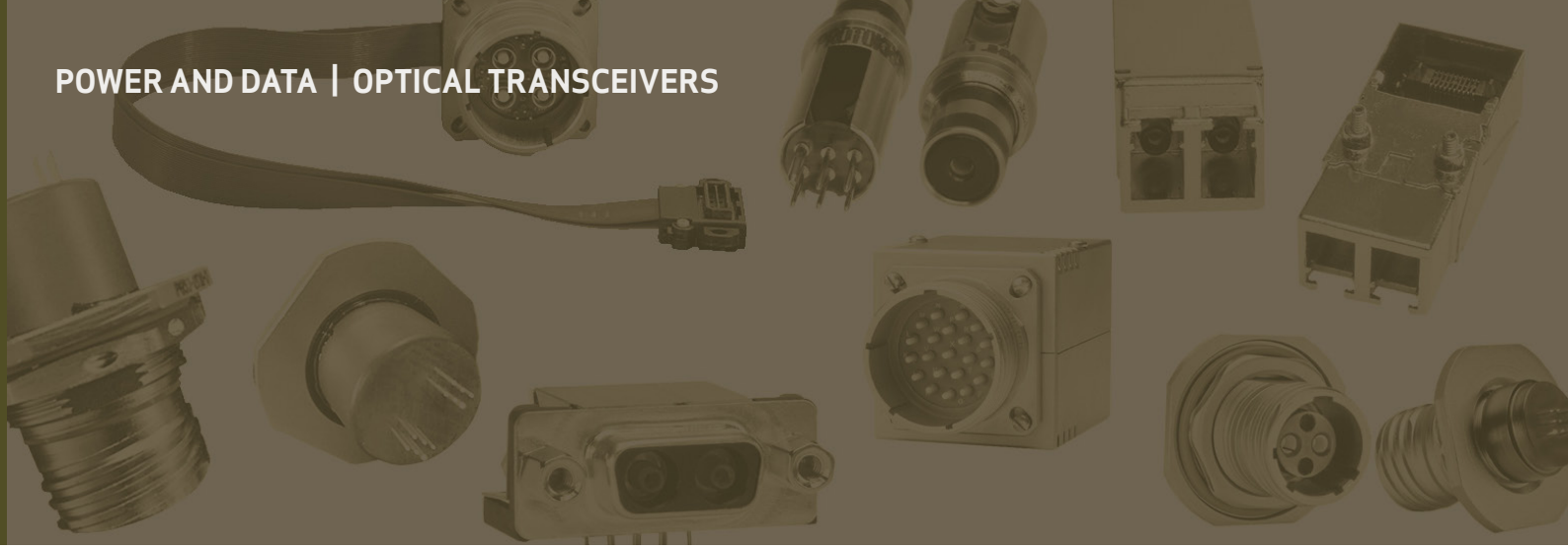
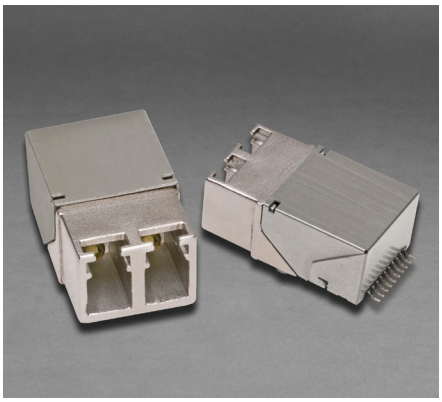


RAZOR SERIES

PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND sFPDP APPLICATIONS, MULTIMODE, 850 NM



Razor series optical fiber transceivers consist of optoelectronic transmitter and receiver functions integrated into a printed circuit board mounted Duplex LC compliant receptacle connector. The optical transmitters are 850 Nm VCSEL lasers. The transmitter input lines are driven with differential CML signals applied to the transmitter (TX+ and TX-) lines. Dual loop, temperature compensated, VCSEL drivers convert the transmitter input signals to suitable VCSEL bias and modulation currents.

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 line 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 the transceiver.

