



E2O Communications, Inc.

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

EMxxx-MP3TA Preliminary 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
- Compliant with Small Form-factor Pluggable (SFP) Multi-Source Agreement
- Compatible with Industry Standard RFT Electrical Connector & Cage
- MT-RJ Receptacle Compatible with Industry Standard MT-RJ Optical Connector
- Operates with 50 μ m and 62.5 μ 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-MP3 from E2O Communications is a hot-pluggable 3.3V Small Form-Factor transceiver designed for use in Fibre Channel and Gigabit Ethernet applications. The EMxxx-MP3 transceivers provide the MT-RJ optical receptacle that is compatible with the industry standard MT-RJ connector. The transceiver is also compatible with industry standard RFT connector and cage. The transceiver conforms to the Small Form-factor Pluggable (SFP) multi-source agreement (MSA)

Each EMxxx-MP3 transceiver consists of an optical subassembly housing both the transmitter and the receiver, and an electrical subassembly. All are housed within a plastic/metal package. The transmitter consists of a high-performance 850-nm VCSEL while the receiver consists of a GaAs PIN and a pre-amplifier.

A serial EEPROM in the transceiver allows the user to access information. Details of the Serial Identification Protocol will be contained in the SFP Multi-Source Agreement.

All EMxxx-MP3 transceivers 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) & Immunity

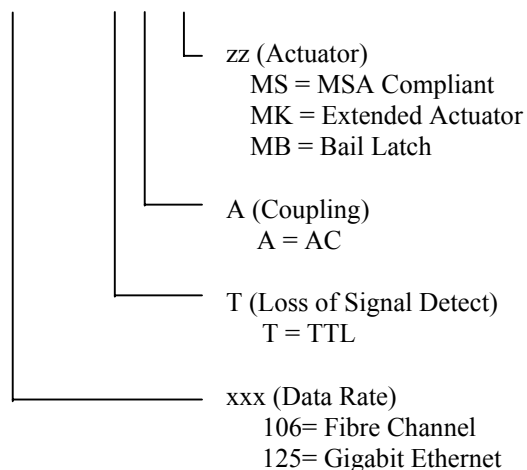
To assist the customer in managing the overall equipment EMI performance, the EMxxx-MP3 transceiver is designed to be compatible with the industry-standard RFT cage. The RFT cage is designed to provide protection for EMI emission and EMI susceptibility. All transceivers comply with the FCC Class B limits.

Eye Safety

The EMxxx-MP3 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-MP3 T A -zz



EB-SFP-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°C , $V_{CC} = 3.15\text{V}$ to 3.45V)

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			0.40	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°C , $V_{CC} = 3.15\text{V}$ to 3.45V)

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			0.26	ns	20-80%
Optical Modulation Amplitude	OMA	160			μW	Pk to Pk Applies to FC
Relative Intensity Noise	RIN		-122	-117	dB/Hz	
Transmitter Optical Contributed Jitter (TOTAL)	TJ			225	ps	
RECEIVER						
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	λ_c	770		860	nm	
Optical Modulation Amplitude	OMA	31			μW	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	



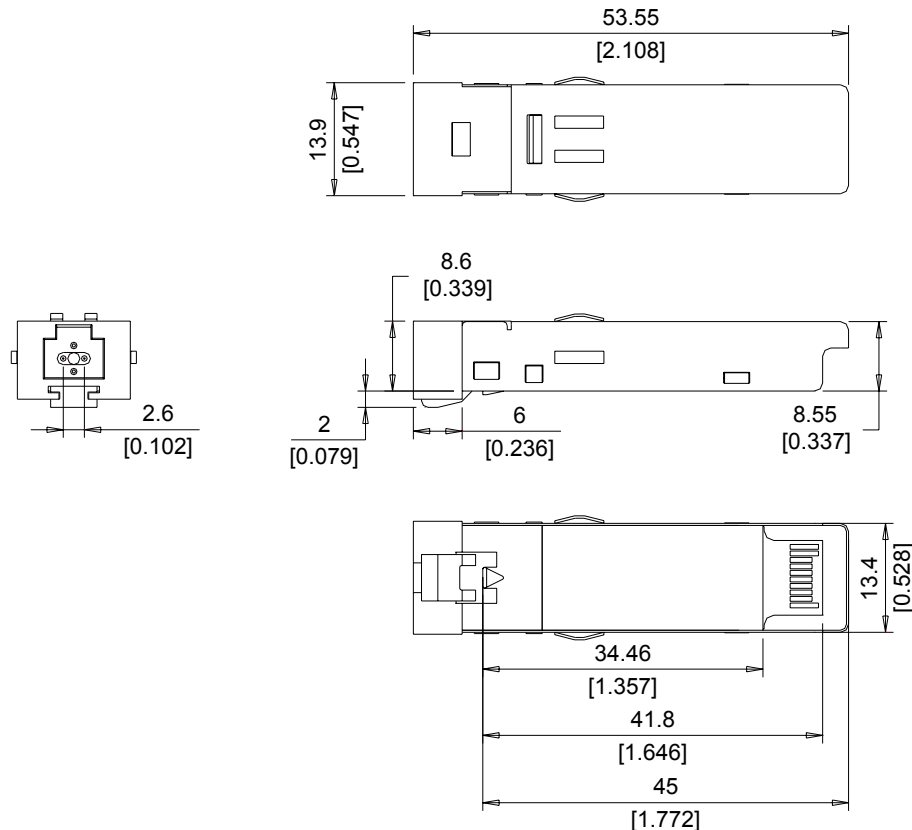
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Table 1: SFP Pin Definitions

PIN	SYMBOL	DESCRIPTION OF FUNCTION	PIN	SYMBOL	DESCRIPTION OF FUNCTION
1	VeeT	Transmitter Signal Ground	11	VeeR	Receiver Signal Ground
2	TX Fault	Transmitter Fault Indication	12	RD-	Received Data Inverted Differential Output
3	TX Disable	Transmitter Disable	13	RD+	Received Data Non-Inverted Differential Output
4	MOD-DEF2	Module Definition 2	14	VeeR	Receiver Signal Ground
5	MOD-DEF1	Module Definition 1	15	VccR	+3.3V Receiver Power Supply
6	MOD-DEF0	Module Definition 0	16	VccT	+3.3V Transmitter Power Supply
7	Rate Select	Select between full or reduced receiver bandwidth	17	VeeT	Transmitter Signal Ground
8	LOS	Loss of Signal	18	TD+	Transmitter Data Non-Inverted Differential Input
9	VeeR	Receiver Signal Ground	19	TD-	Transmitter Data Inverted Differential Input
10	VeeR	Receiver Signal Ground	20	VeeT	Transmitter Signal Ground

Figure 1: SFP Transceiver Package Outline in mm [inches].



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