



## **FEATURES**

- Supports up to 10.7Gb/s bit rates
- 0 to 70°C operating case temperature
- SFP+ package with single LC receptacle connector
- Hot-pluggable capability
- Single 3.3V power supply
- 1270nm DFB transmitter and 1330nm high performance PIN receiver
- Up to 40km transmission distance over SMF
- Low power dissipation
- SFI electrical interface
- Low EMI and excellent ESD protection
- Built-in Digital Diagnostic Monitoring (DDM) function
- Class I laser safety standard IEC-60825 compliant
- RoHS-6 compliance

## **APPLICATIONS**

- 10GBASE-LR/LW
- CPRI rates 2.4576 Gb/s, 4.9152Gb/s, 6.144Gb/s, 9.83Gb/s
- 10Gb/s Fiber Channel

## **STANDARDS**

- Complies with SFP+ MSA (SFF-8431)
- Complies with SFF-8472
- Complies with FCC 47 CFR Part 15, Class B
- Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

**ABSOLUTE MAXIMUM RATING**

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Ambient Temperature	$T_{STG}$	-40	85	°C	
Operating Case Temperature	$T_c$	0	70	°C	
Operating Humidity	OH	5	95	%	
Power Supply Voltage	$V_{CC}$	-0.5	3.6	V	

**RECOMMENDED OPERATING CONDITION**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	$T_c$	0		70	°C	
Power Supply Voltage	$V_{CC}$	3.13	3.3	3.47	V	
Power Supply Consumption	P			1	W	
Data Rate				10.7	Gbps	
Data Rate Drift		-100		+100	PPM	

**TRANSMITTER OPTICAL CHARACTERISTICS**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Centre Wavelength	$\lambda_c$	1260	1270	1280	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Average Output Power	$P_{OUT}$	+1		+6	dBm	Launched into SMF Fiber
Average Power of OFF Transmitter	$P_{OUT-OFF}$			-30	dBm	
Extinction Ratio	ER	3.5			dB	
Side Mode Suppression Ratio	SMSR	30			dB	

**TRANSMITTER ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Input Differential Swing		180		700	mV	
Input Differential Impedance		85	100	115	$\Omega$	
TX Disable	Disable		2		$V_{CC}+0.3$	V
	Enable		-0.3		0.8	V
TX Fault	Fault		2.4		$V_{CC_{HOST}}$	V
	Normal		-0.3		0.4	V

**RECEIVER OPTICAL CHARACTERISTICS**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Wavelength	$\lambda_c$	1320		1340	nm	
Sensitivity	SEN			-14.4	dBm	PRBS2 <sup>31</sup> -1 @ 10.3125Gbps BER $\leq 1 \times 10^{-12}$
Saturation Optical Power	SAT	0.5			dBm	
LOS De-Assert	LOS <sub>D</sub>			-18	dBm	
LOS Assert	LOS <sub>A</sub>	-32			dBm	
LOS Hysteresis	HYS	0.5		5	dB	

**RECEIVER ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Differential data output swing	V <sub>out</sub>	350		850	mV	
Rx_LOS Output Voltage - High	High	2.4		V <sub>CC_HOST</sub>	V	
Rx_LOS Output Voltage - Low	Low	-0.3		0.4	V	
Output Rise Time, 20%~80%	TR	28			ps	
Output Fall Time, 20%~80%	TF	28			ps	

