



# 3.3V GBIC Transceiver for Fibre Channel & 1000Base-SX 850 nm VCSEL for Multimode Fiber

E2O Communications, Inc.

## EMxxx-G3TA Data Sheet



### Features

- 850nm Vertical Cavity Surface Emitting Laser (VCSEL) Source Technology
- Compliant with specifications for IEEE-802.3z Gigabit Ethernet (1000Base-SX) at 1.25 Gbps
- Compliant with ANSI specifications for Fibre Channel applications at 1.06 Gbps
- Duplex SC Optical Connector
- Conforms to Industry Standard Gigabit Interface Converter (GBIC) specification Rev. 5.5
- 20-pin SCA Electrical Connector
- Operates with 50  $\mu\text{m}$  and 62.5  $\mu\text{m}$  multimode optical fibers
- Class 1 Laser Safety Compliant
- Single +3.3V Power Supply
- Hot-Pluggable
- EEPROM with Serial ID Functionality

### Product Description

The EMxxx-G3TA from E2O Communications is a 3.3V duplex-SC transceiver designed for use in Fibre Channel and Gigabit Ethernet applications. The transceiver conforms to the Gigabit Interface Converter (GBIC) specification and meets the mezzanine height requirement of 9.8 mm. Each EMxxx-G3TA transceiver consists of a transmitter optical subassembly, a receiver optical subassembly, and an electrical subassembly. All are packaged inside a metallized plastic frame with metal cover.

The transmitter consists of a high-performance 850-nm VCSEL while the receiver consists of a GaAs PIN and a preamplifier. At the same time, a serial EEPROM in the transceiver allows the user to access information such as the GBIC's capabilities, the standard interfaces as well as the manufacturer. Details of the Serial Identification Protocol are contained in Annex D of the GBIC Multi-Source Agreement (MSA) specification.

All EMxxx-G3TA transceivers also include a loss-of-Signal-Detect circuit which provides a TTL logic high output when an unusable input optical signal level is detected.

### Electromagnetic Interference (EMI)

Most equipment utilizing high-speed transceivers 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 EMxxx-G3TA transceivers have been designed to perform to the specified limits. All transceivers comply with the FCC Class B limits.

### Immunity

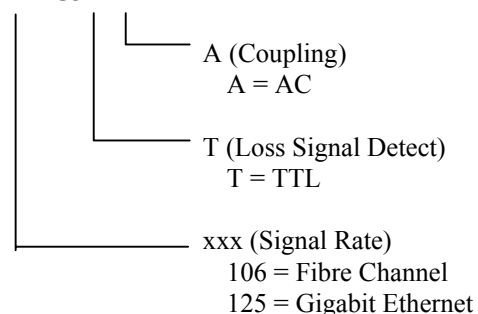
The EMxxx-G3TA transceiver has been designed to provide good immunity to radio-frequency electromagnetic fields. Key components to achieve the good electromagnetic compliance (EMC) are the metallized plastic frame, the metal cover, and the chassis shield.

### Eye Safety

The EMxxx-G3TA 850-nm VCSEL-based transceivers have been designed to meet Class 1 eye safety and comply with FDA 21CFR 1040.10 and 1040.11 and the IEC 825-1.

### Ordering Information

EMxxx-G3 T A



EB-GBIC-A (Evaluation Board)



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### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Storage Temperature	$T_S$	-40		85	°C	
Supply Voltage	$V_{CC}$			5.0	V	$V_{CC}$ – ground

### RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Ambient Operating Temperature	$T_A$	0		70	°C	
Supply Voltage	$V_{CC}$	3.1		3.5	V	
Transmitter Differential Input Voltage	$V_D$	0.6		2.0	V	

### ELECTRICAL 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>TRANSMITTER</b>						
Supply Current	$I_{CCT}$		80	100	mA	
<b>RECEIVER</b>						
Supply Current	$I_{CCR}$		100	200	mA	
Data Output Peak-to-Peak Differential Voltage	$V_{O,P-P}$	0.5		1.9	V	
Data Output Rise & Fall Times	$t_r, t_f$			0.25	ns	20-80%
Loss Signal Detect Output – High	$V_{oh}$	2.0		$V_{CC}$	V	
Loss Signal Detect Output - Low	$V_{ol}$	0.0		0.5	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  $3.45\text{V}$ )

