

## **L9-SC315501-20PTI5**

### **1×9 155Mbps Bi-Directional Transceiver**

#### **Features:**

- Integrated single fiber bi-directional optical subassembly
- Operating data rate up to 155Mbps
- Simplex SC optical interface
- Single +5V Power Supply
- Multi-sourced 1×9 package
- Very low EMI and certified ESD protection
- Compliant with ROHS
- (LV)PECL Differential Input/Output and (LV)TTL signal detect

#### **Applications:**

- WDM Application
- SDH STM-1/ SONET OC-3
- Fast Ethernet

#### **Standard:**

- Compliant with ITU-T G.957

#### **Ordering Information**

| Part. No           | Specifications |         |           |        |     |        |            |       |                 |
|--------------------|----------------|---------|-----------|--------|-----|--------|------------|-------|-----------------|
|                    | Pack           | Rate    | Tx        | P(dBm) | Rx  | S(dBm) | WorkingTem | Reach | Fiber Interface |
| L9-SC315501-20PTC5 | 1x9 Bi-Di      | 155Mb/s | 1310nm FP | -15~-8 | PIN | <-32   | 0~70℃      | 20km  | Simplex SC      |
| L9-SC553101-20PTC5 | 1x9 Bi-Di      | 155Mb/s | 1550nm FP | -15~-8 | PIN | <-32   | 0~70℃      | 20km  | Simplex SC      |
| L9-SC315501-20PTI5 | 1x9 Bi-Di      | 155Mb/s | 1310nm FP | -15~-8 | PIN | <-32   | -40~85℃    | 20km  | Simplex SC      |
| L9-SC553101-20PTI5 | 1x9 Bi-Di      | 155Mb/s | 1550nm FP | -15~-8 | PIN | <-32   | -40~85℃    | 20km  | Simplex SC      |

## Absolute Maximum Ratings

| Parameter                       | Symbol | Unit. | Min  | Max |
|---------------------------------|--------|-------|------|-----|
| Storage Temperature Range       | Ts     | °C    | -40  | 85  |
| Operating Temperature           | TC     | °C    | 0    | 70  |
|                                 | TI     | °C    | -40  | 85  |
| Power Supply Voltage (+3.3V)    | Vcc    | V     | -0.5 | +4  |
| Lead Solder Temperature         | -      | °C    | -    | 260 |
| Lead Solder Duration            | -      | S     | -    | 10  |
| Voltage on any input/output pin | VI     | V     | 0    | Vcc |

## Recommended Operating Conditions

| Parameter                  | Symbol | Unit. | Min  | Typ    | Max  |
|----------------------------|--------|-------|------|--------|------|
| Operating Temperature Rang | TC     | °C    | 0    |        | 70   |
|                            | TI     | °C    | -40  |        | 85   |
| Power Supply Voltage       | Vcc    | V     | 4.75 | 5      | 5.25 |
| Operating Data Rate        | -      | Mbps  |      | 155.52 |      |

## Transmitter Optical ,Electrical characteristics

| Parameter                            | Symbol                                  | Unit. | Min  | Typ  | Max  | Note    |
|--------------------------------------|-----------------------------------------|-------|------|------|------|---------|
| Electrical Characteristics           |                                         |       |      |      |      |         |
| Supply Current                       | Icc                                     | mA    |      |      | 250  |         |
| TransmitterDifferential InputVoltage | VD                                      | mV    | 550  |      | 1750 |         |
| Input Differential Impedance         | Rin                                     | Ω     |      | 100  |      |         |
| Optical rise time                    | tr                                      | ns    |      |      | 2.0  | 20%-80% |
| Optical fall time                    | tf                                      | ns    |      |      | 2.0  |         |
| Launch Optical Power                 | Po                                      | dBm   | -15  |      | -8   | 20km    |
| Extinction Ratio                     | ER                                      | dB    | 8.2  |      |      |         |
| Central Wavelength                   | λ                                       | nm    | 1270 | 1310 | 1350 | 1310FP  |
|                                      |                                         |       | 1510 | 1550 | 1590 | 1550FP  |
| Output Spectrum Width                | Δλ                                      | nm    |      |      | 4    | FP -LD  |
| Eye diagram                          | ITU - T Recommendation G.957 STM-1/OC-3 |       |      |      |      |         |

