



E2O Communications, Inc.

# 4 Channel 2X9 LC Receiver for 2.5/3.125 Gbps 850 nm PIN for Multimode Fiber

## EM4Rxxx-L3TA Preliminary Data Sheet



### Features

- 4 X 2.5 or 4 X 3.125 Gbps Operating Data Rate
- LC Receptacle Compatible with Industry Standard LC Optical Connector
- 850nm PIN Detector compatible with VCSEL sources
- 2x9 Footprint
- Operates with 50  $\mu$ m and 62.5  $\mu$ m multimode optical fibers
- Single +3.3V Power Supply
- Wave Solderable / Aqueous Washable

### Product Description

The EM4Rxxx-L3TA from E2O Communications is a +3.3V, 4 channel, 2.5 or 3.125 Gbps receiver. The EM4Rxxx-L3TA receiver uses the LC optical receptacle that is compatible with the industry standard LC optical connector. The receiver features a modified 2x9 footprint and meets the mezzanine height requirement of 9.8 mm. The EM4Rxxx-L3TA receiver consists of an optical subassembly housing and an electrical subassembly, housed within a plastic/metal package.

The receiver consists of four GaAs PIN photodetectors and four preamplifiers.

EM4Rxxx-L3TA receivers also include four (4) Signal Detect circuits that provide 4 TTL logic high outputs when a usable input optical signal level is detected.

### Electromagnetic Interference (EMI)

Most equipment utilizing high-speed receivers will be required to meet the following requirements:

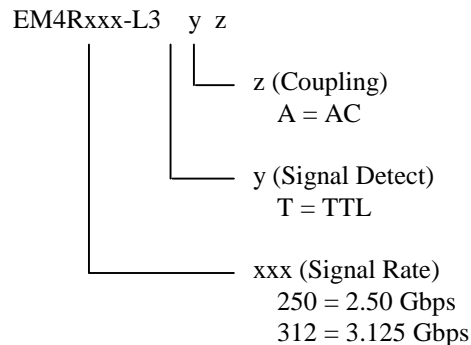
- 1) FCC in the United States
- 2) CENELEC EN55022 (CISPR 22) in Europe. and
- 3) VCCI in Japan.

To assist the customer in managing the overall equipment EMI performance, the EM4Rxxx-L3TA receiver have been designed to perform to the specified limits. All receivers comply with the FCC Class B limits.

### Immunity

The EM4Rxxx-L3TA receiver has been designed to provide good immunity to radio-frequency electromagnetic fields. To achieve electromagnetic immunity, a metal housing, and chassis shield are used.

### Ordering Information



EB-4XT/R-A (Evaluation Board)



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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Storage Temperature	T <sub>S</sub>	-40		+85	°C	
Supply Voltage	V <sub>CC</sub>			5.0	V	V <sub>CC</sub> – ground

## RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Ambient Operating Temperature	T <sub>A</sub>	0		+70	°C	
Supply Voltage	V <sub>CC</sub>	3.1		3.5	V	
Data Skew	T <sub>sk</sub>			TBD	ps	

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 0°C to 70°C, V<sub>CC</sub> = 3.15V to 3.45V)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Supply Current	I <sub>CCR</sub>			150	mA	Per Channel
Cross talk	Xtalk	TBD			dB	
Data Output Peak-to-Peak Differential Voltage	V <sub>O,P-P</sub>	0.6		0.8	V	
Data Output Rise & Fall Times	t <sub>r</sub> ,t <sub>f</sub>			0.15	ns	20-80%
TTL Signal Detect Output – High	V <sub>oh</sub> ,TTL	2.4		V <sub>CC</sub>	V	
TTL Signal Detect Output - Low	V <sub>ol</sub> ,TTL	0.0		0.4	V	



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**OPTICAL CHARACTERISTICS** ( $T_A = 0^\circ\text{C}$  to  $+70^\circ\text{C}$ ,  $V_{CC} = 3.15\text{V}$  to  $3.45\text{V}$ )

