

MAGNUM 801 SERIES

SIZE 8 CAVITY OPTOELECTRONIC PCB INSERT, 1.25 MM,
850 NM - ARINC 801, 803 AND 804 COMPLIANT



Magnum - 801 series optoelectronic size 8 cavity PCB insert transmitter consist of optoelectronic transmitter functions integrated into a printed circuit board mounted pin contact. The optical transmitter is a 850 nm VCSEL laser. The transmitter input lines are driven with differential CML signals applied to the transmitter (TX+ and TX-) lines. A dual loop, temperature compensated, VCSEL driver converts the transmitter input signals to suitable VCSEL bias and modulation currents. The TX_Fault circuit disables the optical transmitter output when the optical output power or internal current exceeds predefined limits. The fault condition is latched until reset by a toggle of TX_Dis or VCC. A CMOS fault signal is generated on the TX_Fault line upon a transmitter optical or electrical fault condition.

The optical mating interface to the Magnum - 801 series size 8 cavity insert optical transmitters is a 1.25 mm ceramic fiber optic receptacle per ARINC 801. The transmitter incorporates a ferrule stub with a 50/125 μ multimode optical fiber stub enabling it to interface to either 62.5/125 μ or 50/125 μ optical fiber cable.

The electrical interface to the Magnum - 801 series size 8 cavity insert optical transmitters is a 6 position pin header suitable for thru-hole soldering to a flexible or rigid printed circuit.

Magnum series size 8 cavity insert optical transmitters are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

MAGNUM SERIES, 1.25 MM FERRULE, SIZE 8 CAVITY INSERT, OPTICAL TRANSMITTER, MULTIMODE, 850 NM, ARINC 664, 818, 801, 803 AND 804 COMPLIANT

Front Release Optical Transmitter Insert
ARINC 801/1.25 mm Ferrule/PCB Mounted

FEATURES

- Compliant with Arinc 664, 801, 803, 804 and 818
- Suitable for Fast Ethernet, Gigabit Ethernet and 1x/2x/4x Fibre Channel applications from 50 Mbps to 4.25 Gbps
- Operating temperature range from -40 to +85 °C
- Designed to perform when subjected to shock and vibration per RTCA/DO-160E
- Arcap contact insert material meets stringent EMI/RFI/ESD and EMP performance specifications
- 6 pin PCB footprint with TX Disable and TX Fault functions
- 1.25 mm ceramic optical fiber receptacle connector interface per Arinc 801
- Compatible with Arinc 600 and MIL-STD-83527 size 8Q (Quadrax) insert cavities

APPLICATIONS

Magnum -801 series printed circuit board mounted optical transmitters enable high speed network communications over long distances in harsh environments.

- Fast or Gigabit Ethernet switches and peripherals
- Fibre Channel switches and peripherals
- Serial Rapid I/O (sRIO) interfaces
- sFPDP data links
- Video displays

This size 8 optoelectronic cavity insert provides a rugged optical interface that is compliant with ARINC 801 1.25 mm ceramic optical ferrules.

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.

US Pat. # 7,690,849

ORDERING INFORMATION

Application	Part Number
50 Mbps to 2.49 Gbps	P44F-TS1D-LK
50 Mbps to 2.49 Gbps - EMI Hardened	P44F-TS1D-LK-EMI
50 Mbps to 3.19 Gbps	P44F-TS1E-LK
50 Mbps to 3.19 Gbps - EMI Hardened	P44F-TS1E-LK-EMI
50 Mbps to 4.25 Gbps	P44F-TS1G-LK
50 Mbps to 4.25 Gbps - EMI Hardened	P44F-TS1G-LK-EMI

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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
Differential Input Voltage (p-p)	V_D			2.2	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
TX Differential Input Voltage (p-p)	V_D	0.25		2.2	V
Power Supply Noise (p-p)	N_P			200	mV

DESIGNED TO PERFORM UNDER THE FOLLOWING CONDITIONS

Requirement	Description	Section
MIL-STD-461	Conducted Emissions	CE102
MIL-STD-461	Conducted Susceptibility	CS101, CS114-116
MIL-STD-461	Radiated Emissions	RE102
MIL-STD-461	Radiated Susceptibility	RS103
MIL-STD-810	High / Low Temp Opp	M 501.6 / 502.6 P II
MIL-STD-810	High / Low Temp Storage	M 502.6 / 502.6 O I
MIL-STD-810	Altitude Opp / Non-Opp	M 500 P I, 15 k feet
MIL-STD-810	Acoustic Noise	M 515.7 P I
MIL-STD-810	Shock	> 100 G
MIL-STD-810	Vibration	M 514
MIL-STD-810	Fungus	M 508.6

