

2.5GBASE-T SFP Copper RJ-45 100m Industrial Transceiver (LOS)

SFP-2.5G-T-I



Application

- 2.5GBASE-T 2.5G Ethernet

Features

- Support 2.5Gbase-T on line port
- Support 2.5Gbase-X on host port
- Hot-pluggable SFP footprint
- Compact RJ-45 connector assembly
- Single +3.3V power supply
- 2.5 Gigabit Ethernet over Cat 5A cable
- Operating case temperature: 0° C to +70° C, -40° C to +85° C
- Power dissipation <1.5W

Description

2.5G -T-C/INFB Copper Small Form Pluggable (SFP) transceivers are based on the SFP MSA . Compatible with the 2.5Gbase-T standards as specified in IEEE Std 802.3 .

The module uses the SFP's RX_LOS(must be pulled up on host) pin for link indication. If pull up or open SFP's TX_DISABLE pin, PHY IC be reset.

Product Specifications

I. General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes/Conditions
Data Rate	BR			2.5	Gb/sec	IEEE 802.3 compatible. Notes1

Notes:

1. Clock tolerance is +/- 50 ppm

II. Environmental Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes/Conditions
Operating Case Temperature	Top	0		70	° C	IEEE 802.3 compatible. Notes1
		-40		85	° C	Industrial Temperature
Storage Temperature	Tsto	-40		85	° C	Ambient temperature

III. Work Mode

Line Port	Host Port	Cable	Reach
2.5Gbase-T	2.5Gbase-X	CAT5A	100m

IV. Electrical Power Interface

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes/Conditions
Supply Current	I_{CC}			450	mA	
Input Voltage	V_{CC}	3.13	3.3	3.47	V	Referenced to GND
Maximum Voltage	V_{max}			4	V	
Surge Current	I_{surge}		TBD		mA	Hot plug above steady state current.

Notes:

- 1. Module has an input voltage range of 3.3 V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.
- 2. Power consumption and surge current are higher than the specified values in the SFP MSA

V. Low-Speed Signals

Parameter	Symbol	Min.	Max.	Unit	Notes/Conditions
SFP Output LOW	V_{OL}	0	0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
SFP Output HIGH	V_{OH}	host_Vcc -0.5	host_Vcc + 0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
SFP Input LOW	V_{IL}	0	0.8	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector
SFP Input HIGH	V_{IH}	2	Vcc + 0.3	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector

Notes:

- 1. MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals (see section VII, "Serial Communication Protocol"). Both MOD_DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc

VI. High-Speed Electrical Interface

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes/Conditions
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High-Speed Electrical Interface, Transmission Line-SFP

Tx Output Impedance	Zout,TX		100		Ohm	Differential, for all frequencies between 1MHz and 125MHz
Rx Input Impedance	Zin,RX		100		Ohm	Differential, for all frequencies between 1MHz and 125MHz

High-Speed Electrical Interface, Host-SFP

Differential data input swing	Vinsing	125		750	mV	Single ended
Differential data output swing	Voutsing	400		750	mV	Single ended
Rise/Fall Time	Tr,Tf	30			psec	20%-80%
Tx Input Impedance	Zin		100		Ohm	Differential
Rx Output Impedance	Zout		100		Ohm	Differential

Notes:

- 1. All high-speed signals are AC-coupled internally

VII. Serial Bus

Parameter	Symbol	Min.	Typ	Max.	Unit
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I ² C Clock Rate		0		200,000	Hz
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VIII. PIN Definitions

