

## **L9-SD5501-80PTI5**

### **1×9 155Mbps Transceiver**

#### **Features**

- VCSEL/FP/DFB Laser Diode Transmitter
- Up to 2 Km on 50/125μm MMF, Up to 120 Km on 9/125μm SMF
- 3.3V or 5V power supply
- SC duplex optical interface
- (LV)PECL Differential Input /Output and (LV)TTL signal detect
- Class 1 Laser International Safety Standard IEC 825 Compliant
- Operating case temperature range (Standard: 0 to +70°C) or (Industrial: -40°C to +85°C)

#### **Applications**

- ATM 155Mbps
- SONET/SDH
- 100Mbps Ethernet
- Digital Video system
- Other optic link

#### **Product Description**

Link-pp's L9-SDxx01-xxPTI5 series of transceiver modules are the perfect solution for low-speed communication networks. These transceiver modules support data rates up to 200Mbps. The module is fully compliant with the Multi-sourced 1×9 protocol. These transceiver modules provides the system designer with products to implement a range of FDDI and ATM designs at the 100Mbps/125Mbps rate and SONET/OC-3, SDH/STM-1 for Telecommunication.

## Absolute Maximum Ratings

Operating of the transceiver beyond the Absolute Conditions Listed in Table 1 will degrade or damage the product. It's not implied that the product would function above the recommended operating environment, it's possible to reduce the reliability and lifetime of device if Recommended Operating Environment is exceeded (Refer to table 2)

**Table 1--- Absolute Maximum Conditions**

Parameter		Symbol	Min	Max	Units	Note
Storage Temperature		$T_{ST}$	-40	+85	°C	-
Relative Humidity		RH	5	95	%	-
Supply Voltage	3.3V power	$V_{CC}$	0	+3.6	V	-
	5V power		0	+6		-

**Table 2--- Recommended Operating Environment and Electrical Characteristics**

Parameter		Symbol	Min	Typ	Max	Units	Note
Supply Voltage	3.3V power	$V_{CC}$	+3.1	+3.3	+3.5	V	-
	5V power		+4.75	+5.0	+5.25		-
Supply Current		$I_{CC}$	-	-	260	mA	-
Operating Case Temperature		$T_{OP}$	0	-	+70	°C	1
			-40	-	+85		2
Data Rate		B	10	155	200	Mbps	-
Soldering temperature		-	-	-	350	°C	3
Soldering duration		-	-	-	10	Sec	3

Note 1.Standard level  
 2.Industrial level  
 3.Not recommended wave soldering.

## Optical Parameters

**Table 3 --- L9-SD5501-80PTI5 Transceiver Optical Characteristics**  
 (Ambient Operating Temperature  $T_a = +25 \pm 5^\circ\text{C}$ ,  $V_{CC} = 3.3$  or  $5.0 \pm 0.2\text{V}$ )

Parameter	Symbol	Min	Typ	Max	Units	Note	
<b>Transmitter</b>							
Data rate	B	10	155	200	Mbps	-	
Output Center Wavelength	$\lambda_c$	1480	1550	1580	nm	-	
Output Spectral width (-20dB)	$\lambda$	-	-	1	nm	-	
Average Optical Output Power	$P_o$	-5	-	0	dBm	1,2	
Extinction Ratio	ER	10	-	-	dB	1,2	
Optic Output Eye: Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957						1,2	
<b>Receiver</b>							
Receiver Sensitivity	$P_{min}$	-	-	-36	dBm	1,2	
Receiver Saturation	$P_{max}$	-3	-	-	dBm	1,2	
Operation Center Wavelength	$\lambda_c$	1260	-	1620	nm	-	
SD	Deassert	PD	-45	-	-	dBm	1,2
	Assert	PA	-	-	-36	dBm	1,2
SD Hysteresis	SDHYS	0.5	-	-	dB	-	

Note1: The optical power is launched into 9/125 $\mu\text{m}$  SMF.

Note2: With a PRBS  $2^{23}-1$  test pattern@ 155Mbps.

