

**MRV Communications, Inc.**

**GIGABIT ETHERNET  
SINGLEMODE  
TRANSCEIVER - 5LD9A  
AC-COUPLED**

**THE SOURCE FOR YOUR SOURCE**

**FEATURES**

- 1300 /1550nm Wavelength
- For Singlemode Applications
- Data rate to 1.25 Gb/s

- Low power consumption
- Single Power Supply
- Available with SC/ST Connector

**LASER TRANSMITTER CHARACTERISTICS ( T= 25°C)**

| Parameter             | Symbol                | Minimum         | Typical | Maximum  | Unit    |
|-----------------------|-----------------------|-----------------|---------|----------|---------|
| Spectral Width F.P    | $\Delta\lambda$ (RMS) |                 |         | 4.0      | nm      |
| Spectral Width DFB    | $\Delta\lambda$ (RMS) |                 |         | 0.2      | nm      |
| Output Power          | $P_0$                 | SEE CHART BELOW |         |          |         |
| Extinction Ratio      |                       | 10              |         |          | dB      |
| Data Rate             |                       |                 |         | 1250     | Mb/s    |
| Supply Voltage        | Vcc                   | 4.75            | 5.0     | 5.25     | V       |
| Supply Current        | Icc                   |                 |         | 140      | mA      |
| Power Dissipation     | P                     |                 |         | 700      | mW      |
| Input High Voltage    | V <sub>IHS</sub>      | Vcc-1.16        |         | Vcc-0.89 | V       |
| Input Low Voltage     | V <sub>ILS</sub>      | Vcc-1.82        |         | Vcc-1.48 | V       |
| Rise Time (10%-90%)   | Tr                    |                 |         | 0.5      | ns      |
| Fall Time (90%-10%)   | Tf                    |                 |         | 0.5      | ns      |
| Random Jitter         |                       |                 |         | 0.1      | ns(p-p) |
| Duty Cycle Distortion |                       |                 |         | 0.1      | ns(p-p) |
| Data Dependent Jitter |                       |                 |         | 0.1      | ns(p-p) |
| EyeDiagram            | IEEE-802.3 Compliant  |                 |         |          |         |

**LASER TRANSMITTER AVERAGE OUTPUT POWER ( T= 0°C to 70°C, 50% DUTY CYCLE )**

| Part Number<br>1300 nm Singlemode | Min | Max | Unit | Min   | Max  | Unit | $\lambda$<br>(nm) | Dist.<br>(KM) |
|-----------------------------------|-----|-----|------|-------|------|------|-------------------|---------------|
| -001*(1.3um FP)                   | 0.1 | .05 | mW   | -10.0 | -3.0 | dBm  | 1310±10           | 6             |
| -003(1.3um FP)                    | 0.3 | 1.0 | mW   | -5.0  | 0.0  | dBm  | 1305±3            | 10            |
| -D005(1.3um DFB)                  | 0.5 | 1.0 | mW   | -3.0  | 0.0  | dBm  | 1310±10           | 20            |
| -D5003(1.55um DFB)                | 0.3 | 1.0 | mW   | -5.0  | 0.0  | dBm  | 1550±10           | 50            |

NOTE: \* Meets 802.3 Giga bit Ethernet spec.

**ABSOLUTE MAXIMUM RATINGS**

| PARAMETER                | SYMBOL | RATING   | UNIT  |
|--------------------------|--------|----------|-------|
| Supply Voltage           | Vcc    | 5.50     | VOLTS |
| Operating Temp(Case)     |        | 0 - 70   | °C    |
| Storage Temp             |        | -40 - 85 | °C    |
| Lead Soldering Temp/Time |        | 240/6    | °C/S  |

## FEATURES

- 1300/1550 nm Wavelength
- For Singlemode
- Data rate 1.25 Gb/S
- Low power consumption
- Single Power Supply
- Available with SC/ST Connector

