

## Stiletto Series

PCB Mounted Optical Dual Transmitter, 10GBase-SR, 10Gigabit Ethernet Applications, Multimode, 850nm

### Duplex Optical Transmitter Unit

#### FEATURES

- Compliant with 10Gigabit Ethernet - 10GBase-SR
- Optical fiber link distances up to 300 Meters (50/125µ 2000MHz\*Km MMF - OM3)
- Maximum optical channel bit error rate less than  $1 \times 10^{-12}$
- Operating temperature range from  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- 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

Stiletto series printed circuit board mounted optical dual transmitters enable high speed network communications over long distances in harsh environments.

- 10 Gigabit Ethernet switches and peripheral
- 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 quadrx copper conductors unacceptable.



Dual TX Channel Operating at 10.125Gbps

#### DESCRIPTION

Stiletto series optical fiber transmitters consist of optoelectronic transmitter functions integrated into a pluggable Duplex LC compliant receptacle connector. The optical transmitters are 850nm 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.

Stiletto series optical fiber transmitters support the 2-wire serial communication protocol as defined in SFF-8472, offering end user access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power and transmitter supply voltage. It also defines alarm and warning flags, to alert end users when particular operating parameters are outside of a factory defined normal range.

The electrical interface to the Stiletto optical transceivers is a Samtec SMT Connector with a 20 position footprint.

#### ORDERING INFORMATION

Application	Part Number
Dual Transmitters @ 10.125Gbps	R45N-2T1K

# Facilitating Secure Communications in Harsh Environments

Stiletto Series SMT / PCB mounted Optical Dual Transmitter,  
10 GbE, 10GBase-SR / SFI or sFPDP Applications, Multimode, 850nm VCSELs

## 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	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
Metal Shell	Nickel Plated Brass	
Die Cast Body	Zamak 5	
Connector Pins	Brass	
Connector Pin Plating	Gold over Nickel	
Alignment Sleeves	Composite Polymer	
Printed Circuits	Polyimide / FR-4	
PCB Conformal Coating	Type AR	
Threaded Mounting Posts	Stainless Steel	

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## OPTICAL TRANSMITTERS $T_A$ = Operating Temperature Range, $V_{CC}$ = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power (BER<10 <sup>-12</sup> )	$P_o$	-5.0		-1.0	dBm
Optical Output Wavelength	$\lambda_{OUT}$	840	850	860	nM
Spectral Width	$\Delta\lambda_{RMS}$			0.45	nM
Extinction Ratio	ER	3.0	5.5		dB

## POWER SUPPLY CURRENT $T_A$ = Operating Temperature Range, $V_{CC}$ = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current per Port	$I_{CCT}$		300	400	mA

