



3.3V / 5V GBIC Transceiver for Dual Rate Fibre Channel

850 nm VCSEL for Multimode Fiber

E2O Communications, Inc.

EM212-GDTA Data Sheet



Features

- 850nm Vertical Cavity Surface Emitting Laser (VCSEL) Source Technology
- Interoperable with CD laser based transceivers
- 1.06 and 2.125 Gbps Operating Data Rate
- Compliant with ANSI specifications for Fibre Channel Applications at 2.125 Gbps
- Conforms to Industry Standard Gigabit Interface Converter (GBIC) specification Rev. 5.5
- 20-pin SCA Electrical Connector
- Duplex SC Optical Connector
- Operates with 50 μm and 62.5 μm multimode optical fibers
- Class 1 Laser Safety Compliant
- Single +3.3V or +5V Power Supply
- Hot-Pluggable
- EEPROM with Serial ID Functionality

Product Description

The EM212-GDTA from E2O Communications is a +3.3V or +5V, duplex-SC transceiver designed for use in Dual Rate Fibre Channel applications. The transceiver conforms to the Gigabit Interface Converter (GBIC) specification and meets the mezzanine height requirement of 9.8 mm. Each EM212-GDTA 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 EM212-GDTA 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 EM212-GDTA transceivers have been designed to perform to the specified limits. All transceivers comply with the FCC Class B limits.

Immunity

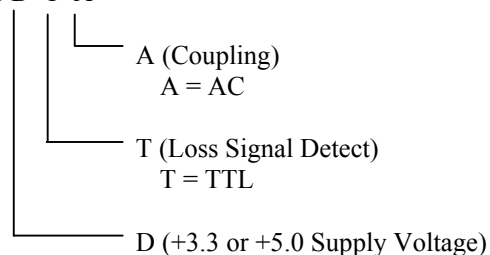
The EM212-GDTA transceiver has been designed to provide good immunity to radio-frequency electromagnetic fields. Key components to achieve the good electromagnetic compliance (EMC) are the metallized plastic frame, the metal cover, and the chassis shield.

Eye Safety

The EM212-GDTA 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

EM212-G D T A



EB-GBIC-A (Evaluation Board)



3.3V / 5V GBIC Transceiver for Dual Rate Fibre Channel 850 nm VCSEL for Multimode Fiber

E2O Communications, Inc.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Storage Temperature	T_S	-40		85	°C	
Supply Voltage	V_{CC}			6.0	V	V_{CC} – ground

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Ambient Operating Temperature	T_A	0		70	°C	
+3.3V Supply Voltage	V_{CC}	3.1		3.5	V	
+5V Supply Voltage	V_{CC}	4.75		5.25	V	
Transmitter Differential Input Voltage	V_D	0.6		2.0	V	

ELECTRICAL CHARACTERISTICS ($T_A = 0^{\circ}\text{C}$ to 70°C , $V_{CC} = 3.1\text{V}$ to 3.5V ; 4.75V to 5.25V)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
TRANSMITTER						
Supply Current	I_{CCT}		80	100	mA	
RECEIVER						
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			0.20	ns	20-80%
Loss Signal Detect Output - High	$V_{oh, TTL}$	2.0		V_{CC}	V	
Loss Signal Detect Output - Low	$V_{ol, TTL}$	0.0		0.5	V	



3.3V / 5V GBIC Transceiver for Dual Rate Fibre Channel 850 nm VCSEL for Multimode Fiber

E2O Communications, Inc.

OPTICAL CHARACTERISTICS ($T_A = 0^\circ\text{C}$ to 70°C , $V_{CC} = 3.1\text{V}$ to 3.5V ; 4.75V to 5.25V)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
TRANSMITTER						
Output Optical Power 50/125 μm , NA = 0.20 fiber	P_{OUT}	-9.5		-4	dBm avg.	
Output Optical Power 62.5/125 μm , NA = 0.275 fiber	P_{OUT}	-9.5		-4	dBm avg.	
Optical Extinction Ratio		9			dB	
Center Wavelength	λ_c	840	850	860	nm	
Spectral Width – rms	σ			0.85	nm	
Optical Rise/Fall Time	t_r / t_f			0.15	ns	20-80% note 1.
Optical Modulation Amplitude (1.06 Gbps Data Rate)	OMA	160			μW	Pk to Pk
Optical Modulation Amplitude (2.125 Gbps Data Rate)	OMA	196			μW	Pk to Pk
Relative Intensity Noise	RIN		-122	-117	dB/Hz	
Transmitter Optical Contributed Jitter (TOTAL)	TJ			150	ps	
RECEIVER						
Minimum Optical Input Power (Sensitivity)	P_{IN} Min			-17	dBm avg.	
Maximum Optical Input Power (Saturation)	P_{IN} Max	0			dBm avg.	
Operating Center Wavelength	λ_c	770		860	nm	
Optical Modulation Amplitude (1.06 Gbps Data Rate)	OMA	31			μW	Pk to Pk
Optical Modulation Amplitude (2.125 Gbps Data Rate)	OMA	49			μW	Pk to Pk
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	