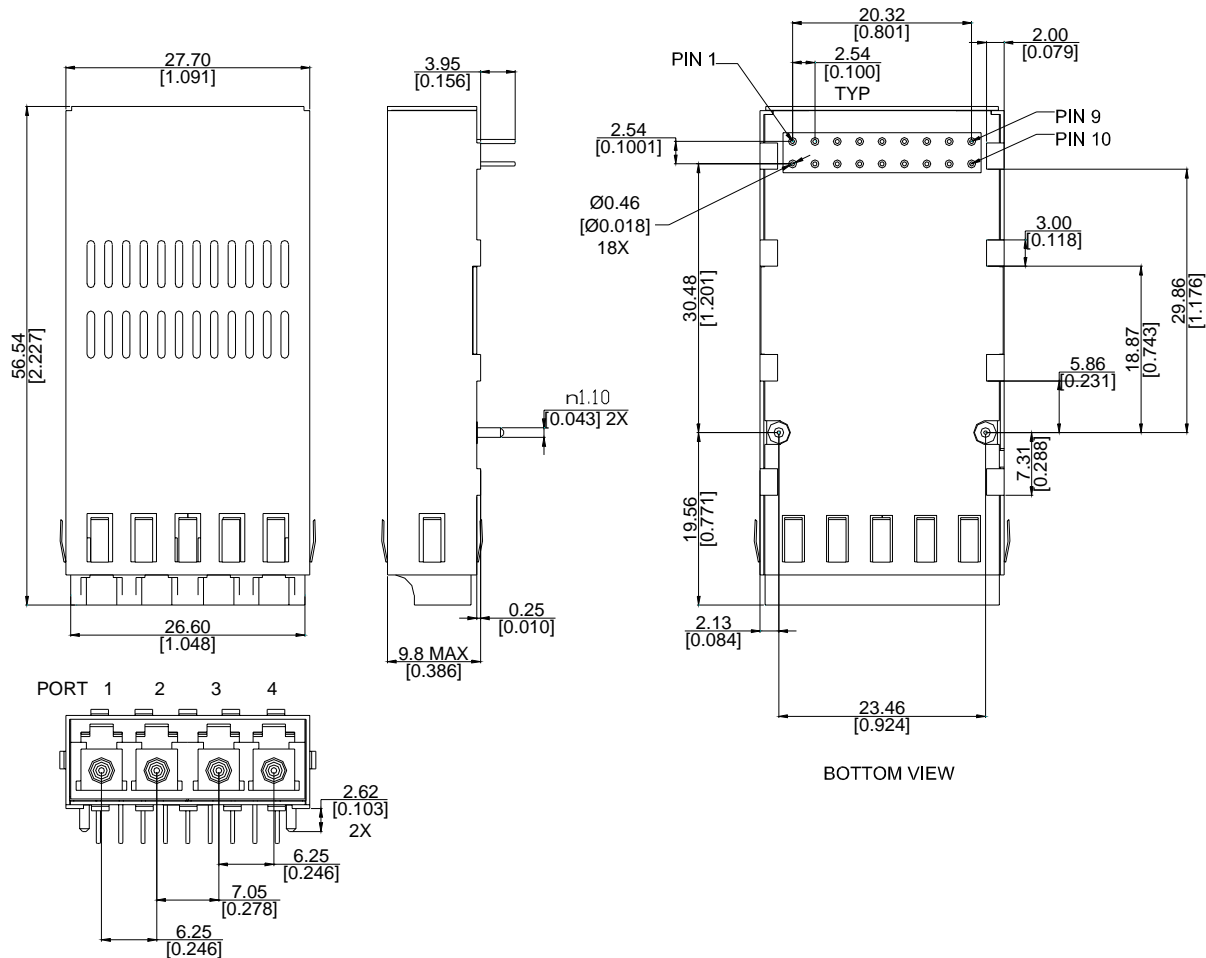
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
<b>RECEIVER</b>						
Minimum Optical Input Power (Sensitivity)	$P_{IN}$ Min			-15	dBm avg.	Per channel
Maximum Optical Input Power (Saturation)	$P_{IN}$ Max	-3			dBm avg.	Per channel
Operating Center Wavelength	$\lambda_c$	770		860	nm	
Return Loss		12			dB	
Signal Detect – Asserted	$P_A$			-15	dBm avg.	
Signal Detect – Deasserted	$P_D$	-30			dBm avg.	
Signal Detect – Hysteresis	$P_A - P_D$	0.5		5	dB	



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**FIGURE 1: Package Dimensions (mm [inches])**