## Electrical Parameters

**Table 4--- Transceiver Electrical Characteristics**

(Ambient Operating Temperature  $T_a = +25 \pm 5^\circ\text{C}$ ,  $V_{CC} = 3.3$  or  $5.0 \pm 0.2\text{V}$ )

Parameter	Symbol	Min	Typ	Max	Units	Note
Supply Voltage	3.3V power	+3.1	+3.3	+3.5	V	-
	5V power	+4.75	+5.0	+5.25		-
Supply Current	$I_{CC}$	-	-	260	mA	-

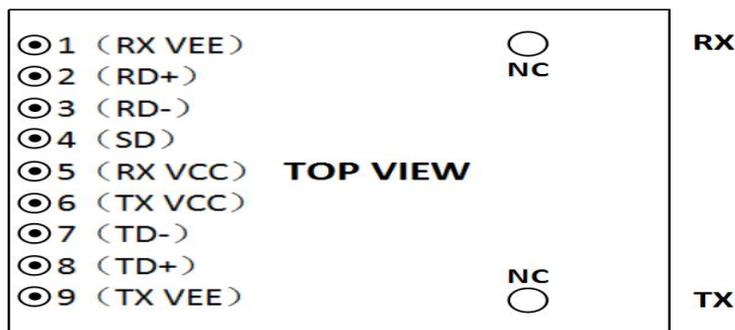
Transmitter						
Differential Input Voltage	V <sub>in</sub>	400	-	2000	mV <sub>P-P</sub>	-
Input Differential Impedance	Z <sub>in</sub>	90	100	110	Ω	-
Data Input Voltage - Low	V <sub>IL</sub>	V <sub>CC</sub> -1.81	-	V <sub>CC</sub> -1.48	V	-
Data Input Voltage - High	V <sub>IH</sub>	V <sub>CC</sub> -1.17	-	V <sub>CC</sub> -0.88	V	-
Receiver						
Differential Output Voltage	V <sub>OUT</sub>	400	-	2000	mV <sub>P-P</sub>	-
Data Output Voltage – Low	V <sub>OL</sub>	V <sub>CC</sub> -1.83	-	V <sub>CC</sub> -1.56	V	1
Data Output Voltage – High	V <sub>OH</sub>	V <sub>CC</sub> -1.09	-	V <sub>CC</sub> -0.88	V	1
SD Output Voltage-Low	V <sub>OL</sub>	V <sub>CC</sub> -2.0	-	V <sub>CC</sub> -1.56	V	2
SD Output Voltage-High	V <sub>OH</sub>	V <sub>CC</sub> -1.1	-	V <sub>CC</sub> -0.75	V	2
SD Output Voltage-Low	V <sub>OL</sub>	0	-	0.8	V	3
SD Output Voltage-High	V <sub>OH</sub>	2	-	V <sub>CC</sub>	V	3

Note1: Outputs are terminated with 50Ω to VCC-2V&Related to VCC

Note2: (LV)PECL signal detect

Note3: (LV)TTL signal detect

## Pin Definitions



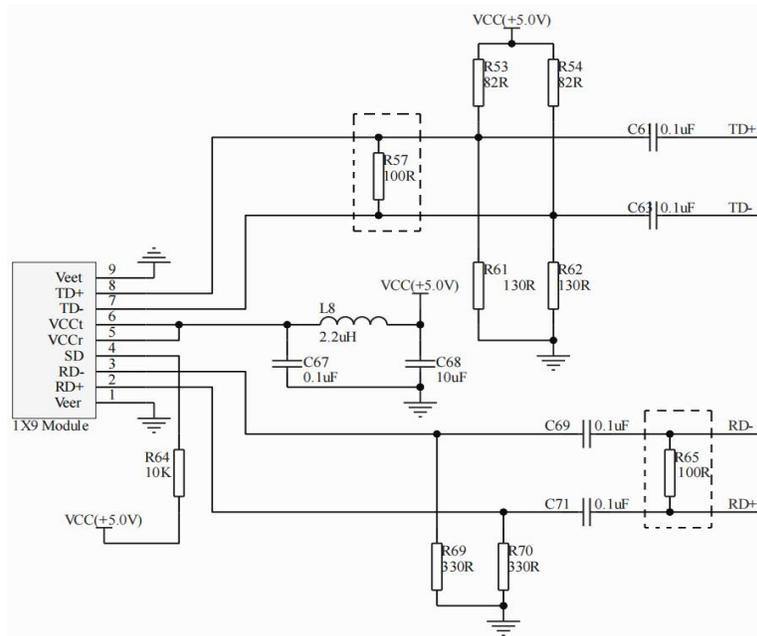
**Table 5---Connector pin assignment**

Pin #	Pin Name	Description	Note
1	RX VEE	Receiver Signal Ground	-
2	RD+	Receiver Data Out	-
3	RD-	Receiver Data Out Bar	-
4	SD	Signal Detect, (LV)PECLor(LV)TTL ouputs	1