MATERIALS

Item	Detail	Notes
Insert Shell	Arcap	
Solder Pins	Brass	
Solder Pin Plating	Gold over Nickel	
Ferrule	Ceramic	
Printed Circuits	Polyimide/FR-4	

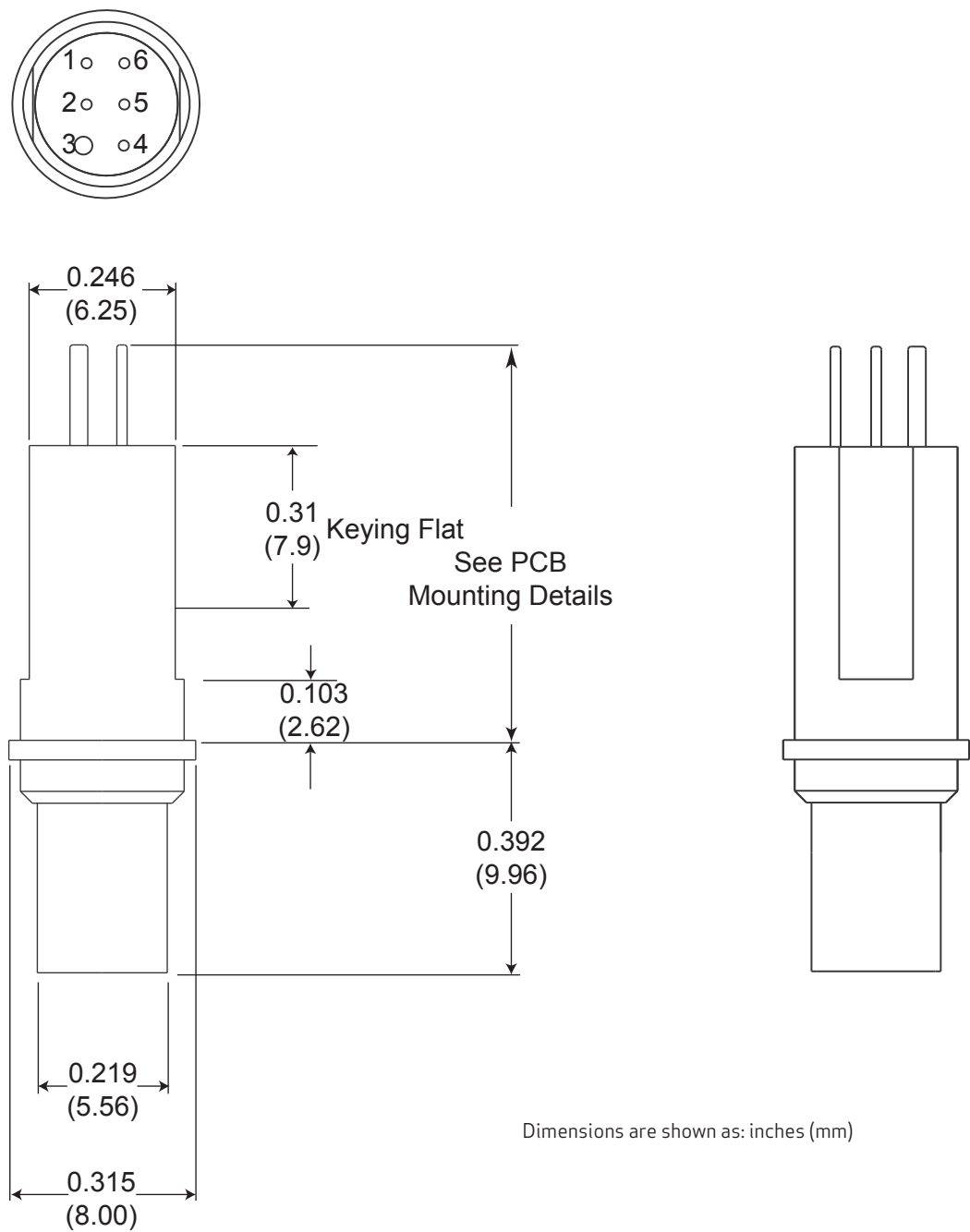
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OPTICAL TRANSMITTERS T_A = OPERATING TEMPERATURE RANGE, V_{CC} = 3.135 V TO 3.465 V					
Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power (BER < 10^{-12})	P_I	-6.5		-1.0	dBm
Optical Wavelength	λ_{OUT}	830	850	860	nm
Spectral Width	$\Delta\lambda_{RMS}$			0.85	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 Transmitter	I_{CCT}		80	110	mA