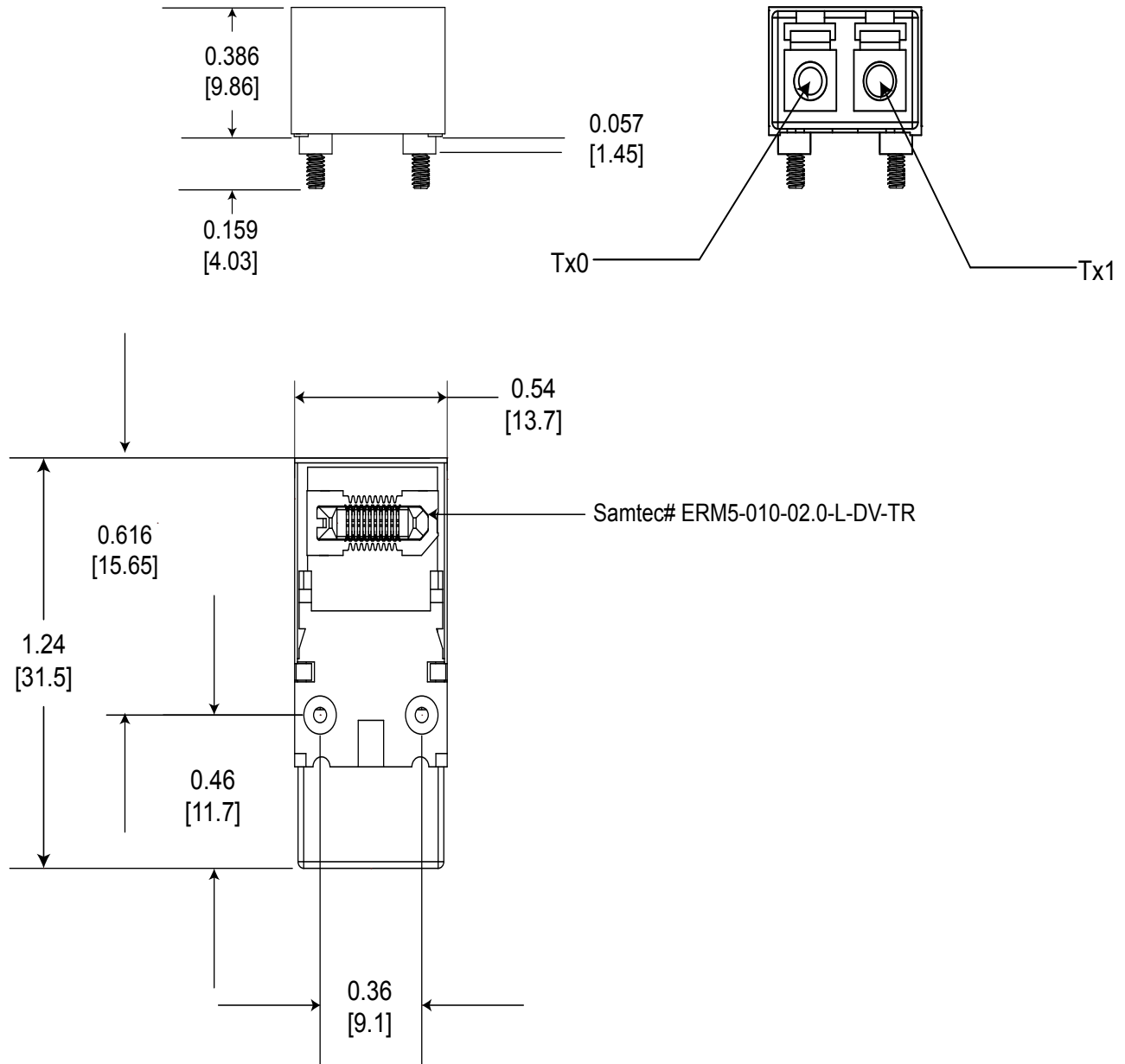
## OPTICAL LINK DISTANCES

Cable Type	62.5/125 $\mu$ 160MHz*Km	62.5/125 $\mu$ 200MHz*Km	50/125 $\mu$ 400MHz*Km	50/125 $\mu$ 500MHz*Km	50/125 $\mu$ 2000MHz*Km
Maximum Supported Link Distance - Meters	26	33	66	82	300

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## OUTLINE DRAWING

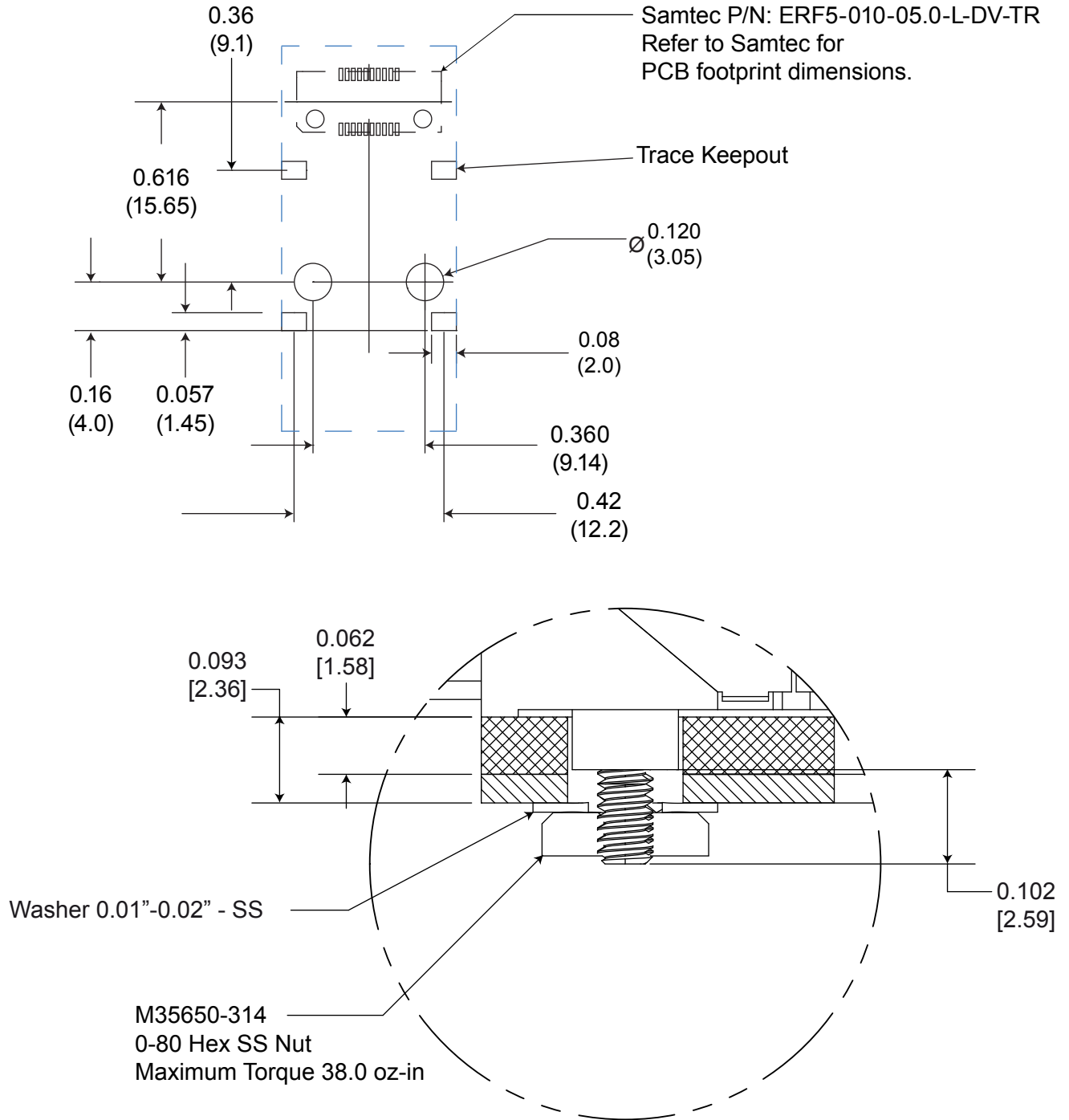
Dimensions are shown as: inches [mm]