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

MOOG

RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

Duplex Optical Transceiver Unit
One TX and One RX Channel Operating from 125 Mbps to 4.25 Gbps

FEATURES

- Compliant with Gigabit Ethernet - IEEE-802.3:2005 and 1x/2x/4xFC - ANSI Fibre Channel FC-PI-2, FC-PI and FC-PH-2
- 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 fiber 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.

- Gigabit Ethernet switches and peripherals
- Fibre Channel switches and peripherals
- sFPDP data links
- Video displays

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
Transceiver @ 0.125 - 4.25 Gbps	R25N-2S1G

RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

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	0.35		1.25	V

ENVIRONMENTAL OPERATING CONDITIONS

Requirement	Feature	Condition	Notes
RTCA / D0-160E	ESD	HBM	2200V
RTCA / D0-160E	Damp Heat	10 Cycles	24 Hours
EIA-455-25	Mating Durability	500 Cycles	<0.5dB 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-46-58
Threaded Mounting Posts	Stainless Steel	

RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

OPTICAL TRANSMITTERS T_A = OPERATING TEMPERATURE RANGE, V_{CC} = 3.135 V TO 3.465 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power (BER<10^{-12})	P_o	-9.5		-1.0	dBm
Optical Output Wavelength	λ_{OUT}	830	850	860	nM
Spectral Width	$\Delta\lambda_{RMS}$			0.85	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) 125Mbps to 1.25Gbps 2.125Gbps 2.5Gbps to 3.19Gbps 3.2 to 4.25Gbps	P_I	 -17.0 -15.0 -15.0 -14.0		0.0	dBm
Optical Wavelength	λ_{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 channel)	I_{CCT}		175	250	mA

OPTICAL LINK DISTANCES

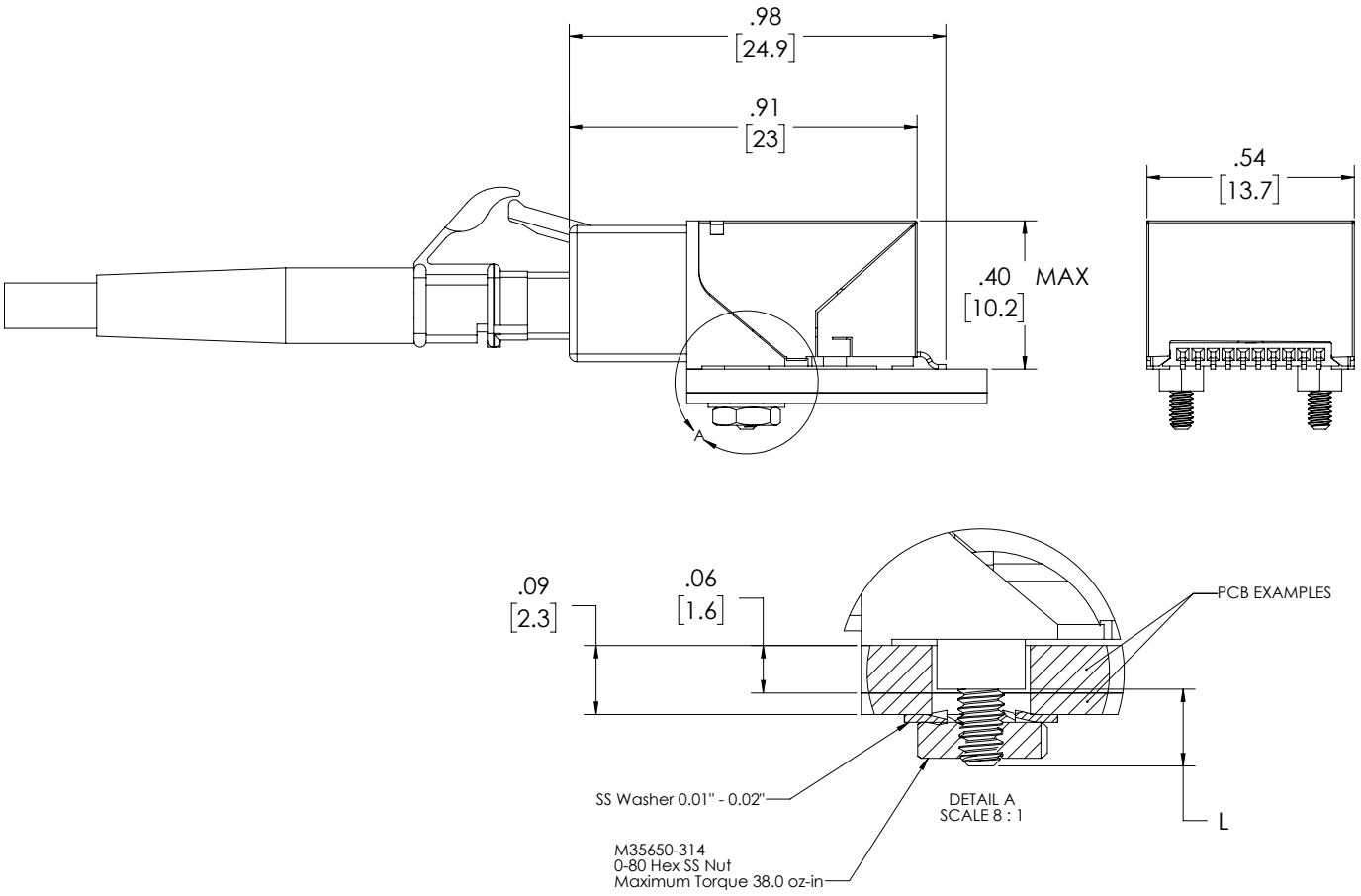
Protocol	62.5/125µ 200MHz*Km	50/125µ 500MHz*Km
4xFibre Channel - ANSI X3.297 FC-PI-2	75M	150M
2xFibre Channel - ANSI X3.297 FC-PI	150M	300M
Gigabit Ethernet - IEEE-802.3:2005	275M	550M
1xFibre Channel - ANSI X3.297 FC-PH-2	300M	500M