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OUTLINE DRAWING

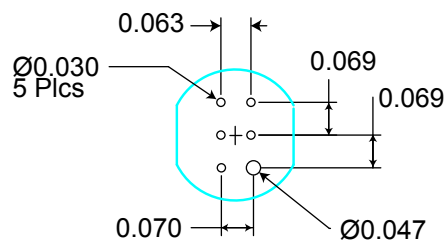


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ELECTRICAL PIN ASSIGNMENTS			
Pin Number	Symbol	Description	Logic Family
1	TX_DIS	Transmit Disable - Input Logic 1: Disable Optical Output Logic 0: Enable Optical Output	CMOS Internal 4.7KΩ Pulldown
2	V _{CC}	Power Supply	N/A
3	GND	Ground	N/A
4	TX_Fault	Internal TX Fault Indicator - Output Satisfactory Operation: Logic "0" Output Internal Fault: Logic "1" Output	Open Drain CMOS
5	TX-	Transmitter Data - Input	CML
6	TX+	Transmitter Data - Output	CML

PRINTED CIRCUIT BOARD FOOTPRINT

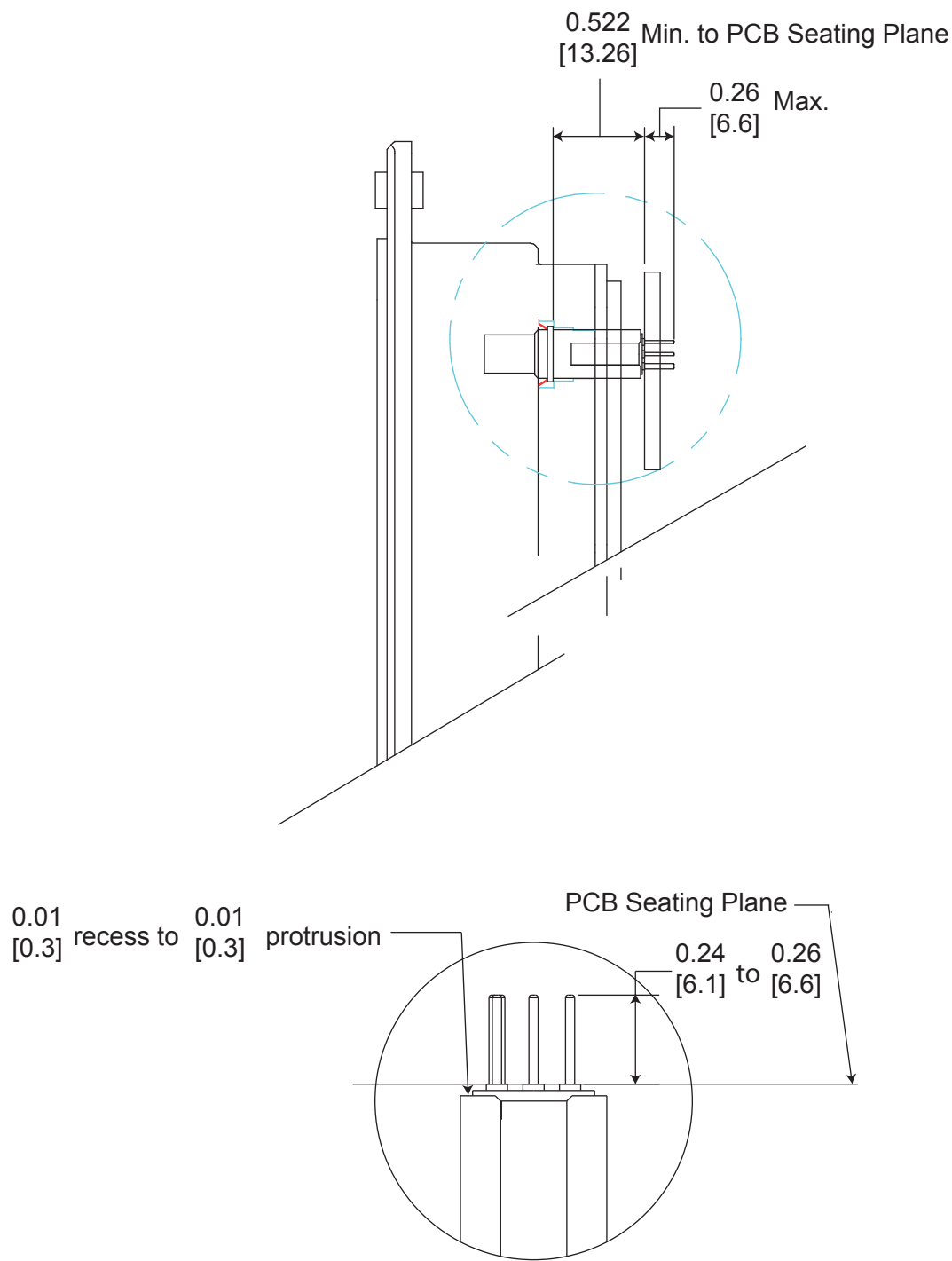