PIN DESCRIPTION			
PIN	Name	Description	Notes
1	V <sub>EE</sub> T	Transmitter Ground	
2	TX_Fault	Transmitter Fault Indication	Low : normal; High: abnormal
3	TX_Disable	Transmitter Disable	Low : transmitter on; High: transmitter off
4	SDA	SDA	The data line of two wire serial interface
5	SCL	SCL	The clock line of two wire serial interface
6	MOD_ABS	Module Absent	Connected to V <sub>EE</sub> T or V <sub>EE</sub> R in the module
7	RS0	Not Connected	
8	RX_LOS	Loss of Signal	Low : signal detected; High: loss of signal
9	RS1	Not Connected	
10	V <sub>EE</sub> R	Receiver Ground	
11	V <sub>EE</sub> R	Receiver Ground	
12	RD-	Inv. Received Data Out	AC-coupled, CML
13	RD+	Received Data Out	AC-coupled, CML
14	V <sub>EE</sub> R	Receiver Ground	
15	V <sub>CC</sub> R	Receiver Power	
16	V <sub>CC</sub> T	Transmitter Power	
17	V <sub>EE</sub> T	Transmitter Ground	
18	TD+	Transmit Data In	AC-coupled, CML
19	TD-	Inv. Transmit Data In	AC-coupled, CML
20	V <sub>EE</sub> T	Transmitter Ground	

## PIN OUT DRAWING (TOP VIEW)

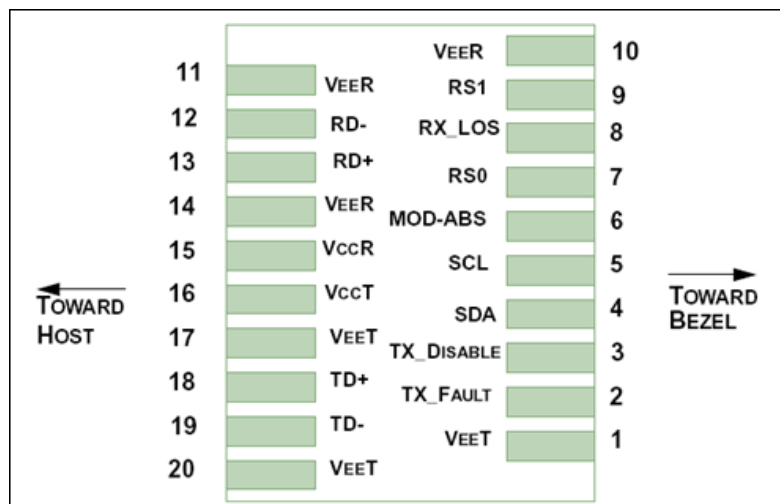


Figure 1 Pin Out Drawing (Top view)