Aqueous washing is permitted with the protective covers in place over the optical interface. If necessary, after washing, clean the optical barrels with lint free swabs and Isopropyl alcohol The transceivers are conformally coated but after aqueous washing the units should be baked @ 85°C for 1.0 hour to eliminate any retained moisture.

RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

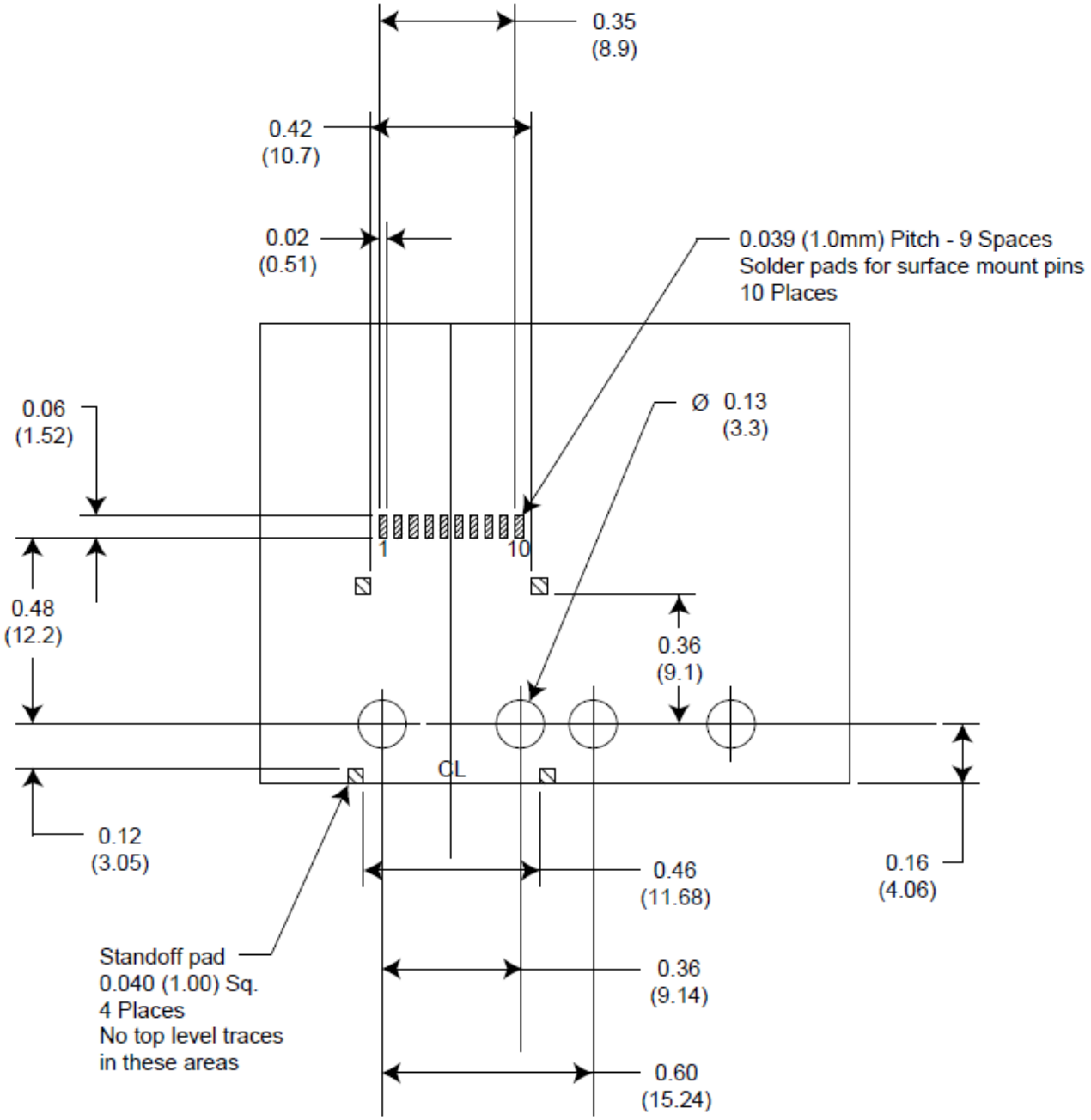
OUTLINE DRAWING

Dimensions are shown as: inches [mm]



THREADED STUD LENGTH OPTIONS

L	ITEM #
0.10 [2.5]	R25N-2S1G
0.16 [2.5]	R25P-2S1G

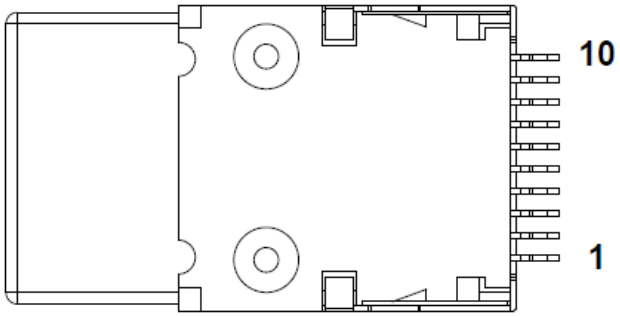


Top View Shown

RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC AND SFPDP APPLICATIONS, MULTIMODE, 850 NM

ELECTRICAL PIN ASSIGNMENTS

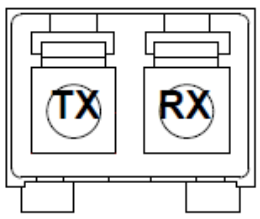
Razor Duplex Optical Transceiver
Component Bottom View Indicated



Pin Number	Symbol	Description	Logic Family
1	TX+	Transmitter Data - Input	CML Internal 100Ω differential termination
2	GND	Ground	N/A
3	TX-	Transmitter Data - Input	CML Internal 100Ω differential termination
4	V_{cc}	Power Supply - Input	N/A
5	SD	Signal Detect - Output Satisfactory Optical Input: Logic "1" Output Fault Condition: Logic "0" Output	LVTTL
6	TX DIS	Transmit Disable - Input Logic 1: Disable Optical Output Logic 0: Enable Optical Output	CMOS Internal 4.7Ω pulldown
7	RX+	Receiver Data - Output	CML
8	V_{CC}	Power Supply - Input	N/A
9	RX-	Receiver Data - Output	CML
10	GND	Ground	N/A