MOUNTING SIDE VIEW
PCB Hole Pattern



Dimensions are shown as: inches

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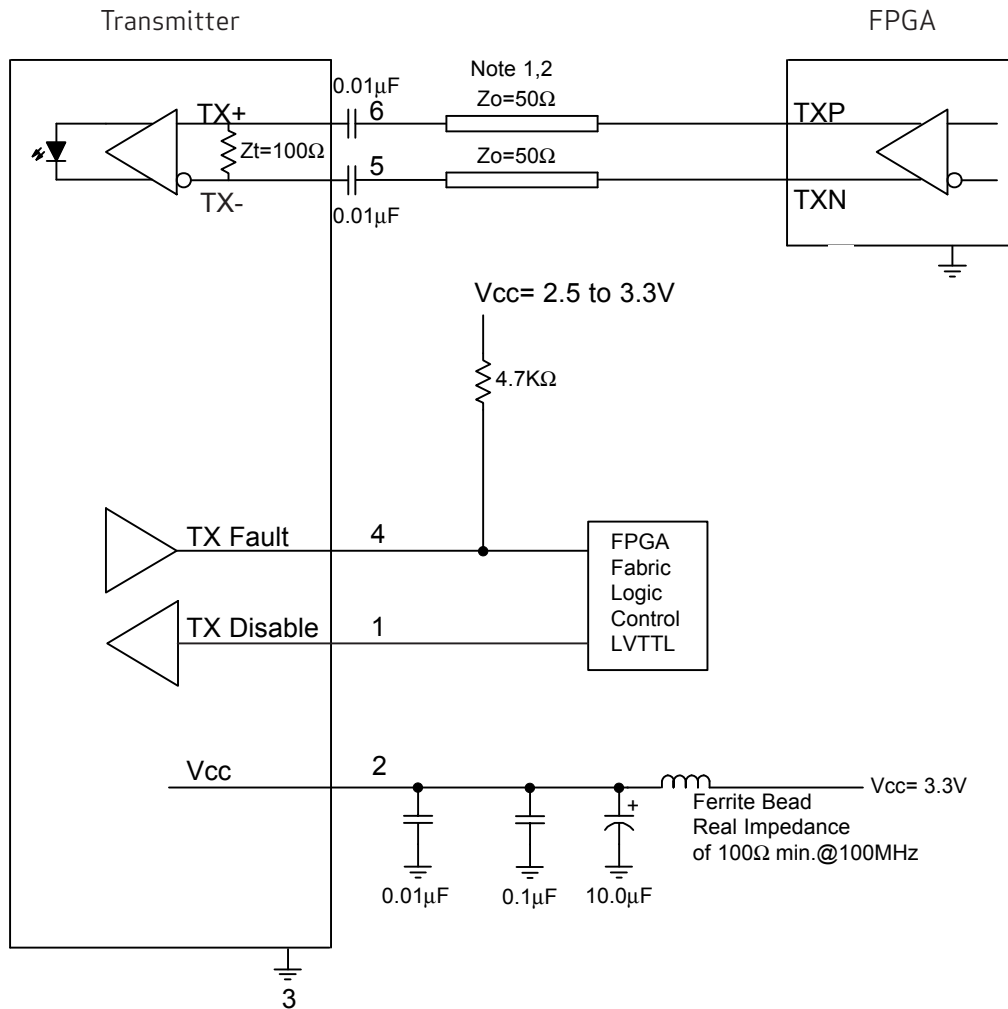
PCB MOUNTING DETAILS



Dimensions are shown as: inches [mm]

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APPLICATION SCHEMATIC FOR XILINX ROCKET I/O INTERFACES



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

Notes:

1. When using controlled impedance cable (coaxial cable) and Pre_Emphasis, lengths of 1.0 meter are obtainable.
2. 50 Ohm impedance termination shown. For alternate impedance requirements, please consult the factory.



192 Bob Fitz Road, Johnson City, TN 37615
salesmp@moog.com
moogprotokraft.com