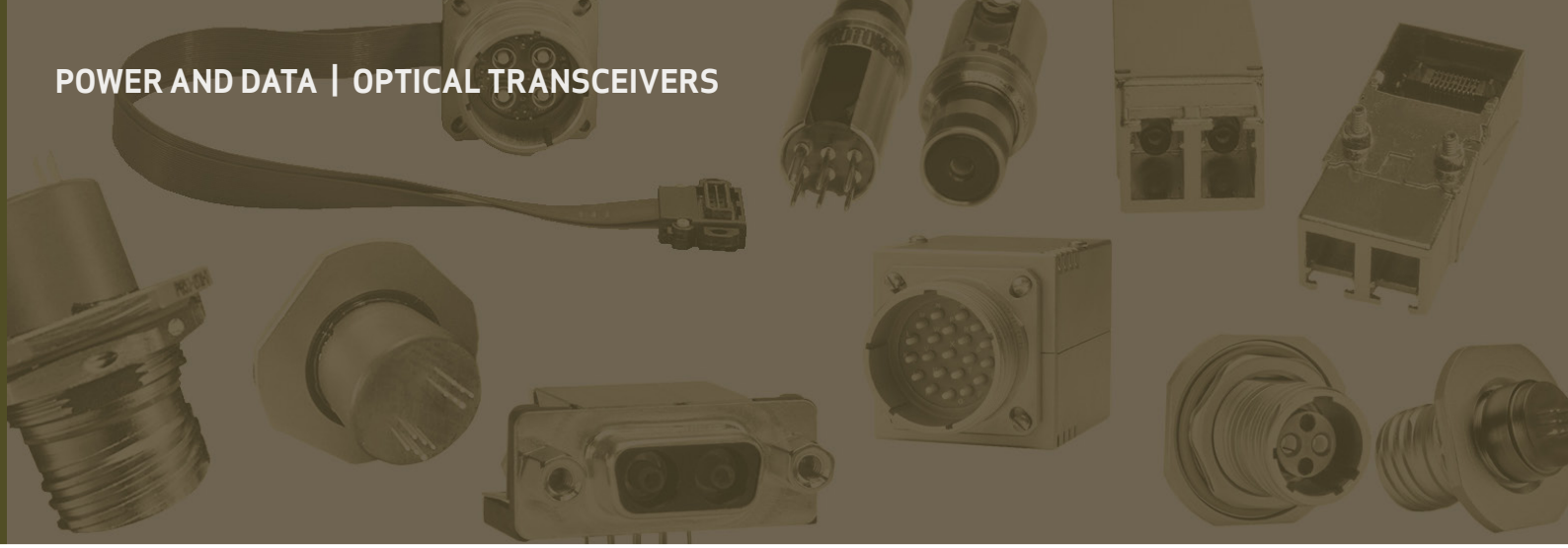
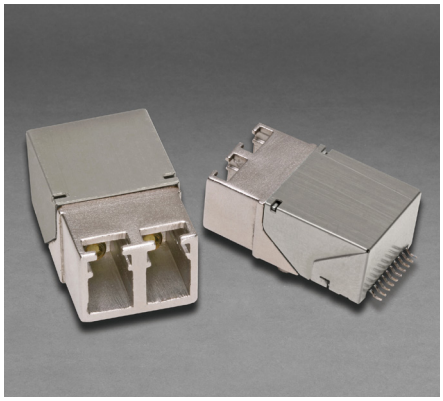


# RAZOR SERIES

## PCB MOUNTED DUPLEX OPTICAL RECEIVERS, ARINC 818 AND sFPDP APPLICATIONS, MULTIMODE, 850 NM



Razor series optical fiber receivers consist of optoelectronic receiver functions integrated into a printed circuit board mounted Duplex LC receptacle connector. Outputs from the receivers consist of differential CML data signals on the receiver (RX+ and RX-) lines. An LVTTL signal is generated on the SD lines upon receipt of a valid incoming optical signal. The receiver data lines are squelched upon SD deassertion, preventing errant data generation when an invalid incoming optical signal is presented to a receiver.

The electrical interface to the Razor optical receivers is a solder pin header with a 10 position SMT / PCB footprint compatible with the industry standard mounting requirements.