**TABLE 1. Pinout Table**

PIN #			PIN #		
1	GND	Signal Ground	10	GND	Signal Ground
2	D4-	Inverted Output for Channel Four	11	SD1	Signal Detect for Channel One
3	D4+	Non-inverted Output for Channel Four	12	GND	Signal Ground
4	D3-	Inverted Output for Channel Three	13	SD2	Signal Detect for Channel Two
5	D3+	Non-inverted Output for Channel Three	14	GND	Signal Ground
6	D2-	Inverted Output for Channel Two	15	SD3	Signal Detect for Channel Three
7	D2+	Non-inverted Output for Channel Two	16	Vcc	+3.3v Power
8	D1-	Inverted Output for Channel One	17	SD4	Signal Detect for Channel Four
9	D1+	Non-inverted Output for Channel One	18	Vcc	+3.3v Power
S1		Solder Post 1	S2		Solder Post 2

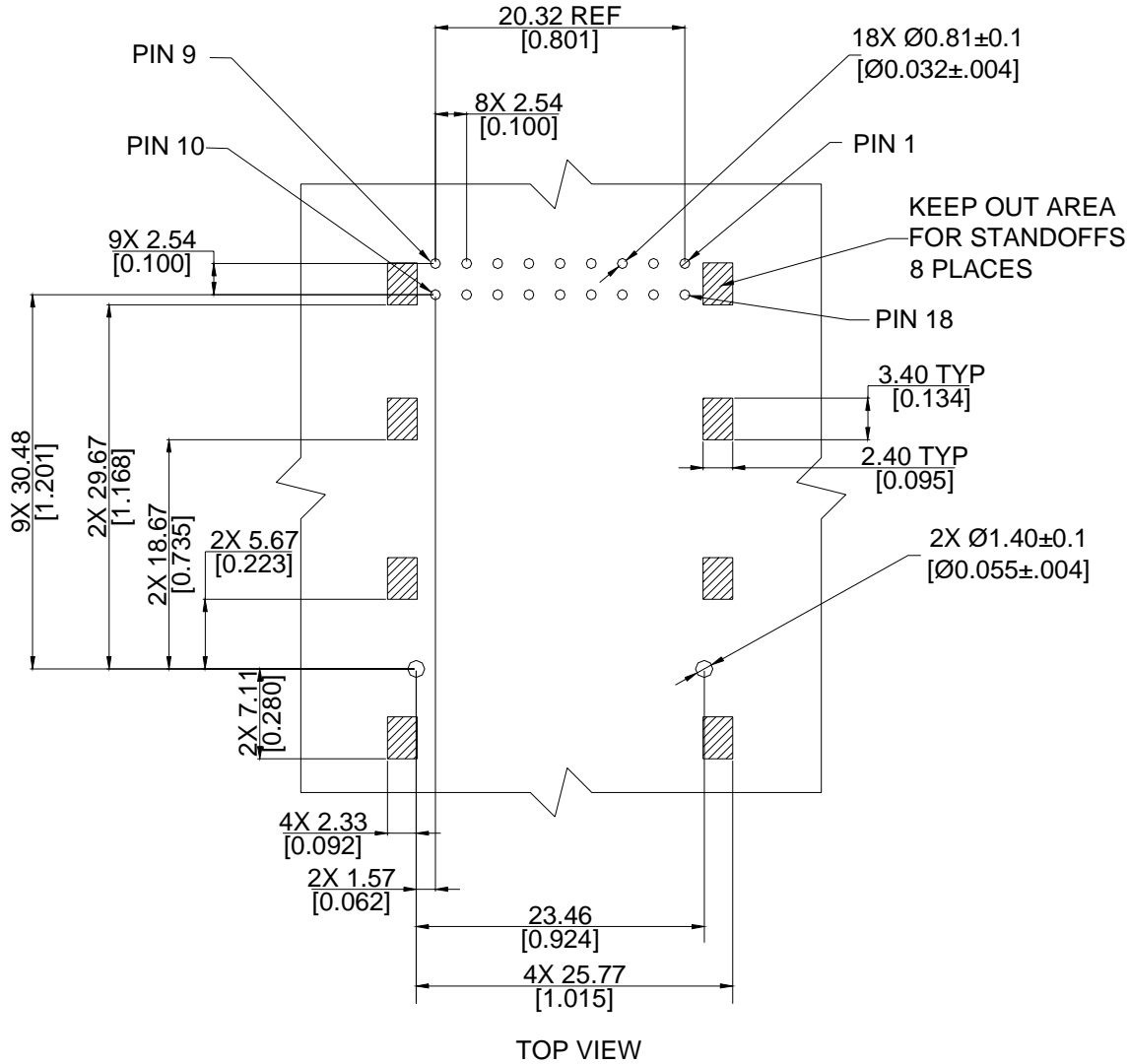


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## 850 nm PIN for Multimode Fiber