## TYPICAL INTERFACE CIRCUIT

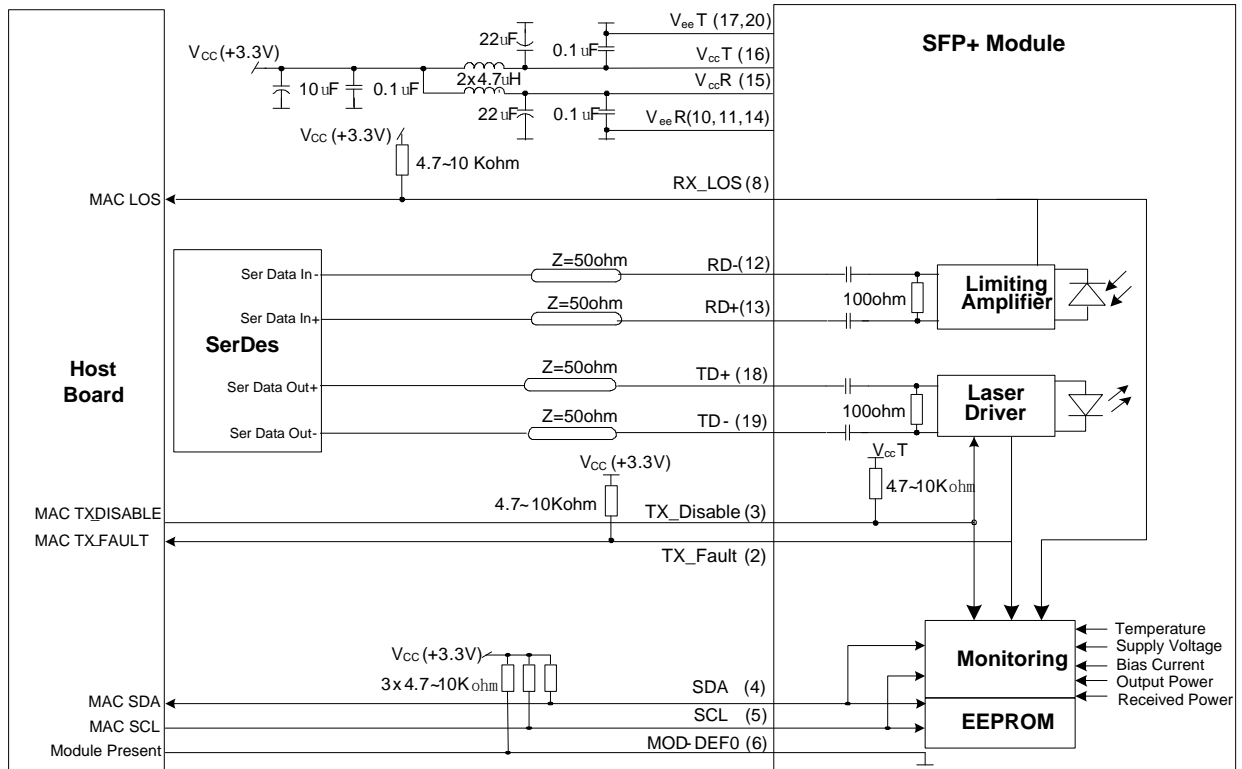


Figure 2 Typical Interface Circuit

## PACKAGE OUTLINE

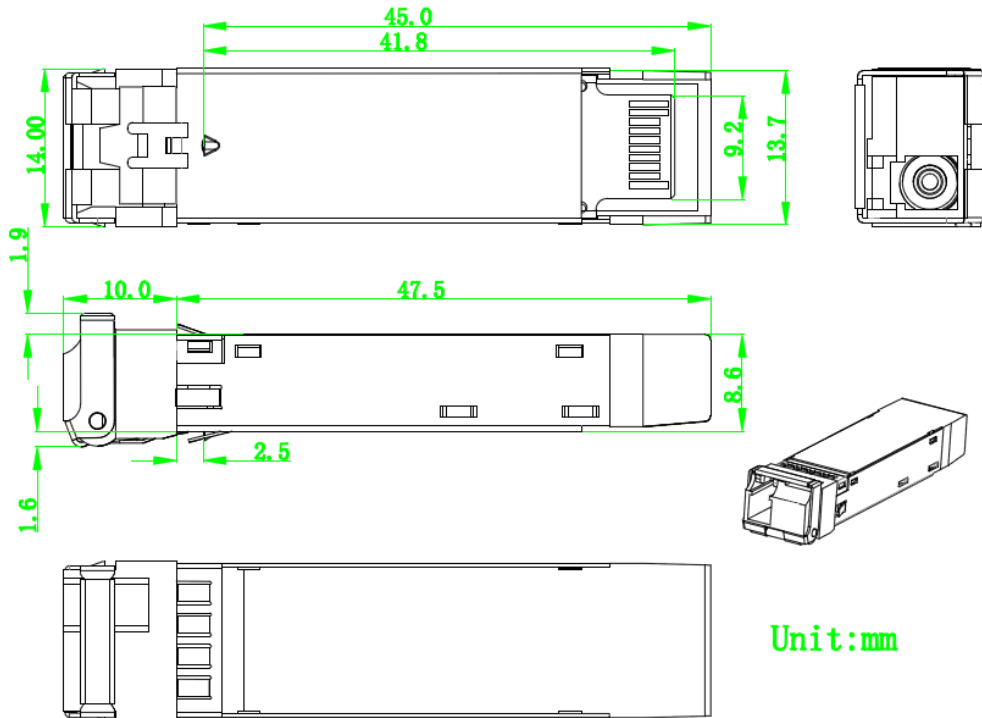
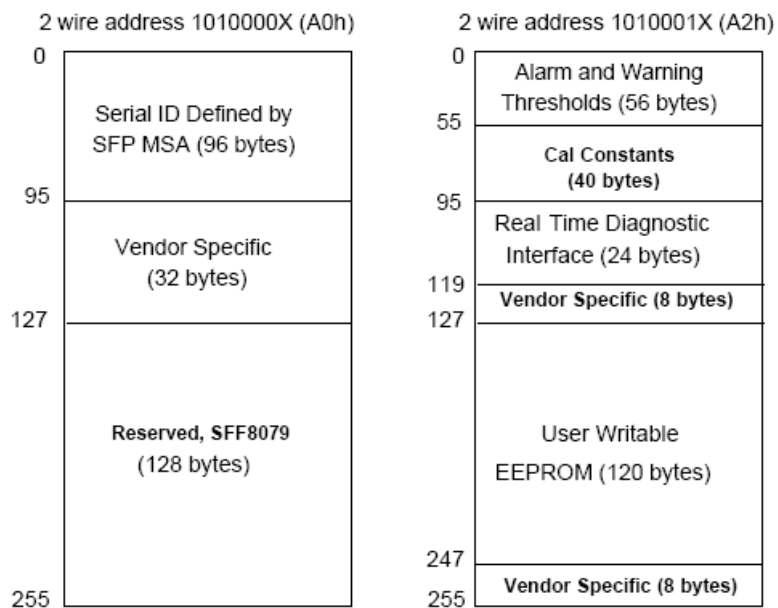