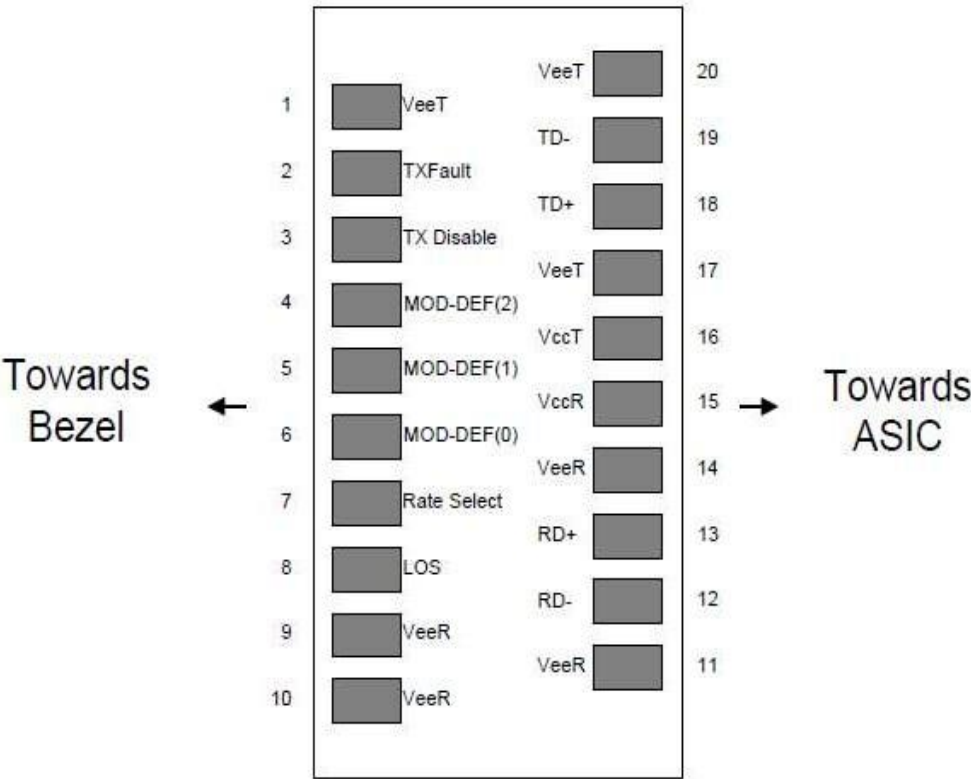


Figure 1: Diagram of host board connector block pin numbers and names

Pin	Symbol	Name/Description	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	
2	TFAULT	Transmitter Fault. Not supported.	
3	TxDIS	High: Reset PHY chipset; Low: Normal	1
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	2
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	2
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	2

Pin	Symbol	Name/Description	Ref.
7	Rate Select	No connection required	
8	LOS	High indicates no linked on Copper. low indicates linked on Copper.	
9,10,11	VeeR	Receiver Ground (Common with Transmitter Ground)	
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground (Common with Transmitter Ground)	
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground)	

Notes:

- 1. PHY disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V
- 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.