5	RX VCC	Receiver Power Supply	-
6	TX VCC	Transmitter Power Supply	-
7	TD-	Transmitter Data In Bar	-
8	TD+	Transmitter Data In	-
9	TX VEE	Transmitter Ground	-

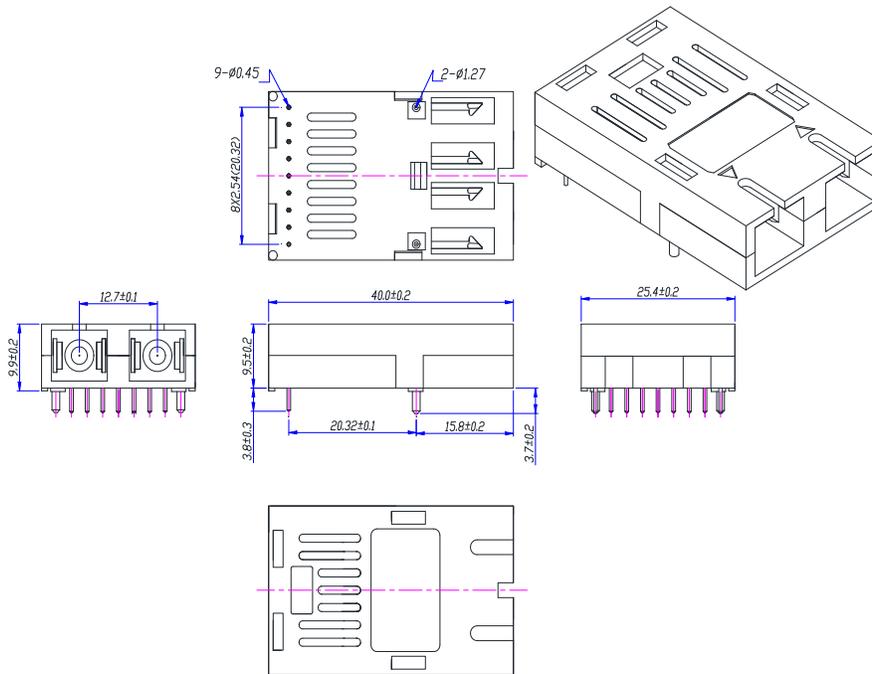
Note1: (LV)PECL-Normal optical input levels to the receiver result in logic "1" output, pull-down 130Ω or 270Ω resistor; (LV)TTL-Normal optical input levels to the receiver result in logic "1" output, pull-up 10kΩ resistor.

## Recommended Circuit Schematic



Recommended Circuit Schematic 5.0V SD TTL

## Module Outline Drawing (Units in mm)



SC receptacle TYPE1(common)

## Order Information

Type	OPTICAL INTERFACE	Fiber Type	Wavelength(nm)	Fiber Length(Km)	Note
L9-SD8501-02PTI5	duplex SC	MM	850(VCSEL)	2	(LV)TTL signal detect , 5V Supply Voltage, -40°C ~85°C
L9-SD3101-02PTI5	duplex SC	MM	1310(FP)	2	
L9-SD3101-10PTI5	duplex SC	SM	1310(FP)	10	
L9-SD3101-20PTI5	duplex SC	SM	1310(FP)	20	
L9-SD3101-40PTI5	duplex SC	SM	1310(FP)	40	
L9-SD5501-20PTI5	duplex SC	SM	1550(FP)	20	
L9-SD5501-40PTI5	duplex SC	SM	1550(DFB)	40	
L9-SD5501-80PTI5	duplex SC	SM	1550(DFB)	80	
L9-SD5501-A0PTI5	duplex SC	SM	1550(DFB)	100	
L9-SD5501-A2PTI5	duplex SC	SM	1550(DFB)	120	