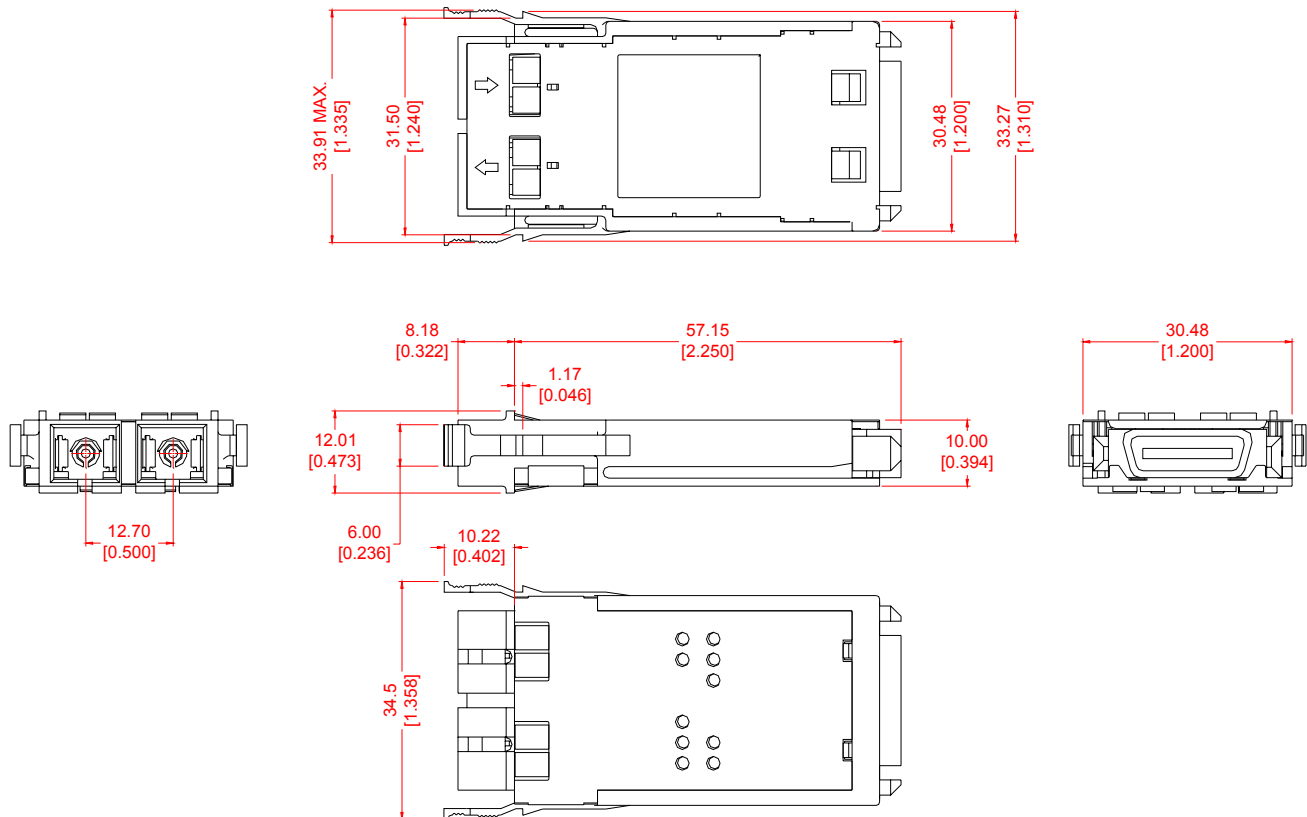
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
<b>TRANSMITTER</b>						
Output Optical Power 50/125 $\mu\text{m}$ , NA = 0.20 fiber	$P_{\text{OUT}}$	-9.5		-4	dBm avg.	
Output Optical Power 62.5/125 $\mu\text{m}$ , NA = 0.275 fiber	$P_{\text{OUT}}$	-9.5		-4	dBm avg.	
Optical Extinction Ratio		9			dB	
Center Wavelength	$\lambda_c$	840	850	860	nm	
Spectral Width – rms	$\sigma$			0.85	nm	
Optical Rise/Fall Time	$t_r / t_f$			0.26	ns	20-80%
Optical Modulation Amplitude	OMA	160			$\mu\text{W}$	Pk to Pk Applies to FC
Relative Intensity Noise	RIN		-122	-117	dB/Hz	
Transmitter Optical Contributed Jitter (TOTAL)	TJ			225	ps	
<b>RECEIVER</b>						
Minimum Optical Input Power (Sensitivity)	$P_{\text{IN Min}}$			-17	dBm avg.	
Maximum Optical Input Power (Saturation)	$P_{\text{IN Max}}$	0			dBm avg.	
Operating Center Wavelength	$\lambda_c$	770		860	nm	
Optical Modulation Amplitude	OMA	31			$\mu\text{W}$	Pk to Pk Applies to FC
Return Loss		12			dB	
Signal Detect – Asserted	$P_A$			-17	dBm avg.	
Signal Detect – Deasserted	$P_D$	-30			dBm avg.	
Signal Detect – Hysteresis	$P_A - P_D$	0.5		5.0	dB	



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Figure 1 – Package Outline in mm [inches].



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