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## PRINTED CIRCUIT BOARD FOOTPRINT

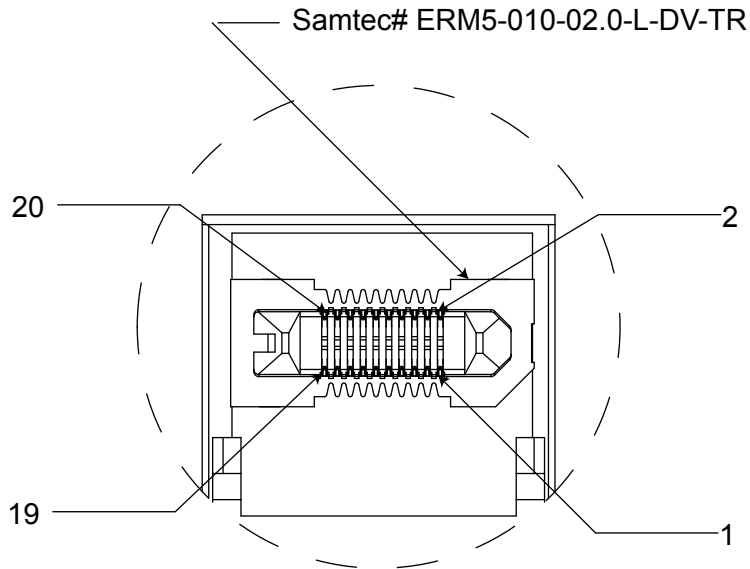
Dimensions are shown as: inches (mm)



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## ELECTRICAL PIN ASSIGNMENTS

Component Bottom View Indicated



Pin Number	Symbol	Port	Description	Logic Family
1	TX-	0	TRANSMITTER DATA IN -	CML
2	TX_FAULT	0	TRANSMITTER FAULT INDICATOR	General Purpose Output - 3.3V / 5mA
3	TX+	0	TRANSMITTER DATA IN +	CML
4	TX_FAULT	1	TRANSMITTER FAULT INDICATOR	General Purpose Output - 3.3V / 5mA
5	SCL	ALL	2 WIRE SERIAL INTERFACE CLOCK	I2C
6	GND	ALL	GROUND - ISOLATED FROM CASE	N/A
7	SDA	ALL	2 WIRE SERIAL INTERFACE DATA	I2C
8	TX_DIS	0	TRANSMITTER DISABLE	CMOS Internal 50KΩ pullup
9	VCC	ALL	POWER SUPPLY	N/A
10	GND	ALL	GROUND - ISOLATED FROM CASE	N/A
11	GND	ALL	GROUND - ISOLATED FROM CASE	N/A
12	TX_DIS	1	TRANSMITTER DISABLE	CMOS Internal 50KΩ pullup
13	GND	ALL	GROUND - ISOLATED FROM CASE	N/A
14	GND	ALL	GROUND - ISOLATED FROM CASE	N/A
15	VCC	ALL	POWER SUPPLY	N/A
16	NC	-	FACTORY CONNECT ONLY	N/A
17	TX-	1	TRANSMITTER DATA IN -	CML
18	NC	-	FACTORY CONNECT ONLY	N/A
19	TX+	1	TRANSMITTER DATA IN +	CML
20	NC	-	FACTORY CONNECT ONLY	N/A

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## APPLICATION SCHEMATIC