## RECEIVER CHARACTERISTICS ( T= 25°C )

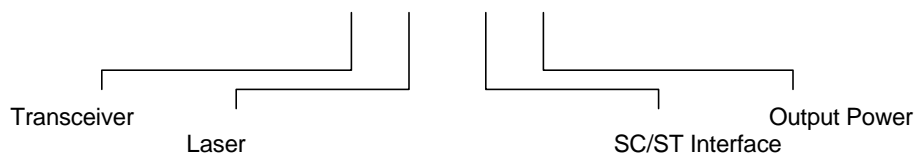
| Parameter                            | Symbol          | Minimum               | Typical | Maximum               | Unit       |
|--------------------------------------|-----------------|-----------------------|---------|-----------------------|------------|
| Wavelength                           | $\lambda$       | 1200                  |         | 1550                  | nm         |
| Average Optical Sensitivity          |                 | -24.0                 |         |                       | dBm        |
| Average max Input Power              |                 |                       |         | -3                    | dBm        |
| Data Rate                            |                 |                       |         | 1250                  | Mb/s       |
| Supply Voltage                       | V <sub>CC</sub> | 4.75                  | 5.0     | 5.25                  | V          |
| Supply Current                       | I <sub>CC</sub> |                       | 110     | 125                   | mA         |
| Power Dissipation                    | P               |                       | 550     | 630                   | mW         |
| Output High Voltage                  | V <sub>OH</sub> | V <sub>CC</sub> -1.03 |         | V <sub>CC</sub> -0.89 | V          |
| Output Low Voltage                   | V <sub>OL</sub> | V <sub>CC</sub> -1.82 |         | V <sub>CC</sub> -1.63 | V          |
| Signal Detect Load                   |                 | 5                     |         |                       | K $\Omega$ |
| Rise/Fall Times                      | TrTf            |                       |         | 0.5                   | ns         |
| Signal Detect Threshold-Assertion    |                 |                       |         | -22.0                 | dBm        |
| Signal Detect Threshold -Deassertion |                 | -31.0                 |         |                       | dBm        |
| Data dependent Jitter                |                 |                       |         | 0.1                   | ns         |
| Hysteresis                           |                 | 2.0                   |         |                       | dB         |
| Duty Cycle Distortion                |                 |                       |         | 0.1                   | ns(p-p)    |
| Signal Detect Timing-Assertion       |                 |                       |         | 100                   | $\mu$ s    |
| Signal Detect Timing-Deassertion     |                 |                       |         | 100                   | $\mu$ s    |

## ABSOLUTE MAXIMUM RATINGS

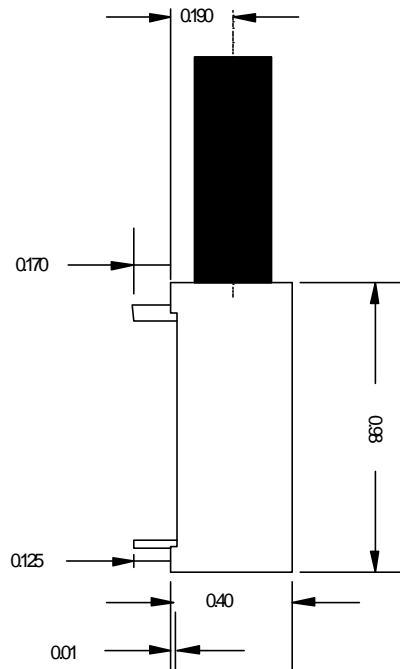
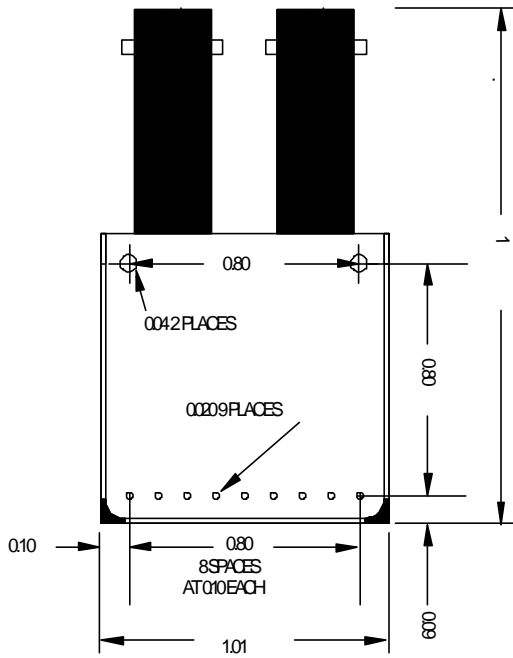
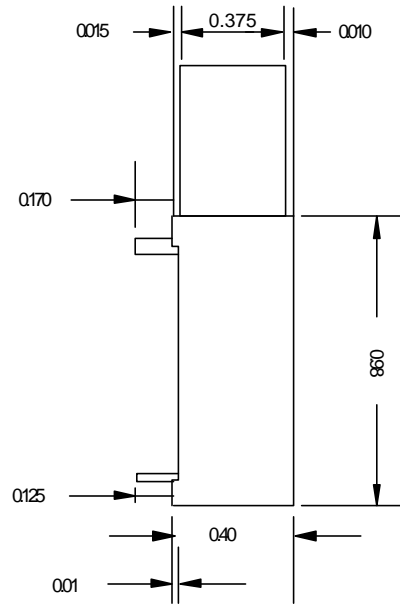
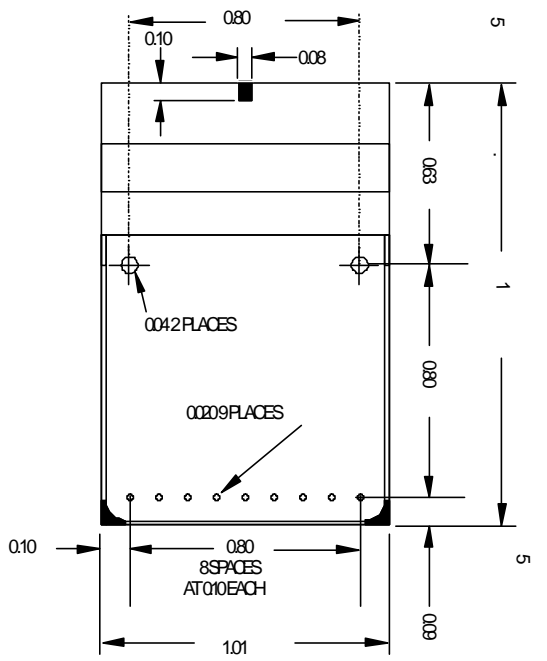
| PARAMETER                | SYMBOL          | RATING   | UNIT  |
|--------------------------|-----------------|----------|-------|
| Supply Voltage           | V <sub>CC</sub> | 5.25     | VOLTS |
| Output Current           | I <sub>O</sub>  | 50       | mA    |
| Operating Temp(case)     |                 | 0 - 70   | °C    |
| Storage Temp             |                 | -40 - 85 | °C    |
| Lead Soldering Temp/Time |                 | 240/6    | °C    |