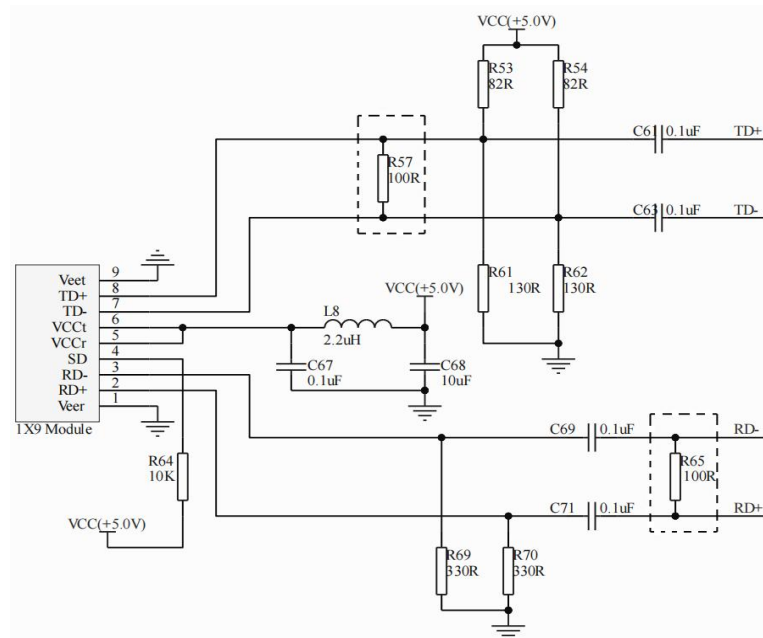
## Receiver Optical Electrical Characteristics

| Parameter                  | Symbol | Unit. | Min  | Typ | Max  | Note |
|----------------------------|--------|-------|------|-----|------|------|
| Sensitivity                | S      | dBm   |      | -32 |      | 20km |
| Maximum Input Power        | P      | dBm   | -3   |     |      | 20km |
| Operating wavelength range | λ      | nm    | 1260 |     | 1610 |      |
| Signal Detect Range        |        | dBm   | -45  |     | -38  |      |
| Signal Detect-Hysteresis   |        | dB    | 0.5  |     |      |      |

## Pin Connections

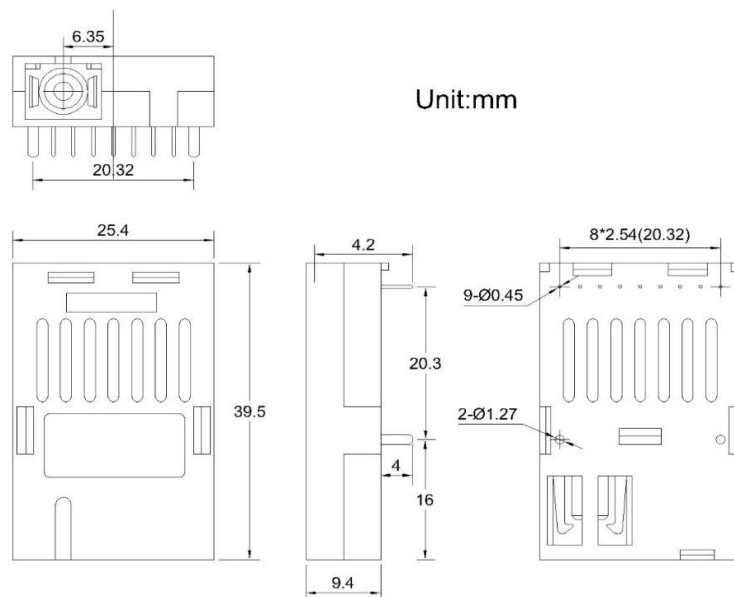
| Pin | Name | Level | Description                                                |
|-----|------|-------|------------------------------------------------------------|
| 1   | Vee  |       | Negative power of receiver section, normally grounded      |
| 2   | RD+  | PECL  | Data output of receiver section                            |
| 3   | RD-  | PECL  | Reverse Data output of receiver section                    |
| 4   | SD   | TTL   | Optical alarm of receiver section, low level when no light |
| 5   | VccR |       | Positive power of receiver section, normally               |
| 6   | VccT |       | Positive power of transmitter section, normally            |
| 7   | TD-  | PECL  | Reverse Data input of transmitter section                  |
| 8   | TD+  | PECL  | Data input of transmitter section                          |
| 9   | Vee  |       | Negative power of transmitter section, normally grounded   |

## Typical Application Circuit



**Recommended Circuit Schematic 5V SD TTL**

## Dimensions: Simplex SC receptacle optical interface



## Regulatory Compliance

| Feature                                               | Test Method                        | Performance                                                                                                                                |
|-------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| ElectrostaticDischarge (ESD)<br>to the ElectricalPins | MIL-STD-883E<br>Method 3015.7      | Class 1 (>1.5kV) – Human Body Model                                                                                                        |
| ElectrostaticDischarge (ESD)<br>Immunity              | IEC61000-4-2                       | Class 2 (>4.0kV)                                                                                                                           |
| Electromagnetic<br>Interence (EMI)                    | CISPR22 Class B<br>EN55022 Class B | Compliant with standards                                                                                                                   |
| Immunity                                              | IEC61000-4-3 Class<br>2 EN55024    | Typically show no measurable effect from a<br>3V/mfield swept from 80 to 1000MHz applied to<br>thetransceiver without a chassis enclosure. |
| Eye Safety                                            | FDA CDRH 21-CFR 1040<br>Class 1    |                                                                                                                                            |
|                                                       | UL                                 |                                                                                                                                            |