \Omega$$

Mechanical Outlines (Unit : mm)



ALL DIMENSIONS ARE ± 0.20 mm UNLESS OTHERWISE SPECIFIED



ESD

Normal ESD precautions are required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

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