10/100/1000BASE-T SFP Copper Transceiver

Features

- Up to 1.25Gbps bi-directional data links
- SFP form with compact RJ-45 connector
- Single +3.3V power supply
- 10/100/1000 BASE-T operation in host systems with SGMII interface
- Support TX_ disable and Link function
- Link lengths: up to 100 meter
- Detailed product information in EEPROM
- Physical layer IC can be accessed via 2-wire serial bus
- For 100m reach over cat 5 UTP cable
- Low power dissipation(1.0W typical)
- RoHS-10 compliant and lead-free
- Operating case temperature： 0 ~ +70℃

Applications

- 1.25 Gigabit Ethernet over Cat 5 cable
- LAN 1000Base-T

Compliance

- Compatible with SFP MSA
- Compatible with IEEE Std 802.3
- ROHS

Description

SFP-1G-TZ 1000BASE-T Copper Small Form Pluggable (SFP) modules are based on the SFP Multi Source Agreement (MSA). They are compatible with the Gigabit Ethernet standards as specified in IEEE STD 802.3. The 10/100/1000 BASE-T physical layer IC (PHY) can be accessed via I^2C, allowing access to all PHY settings and features.

Absolute Maximum Ratings

Table1-Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	℃
Operating Relative Humidity	RH	5	+95	%
Supply Voltage	Vcc	-0.5	+3.6	V

Recommended Operating Conditions

Table2-Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	TC	0	25	70	℃
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Data Rate		10		1000	Mb/s
Link Distance (SMF)	D			100	m

Electrical Characteristic

Table3-Electrical Characteristic

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Consumption				1.0	W	
Supply Current	Icc			375	mA	
Input Voltage Tolerance		-0.3		4.0	V	
Surge	Surge		30		mV	
Current		current See caution note				
Low-Speed Signals, Electronic Characteristics						
SFP Output LOW	VOL	0		0.5	V	4.7k to 10k pull-up to host_ Vcc.
SFP Output HIGH	VOH	host_ Vcc -0.5		host_ Vcc +0.3	V	4.7k to 10k pull-up to host_ Vcc.

SFP Input LOW	VIL	0		0.8	V	4.7k to 10k pull-up to Vcc.
SFP Input HIGH	VIH	2		Vcc + 0.3	V	4.7k to 10k pull-up to Vcc.
High-Speed Electrical Interface, Transmission Line-SFP						
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3
Tx Output Impedance	Zout,TX		100		Ohm	Differential
Rx Input Impedance	Zin,RX		100		Ohm	Differential
High-Speed Electrical Interface, Host-SFP						
Single Ended Data Input Swing	Vinsing	250		1200	mV	Single ended
Single Ended Data Output Swing	Voutsing	350		800	mV	Single ended
Tx Input Impedance	Zin		50		Ohm	Single ended
Rx Output Impedance	Zout		50		Ohm	Single ended

General Specifications

Table4-Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Data Rate	BR	10		1000	Mb/s	IEEE 802.3 compatible
Power Supply Voltage	L			100	m	Category 5 UTP. BER $<10^{-12}$

Notes:

[1] Clock tolerance is +/- 50 ppm

[2] By default, the HXSX-ETRx-4 is a full duplex device in preferred master mode

[3] Automatic crossover detection is enabled. External crossover cable is not required

[4] By default, 1000 BASE-T operation requires the host system to have an SERDES interface with no clocks.