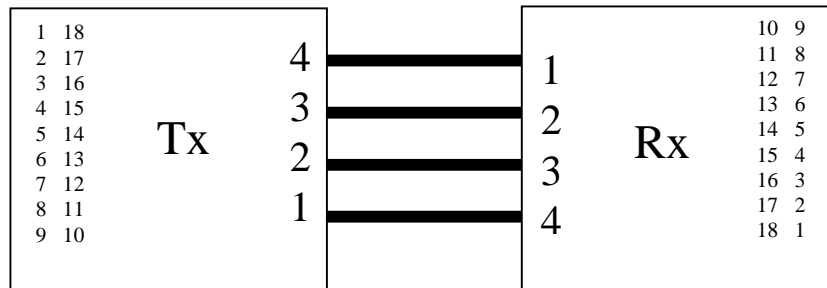
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**FIGURE 2 – Recommended Host PCB Layout (mm [inches])**



**FIGURE 3 – Recommended Hook-up Diagram**

Top View

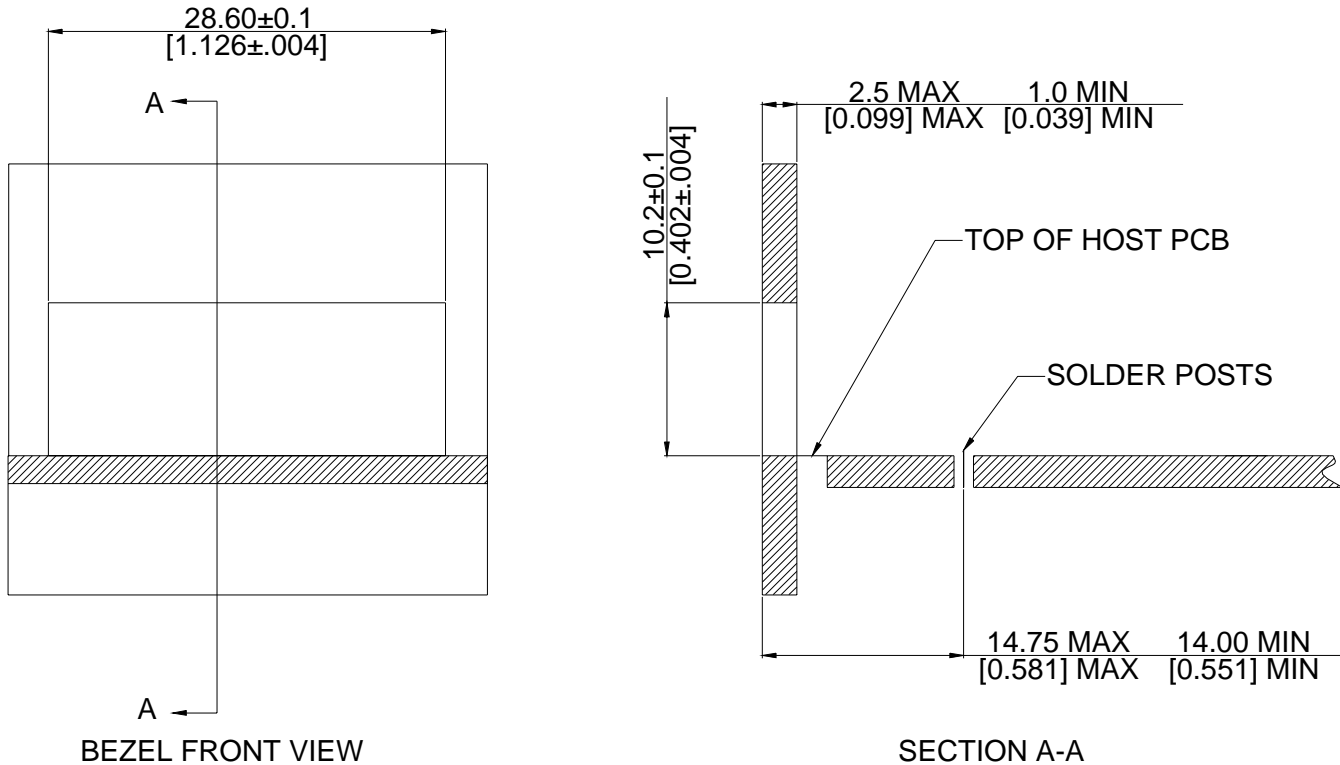




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**FIGURE 4 – Bezel Opening Dimensions (mm [inches])**



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