INSERT ARRANGEMENT

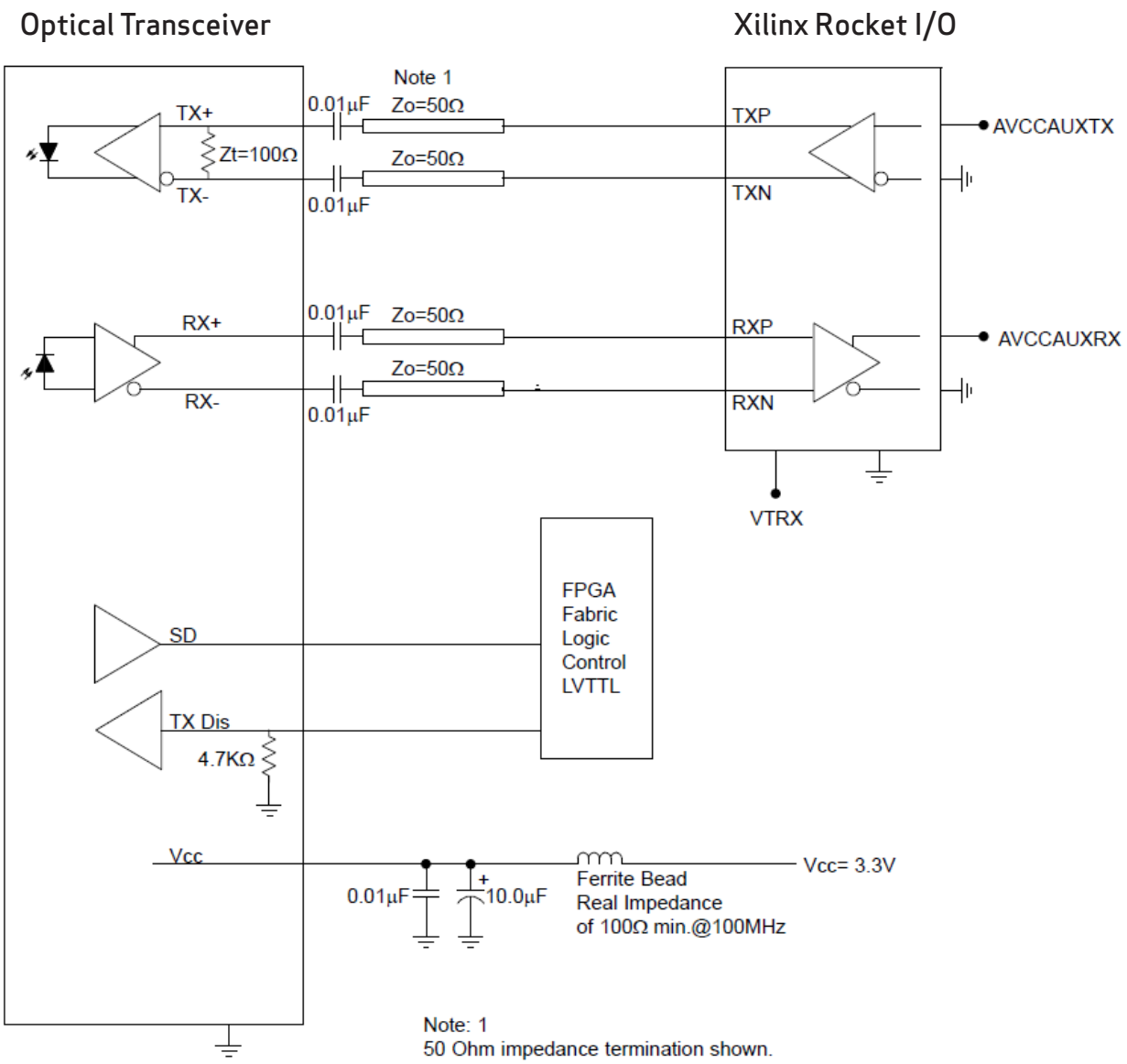
Razor Duplex Optical Transceiver
Optical interface of the transceiver interface shown
Mating cable plug interface opposite



RAZOR SERIES PCB MOUNTED OPTICAL TRANSCEIVER, GBE, 1X / 2X / 4X FC 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.

MOOG PROTOKRAFT

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