MOOG

# RAZOR SERIES PCB MOUNTED DUPLEX OPTICAL RECEIVERS, ARINC 818 AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

Duplex Optical Receiver Unit
Two RX Channels Operating from 125 Mbps to 4.25 Gbps

## FEATURES

- Compliant with sFPDP and ARINC 818 data links
- Optical fiber link distances up to 550 meters (50/125µ 500 MHz*Km MMF)
- Maximum optical channel bit error rate less than $1x10^{-12}$
- Operating temperature range from -40° to +85° C
- Nickel plated brass shell meets stringent corrosion performance requirements
- Die cast housings are strong, durable and light weight
- Duplex LC compliant optical fi ber connector interface
- Threaded PCB retention features provide secure mounting in high shock and vibration environments

## APPLICATIONS

Razor series printed circuit board mounted optical transceivers enable high speed network communications over long distances in harsh environments.

- ARINC 818 video displays
- sFPDP data links
- Camera interfaces

The multimode optical fiber interface supports applications where copper cable link distance, bandwidth, weight or bulk make the use of twisted pair, twinax or quadrax copper conductors unacceptable.

### ORDERING INFORMATION

| Application | Part Number |
|---|---|
| Receivers @ 0.125 - 4.25 Gbps | R25N-2R1G |

## ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Storage Temperature | $T_S$ | -55 | | +100 | °C |
| Supply Voltage | $V_{CC}$ | -0.5 | | +4.5 | V |
| TX_DIS Input Voltage | $V_I$ | -0.5 | | $V_{CC}$ +0.5 | V |

## RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Operating Temperature | $T_A$ | -40 | | +85 | °C |
| Power Supply Voltage | $V_{CC}$ | +3.135 | | +3.465 | V |
| Power Supply Noise (p-p) | $N_P$ | | | 200 | mV |
| TX Differential Input Voltage (p-p) | $V_D$ | 0.25 | | 2.2 | V |

## ENVIRONMENTAL OPERATING CONDITIONS

| Requirement | Feature | Condition | Notes |
|---|---|---|---|
| RTCA / D0-160E | ESD | HBM | 2200 V |
| RTCA / D0-160E | Damp Heat | 10 Cycles | 24 Hours |
| EIA-455-25 | Mating Durability | 500 Cycles | < 0.5 dB Change |
| FDA / CDRH / IEC-825-1 | Eye Safety | Class 1 | No Safety Interlocks Required |

## MATERIALS

| Item | Detail | Notes |
|---|---|---|
| Razor Shell | Nickel Plated Steel | |
| Razor Body | Zamak 5 | |
| Solder Pins | Brass | |
| Solder Pin Plating | Gold over Nickel | |
| Alignment Sleeves | Composite Polymer | |
| Printed Circuits | Polyimide / FR-4 | |
| PCB Conformal Coating | Type AR | MIL-I-46058 |
| Threaded Mounting Posts | Stainless Steel | |