Figure 3 Package Outline

**EEPROM INFORMATION**

**Figure 4 EEPROM Memory Map Specific Data Field Descriptions**
**DIGITAL DIAGNOSTIC MONITORING INTERFACE**

Parameter	Range	Accuracy	Calibration	NOTES
Temperature	-5 to 70°C	±5°C	Internal	LSB: 1/256C
Voltage	2.97 to 3.63V	±3%	Internal	LSB: 0.1mV
Bias Current	0 to 100mA	±10%	Internal	LSB: 2uA
TX Power	+1 to +6dBm	±3dB	Internal	LSB: 0.1uW
RX Power	-16 to +1dBm	±3dB	Internal	LSB: 0.1uW

**ORDERING INFORMATION**

PN	Temperature Rating	Unit
SO042777-PLGA	0 ~ 70	°C

**WARNINGS**

- Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.
- Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

**LEGAL NOTES**

- All information contained in this document is subject to change without notice, at Superxon’s sole and absolute discretion. Superxon Technology warrants performance of its products to current specifications only in accordance with the company’s standard one-year warranty; however, specifications designated as “preliminary” are given to describe components only, and Superxon Technology expressly disclaims any and all warranties for said products, including express, implied, and statutory warranties, warranties of merchantability, fitness for a particular purpose, and non-infringement of proprietary rights. Please refer to the company’s Terms and Conditions of Sale for further warranty information.
- Superxon Technology assumes no liability for applications assistance, customer product design, software performance, or infringement of patents, services, or intellectual property described herein. No license, either express or implied, is granted under any patent right, copyright, or intellectual property right, and Superxon Technology makes no representations or warranties that the product(s) described herein are free from patent, copyright, or intellectual property rights. Products described in this document are NOT intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. Superxon Technology customers using or selling products for use in such applications do so at their own risk and agree to fully defend and indemnify Superxon Technology for any damages resulting from such use or sale.
- THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED ON AN “AS IS” BASIS. Customer agrees that Superxon Technology is not liable for any actual, consequential, exemplary, or other damages arising directly or indirectly from any use of the information contained in this document. Customer must contact Superxon Technology to obtain the latest version of this publication to verify, before placing any order, that the information contained herein is current.
- Copyright © 2015 Superxon (Chengdu) Technology, Ltd.

All rights reserved.