



| PART NUMBER* | DESCRIPTION  |
|--------------|--|
| RX004 - SFF  | 4 Gbps Small Form Factor Dual Fiber Optic Receiver |

**DESCRIPTION**

RX004 - SFF is a dual channel fiber optic receiver specially developed for high data rate communication used in environmentally rugged applications. This is accomplished using High Reliability Industrial Parts (HRIP). This product complies with the 2x5 standard package defined by the Small Form Factor (SFF) Multi-Source Agreement (MSA). In addition to the common properties offered by existing commercial products, RX004 - SFF provides the following three unique features which are particularly adapted for high performance utilization:

1. Extended operational temperature range from -40°C to +95°C;
2. Conformal coating for moisture resistance; and
3. Able to withstand shock and vibration testing for harsh environmental usage.

**FEATURES**

- Dual channel fiber optic receiver operating up to 4.25 GBPS
- GaAs PIN photodetector with transimpedance amplifier integrated in the optical head
- MSA-compliant 2 x 5 pin SFF footprint adaptable to customer's special application
- Receiver Loss-Of-Signal monitor
- Single 3.3 V power supply and low nominal power consumption
- Standard multi-mode LC receptacle and hot pluggable
- All-metal housing for superior EMI performance
- Enhanced enclosure structure for superior shock and vibration performance per RTCA/DO-160E
- Parylene type C conformal coating (MIL-I-46058C) for protection against contamination, corrosion, deterioration and physical damage
- Operating temperature range from -40°C to +95°C



**BETTER THAN INDUSTRY STANDARDS**

1. Extended operational temperature range from -40°C to +95°C;
2. Conformal coating for moisture resistance; and
3. Withstands shock and vibration testing for harsh environmental usage.

**CUSTOMIZABLE OPTIONS**

- Higher Data Rates
- Form Factor, Size, and Interface
- Hermetic
- Pigtail Connector
- Screening and Testing

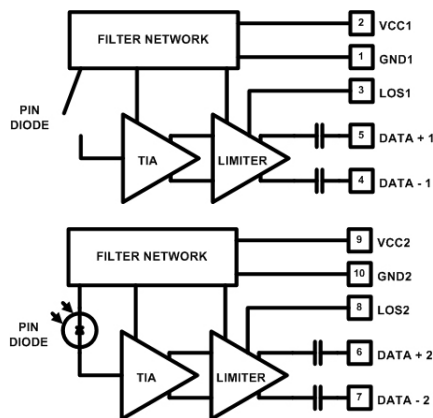
**RECEIVER ELECTRICAL / OPTICAL  
SPECIFICATIONS**

| Parameters                     | Symbol               | Min  | Typ   | Max               | Units | Notes |
|--------------------------------|----------------------|------|-------|-------------------|-------|-------|
| Operating Temperature          | T <sub>op</sub>      | -40  |       | +95               | °C    |       |
| Supply Voltage                 | V <sub>cc</sub>      | 3.0  | 3.3   | 3.6               | V     |       |
| Supply Current (per channel)   | I <sub>cc</sub>      |      | 85    |                   | mA    |       |
| Data Rate                      | BR                   | 0.05 |       | 4.25              | GBPS  |       |
| Single Ended Data Output Swing | V <sub>out, PP</sub> |      | 375   |                   | mV    | 1     |
| Signal Detect Assert           | LOS                  |      | -17.5 |                   | dBm   |       |
| Signal Detect De-Assert        | LOS                  |      | -19.5 |                   | V     |       |
| Bit Error Rate                 | BER                  |      |       | 10 <sup>-12</sup> |       | 2     |
| Receiver Sensitivity           | R <sub>Sens</sub>    |      | -17.5 |                   | dBm   | 2, 4  |
| Total Jitter Contribution      | RX ΔDJ               |      | 30    |                   | ps    | 3, 5  |

**NOTES**

- AC coupled.
- Tested with PRBS 2<sup>7</sup> - 1 test pattern
- If measured with DJ-free data input signal, 10<sup>-12</sup> BER. In actual application, output TJ will be given by:  
$$TJ_{out} = DJ_{in} + \Delta DJ + \sqrt{[(TJ_{in} - DJ_{in})^2 + (\Delta TJ - \Delta DJ)^2]}$$
- Specifications are for standard 50 micrometer or 62.5 micrometer fiber multimode fiber
- @ 3.1 Gbps

**FIGURE 1:  
RECEIVER BLOCK DIAGRAM**

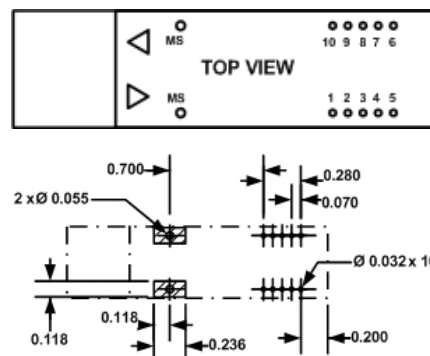


**RECEIVER MECHANICAL  
SPECIFICATIONS**

| Pin | Description                                  | Notes        |
|-----|--|--------------|
| MS  | Mounting Studs are for mechanical attachment |              |
| 1   | Receiver 1 Ground                            |              |
| 2   | Receiver 1 Vcc                               |              |
| 3   | Receiver 1 LOS (Loss of Signal monitor)      |              |
| 4   | Receiver 1 DATA NOT output                   | (AC coupled) |
| 5   | Receiver 1 DATA output                       | (AC coupled) |
| 6   | Receiver 2 DATA output                       | (AC coupled) |
| 7   | Receiver 2 DATA NOT output                   | (AC coupled) |
| 8   | Receiver 2 LOS (Loss of Signal monitor)      |              |
| 9   | Receiver 2 Vcc                               |              |
| 10  | Receiver 1 Ground                            |              |

**FIGURE 2:  
MECHANICAL CONFIGURATION**

RX004 - SFF DUAL RECEIVER COMPLIES WITH THE STANDARD DIMENSIONS DEFINED BY THE SMALL FORM FACTOR MULTI-SOURCE AGREEMENT (MSA)



**NOTES**

- RECOMMENDED CIRCUIT BOARD LAYOUT.
- SHADED AREAS ARE RESERVED FOR MOUNTING STUDS.
- UNITS ARE IN INCHES.

**ABSOLUTE MINIMUM AND MAXIMUM RATINGS**

| Parameters                        | Symbol            | Min   | Max    | Units  |
|-----------------------------------|-------------------|-------|--------|--------|
| Supply Voltage                    | V <sub>cc</sub>   | - 0.5 | 4.0    | V      |
| Total Module Power Dissipation    | P <sub>diss</sub> |       | 1.0    | W      |
| Relative Humidity                 | RH                | 0     | 90     | %      |
| Storage Temperature               | T <sub>s</sub>    | -45   | + 110  | °C     |
| Lead Soldering Temperature / Time | T <sub>h</sub>    |       | 260/10 | °C / s |