# RAZOR SERIES PCB MOUNTED DUPLEX OPTICAL RECEIVERS, ARINC 818 AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

## OPTICAL RECEIVERS $T_A$ = OPERATING TEMPERATURE RANGE, $V_{CC}$ = 3.135 V TO 3.465 V

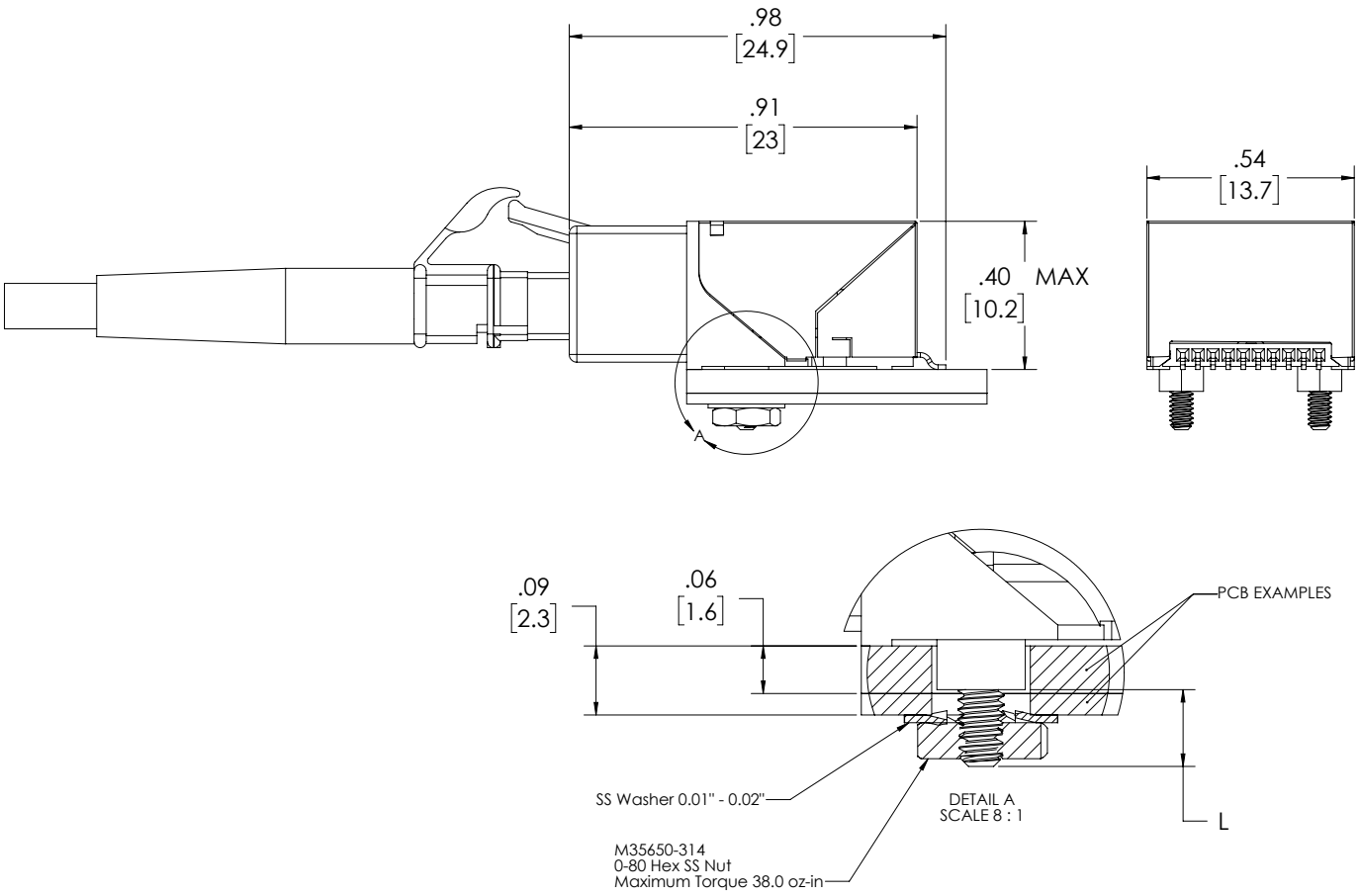
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Optical Sensitivity (BER< $10^{-12}$, ER = 9.0)<br>xxxx-xxxG @ 125 Mbps to 1.25 Gbps<br>xxxx-xxxG @ 2.125 Gbps<br>xxxx-xxxG @ 2.5 Gbps to 3.19 Gbps<br>xxxx-xxxG @ 4.25 Gbps | $P_I$ | <br>-17.0<br>-15.0<br>-15.0<br>-14.0 | | 0.0 | dBm |
| Optical Wavelength | $\lambda_{IN}$ | 830 | | 860 | nM |

## POWER SUPPLY CURRENT $T_A$ = OPERATING TEMPERATURE RANGE, $V_{CC}$ = 3.135 V TO 3.465 V

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Supply Current per Fiber Port | $I_{CCT}$ | | 65 | 95 | mA |

## OUTLINE DRAWING

Dimensions are shown as: inches [mm]