Pin Description

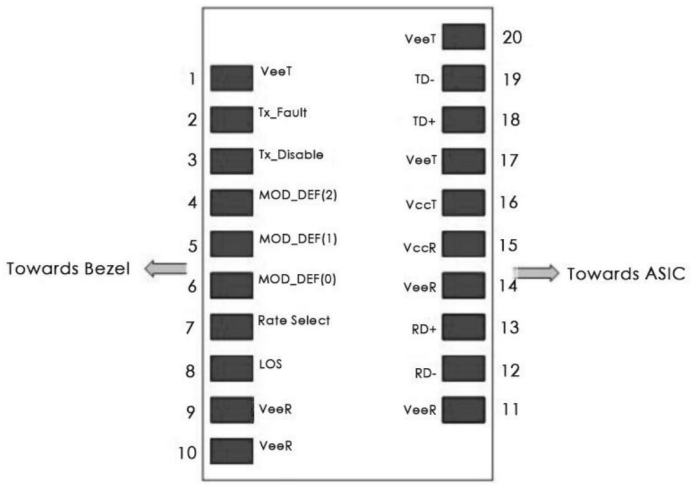

Figure1 Module Interface to Host

SFP Module PIN Definition

Table5-SFP Module PIN Definition

	Symbol	Name / Description	Note
1	VeeT	Module Transmitter Ground	1
2	TX_Fault	Module Transmitter Fault	
3	TX_Dis	Transmitter Disable; Turns off transmitter laser output	
4	MOD-DEF2	Module Definition 2	2
5	MOD-DEF1	Module Definition 1	2
6	MOD-DEF0	Module Definition 0	2
7	Rate Select	Not used	
8	RX_LOS	Loss of Signal	3
9	VeeR	Receiver Ground	1
10	VeeR	Module Receiver Ground	1
11	VeeR	Module Receiver Ground	
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Data Output	
14	VeeR	Module Receiver Ground	1
15	VccR	Module Receiver 3.3 V Supply	
16	VccT	Module Receiver 3.3 V Supply	
17	VeeT	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	VeeT	Module Transmitter Ground	1

[1] Circuit ground is connected to chassis ground

[2] Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0 V and 3.6 V. MOD_DEF (0) pulls line low to indicate module is plugged in.

[3] LVTTL compatible with a maximum voltage of 2.5V.

Mechanical Outline

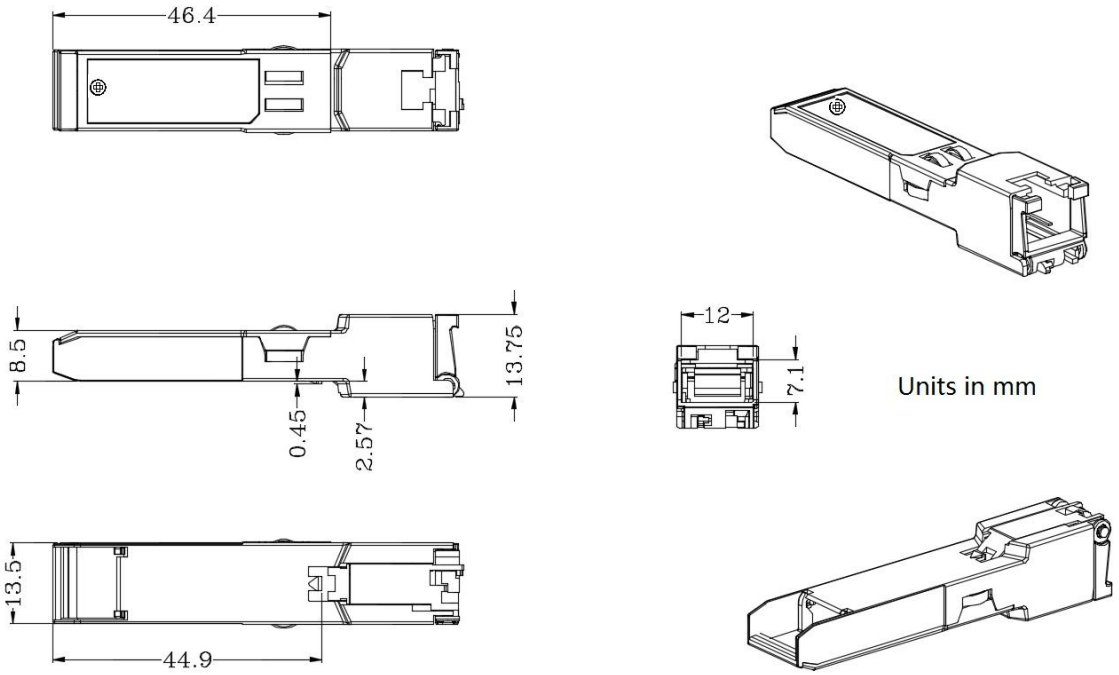

Figure2 Mechanical Outline

Further Information:

Web www.naddod.com

Email For order requirements: sales@naddod.com

For customer service: support@naddod.com

For technical support: tech@naddod.com

For cooperation: agency@naddod.com

For other informations: info@naddod.com

Disclaimer

1. We are committed to continuous product improvement and feature upgrades, and the contents contained in this manual are subject to change without notice.

2. Nothing herein should be construed as constituting an additional warranty.

3. NADDOD assumes no responsibility for the use or reliability of equipment or software not provided by NADDOD.