## Ordering Information

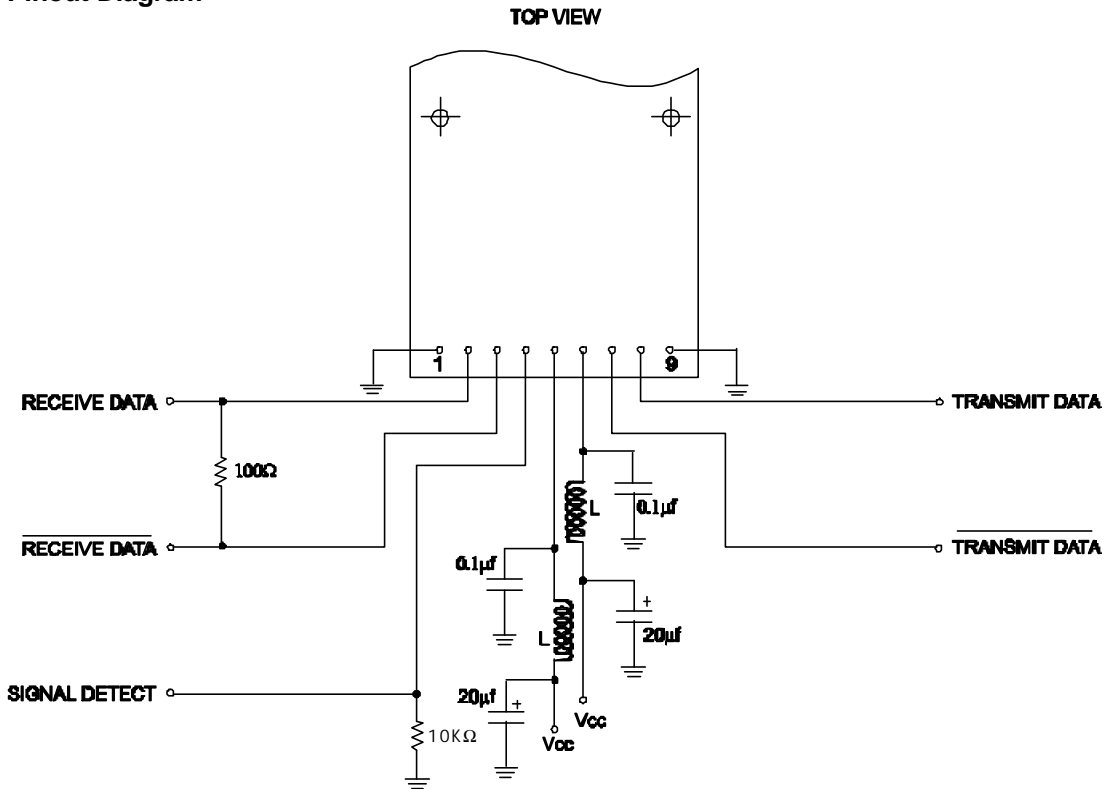
MR TR L xx XXXX - 5LD9A



Outline Drawing



## Pinout Diagram



1. L IS A FERRITE BEAD; FAIR-RITE PRODUCTS CORP., PART NUMBER 2743002111 OR EQUIVALENT
2. CLASS 1 DEVICE. THIS PRODUCT CONFORMS TO THE APPLICABLE REQUIREMENTS OF 21 CFR1040 AT THE DATE OF MANUFACTURE (CDRH).THIS PRODUCTS ALSO MEETS THE REQUIREMENTS OF EN 60950 AND EN 60825 (TUV). APPLICABLE TO DEVICES WITH MAXIMUM OUTPUT OF 1mW.
3. PIN 2 AND 3 ARE INTERNALLY TERMINATED THROUGH 390 OHM RESISTORS. IF THE LOAD IMPEDANCE IS NOT 50 OHMS USE THE TERMINATION AS SHOWN. THE OUTPUTS AT THESE PINS ARE AC-COUPLED.
4. TRANSMIT PINS 7 AND 8 ARE AC – COUPLED AND TERMINATED THROUGH 50 OHM RESISTORS.