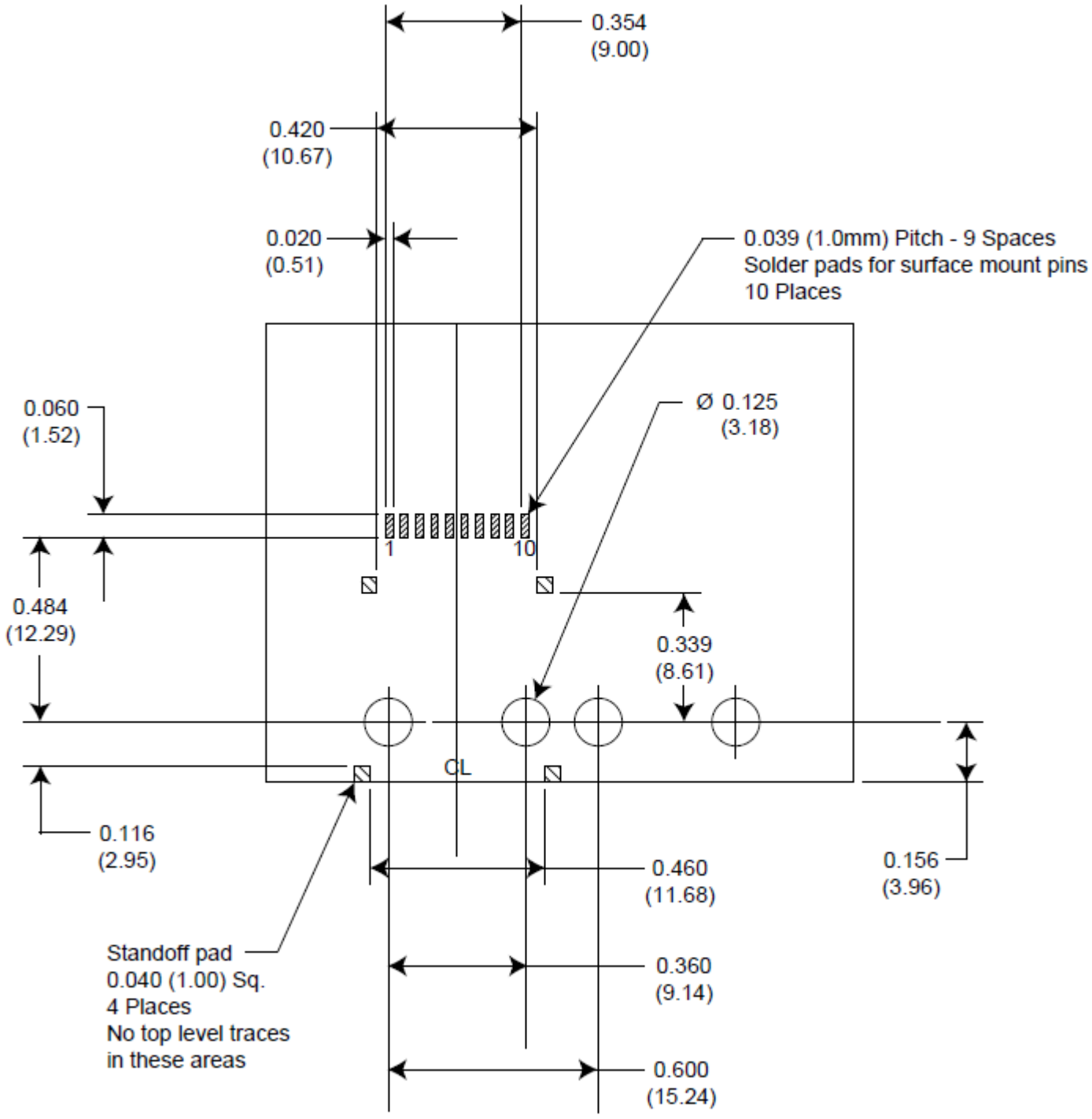



## THREADED STUD LENGTH OPTIONS

| L | ITEM # |
|---|---|
| 0.10 [2.5] | R25N-2S5G |
| 0.16 [4.1] | R25P-2S5G |

## PRINTED CIRCUIT BOARD FOOTPRINT

Razor Duplex Optical Transceiver
Dimension are shown as reference only: inches (mm)

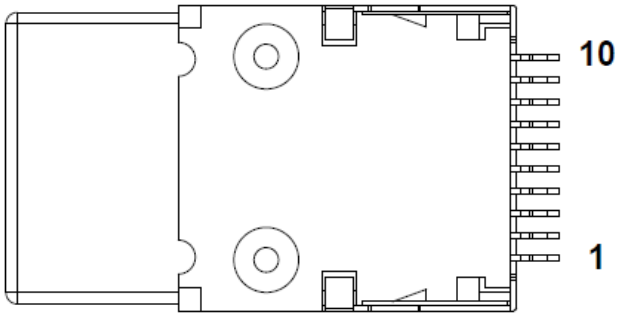



Top View Shown

# RAZOR SERIES PCB MOUNTED DUPLEX OPTICAL RECEIVERS, ARINC 818 AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

## ELECTRICAL PIN ASSIGNMENTS

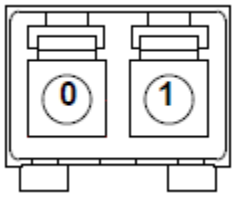
Razor Duplex Optical Receiver
Component Bottom View Indicated




| Pin Number | Symbol | Port | Description | Logic Family |
|---|---|---|---|---|
| 1 | RX+ | 0 | Transmitter Data - Input | CML |
| 2 | GND | 0 | Ground | N/A |
| 3 | RX- | 0 | Transmitter Data - Input | CML |
| 4 | $V_{cc}$ | 0 | Power Supply - Input | N/A |
| 5 | SD | 0 | Signal Detect - Output<br>Satisfactory Optical Input: Logic “1” Output<br>Fault Condition: Logic “0” Output | LVTTL |
| 6 | SD | 1 | Signal Detect - Output<br>Satisfactory Optical Input: Logic “1” Output<br>Fault Condition: Logic “0” Output | LVTTL |
| 7 | RX+ | 1 | Receiver Data - Output | CML |
| 8 | $V_{CC}$ | 1 | Power Supply - Input | N/A |
| 9 | RX- | 1 | Receiver Data - Output | CML |
| 10 | GND | 1 | Ground | N/A |