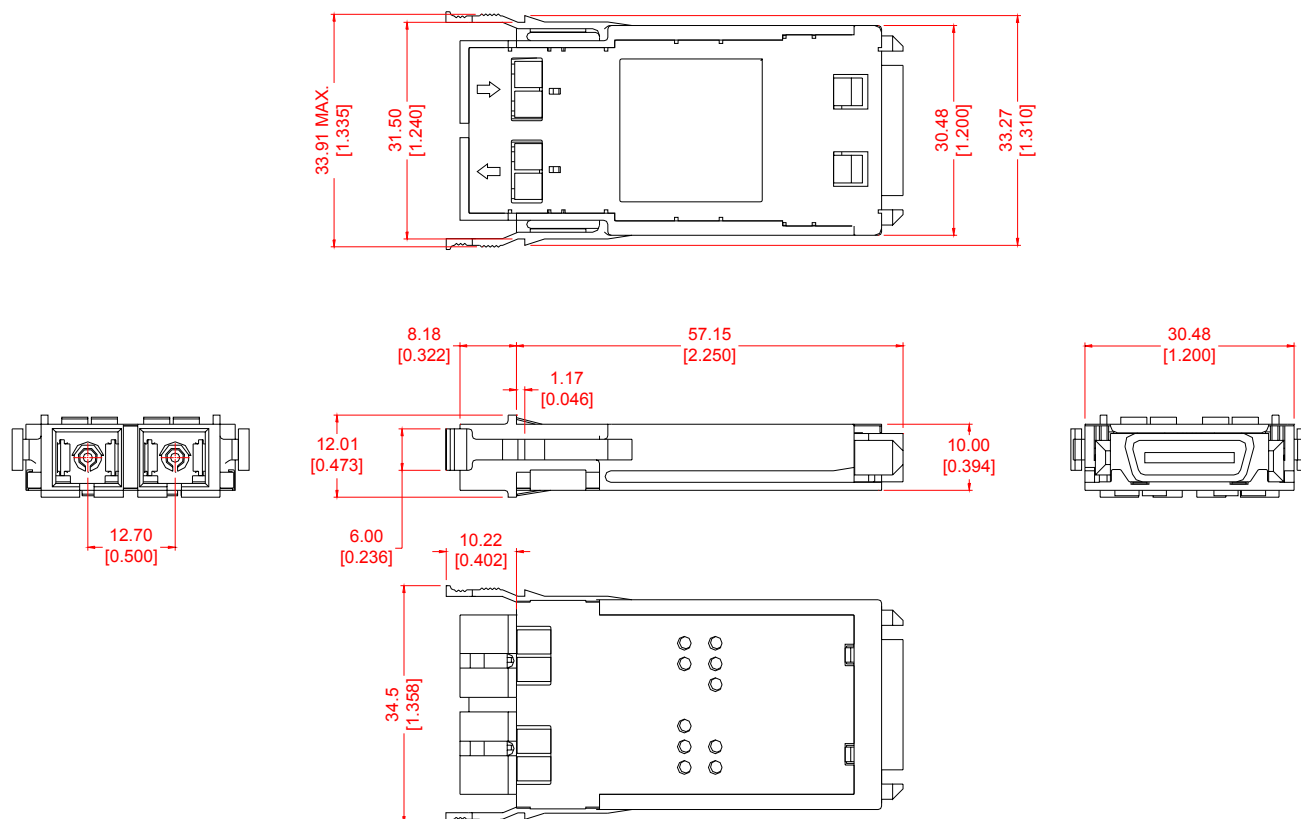
Note 1. measured with the 4th order BT filter off.



3.3V / 5V GBIC Transceiver for Dual Rate Fibre Channel 850 nm VCSEL for Multimode Fiber

E2O Communications, Inc.

Figure 1 – Package Outline in mm [inches].



E2O Communications, Inc. reserves the right to make changes in product design, features, capabilities, function, or specifications at any time without notice. Information supplied by E2O Communications, Inc. is believed to be accurate and reliable at the time of release. No responsibility is assumed by E2O Communications, Inc. for its use nor for any infringements of third parties which may result from its use. No license is granted by implication or otherwise under any patent right of E2O Communications, Inc.