## INSERT ARRANGEMENT

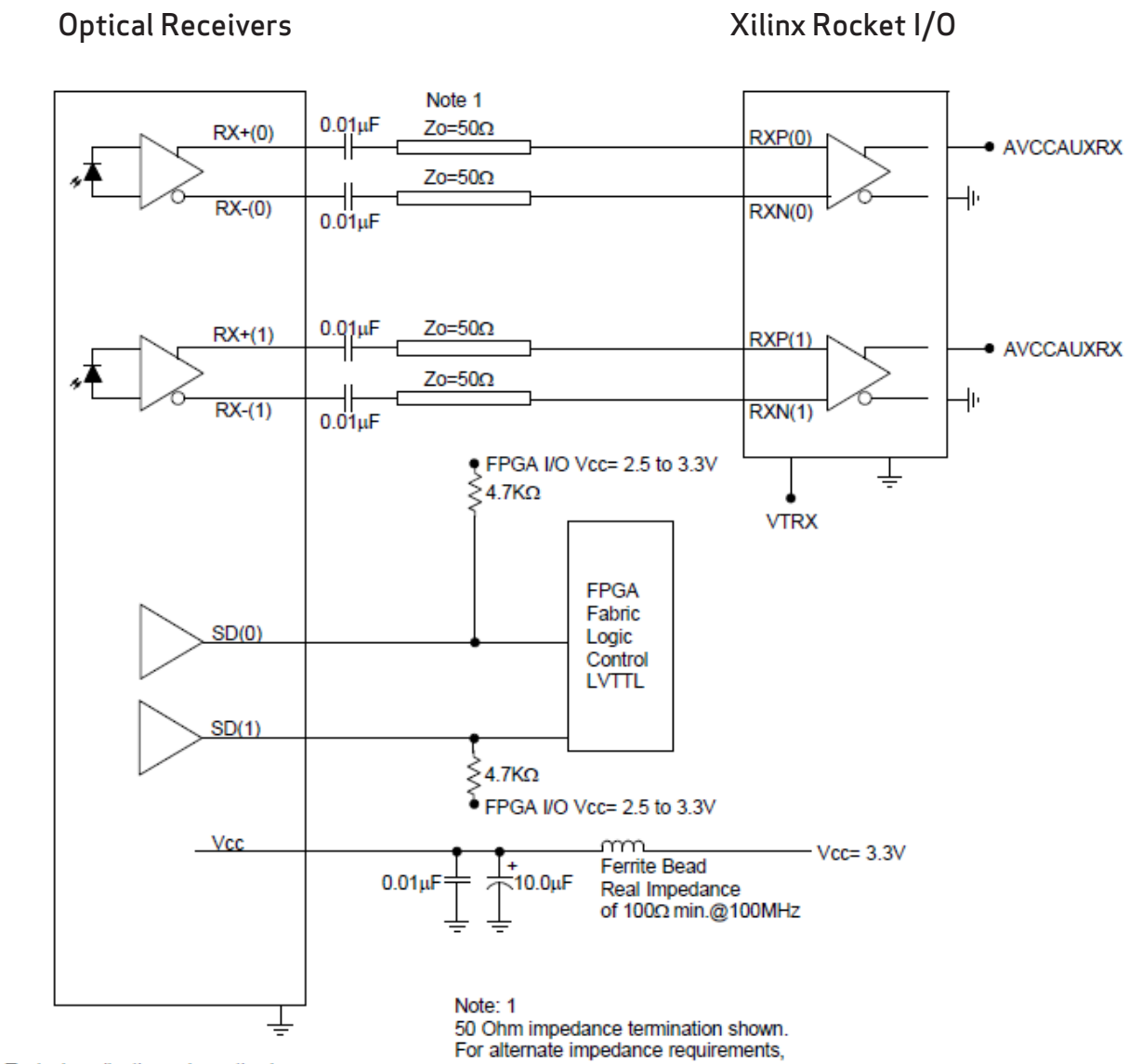
Razor Duplex Optical Receivers
Optical interface of the transceiver interface shown
Mating cable plug interface opposite



# RAZOR SERIES PCB MOUNTED DUPLEX OPTICAL RECEIVERS, ARINC 818 AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

## APPLICATION SCHEMATIC

For Xilinx Rocket I/O Interfaces




Typical application schematic shown
For alternate applications or termination techniques, please consult the Factory

Note: 1
50 Ohm impedance termination shown.
For alternate impedance requirements, please consult the Factory.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