IX. Recommended Application Circuit

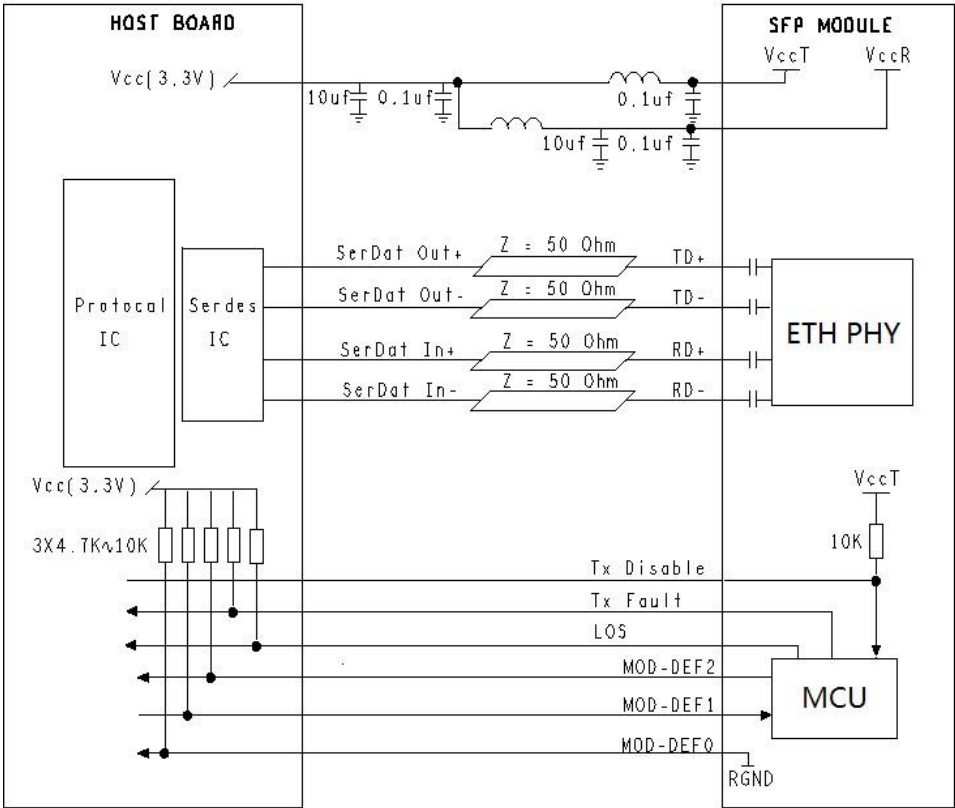


Figure 1: Recommended Circuit

X. Mechanical Diagram

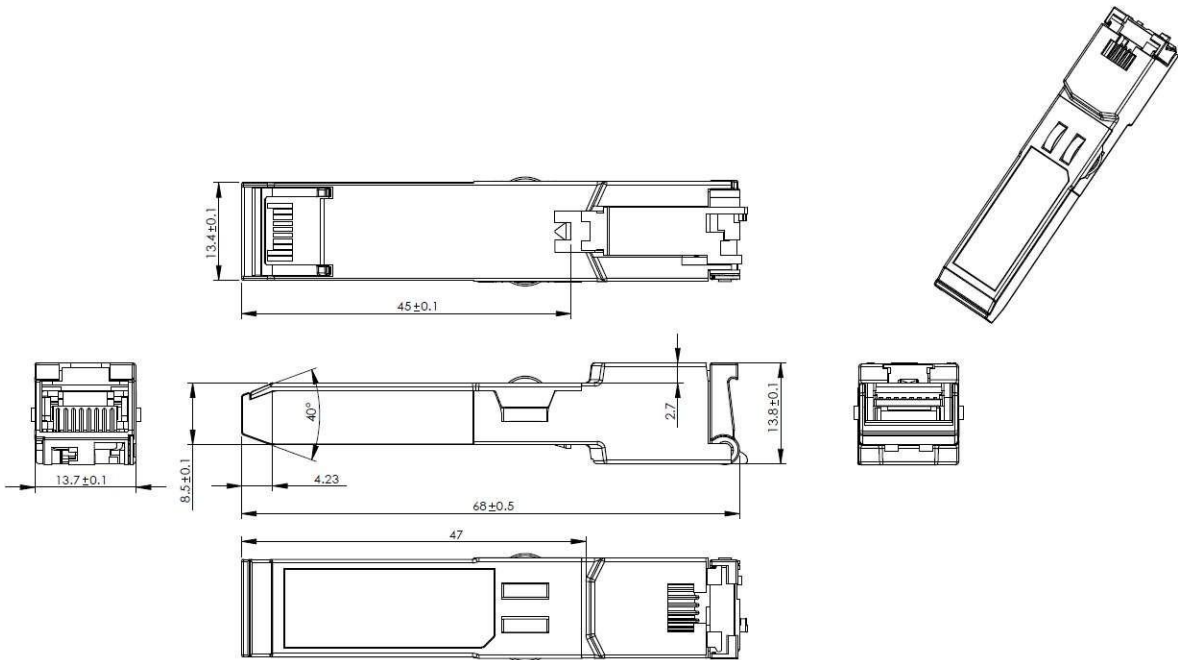


Figure 2: Outline Drawing

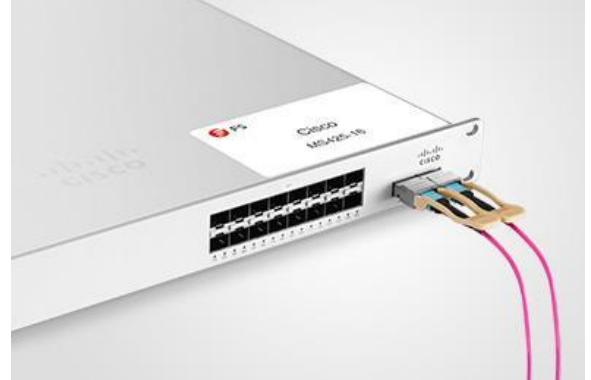
Test Center

I. Compatibility Testing

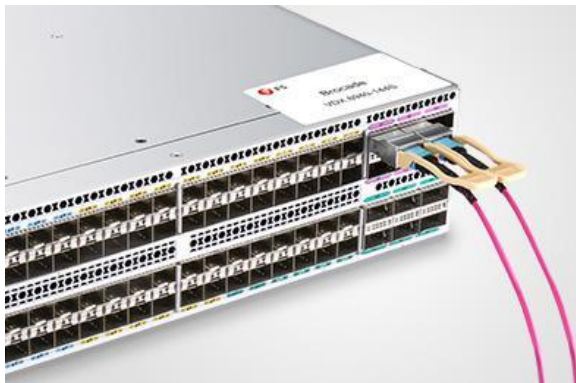
Each fiber optical transceiver has been tested in host device on site in FS Assured Program to ensure full compatibility with over 200 vendors.



Cisco Catalyst C9500-24Y4C



Cisco MS425-16



Brocade VDX 6940-144S



Dell EMC Networking Z9100-ON



Force10 S60-44T

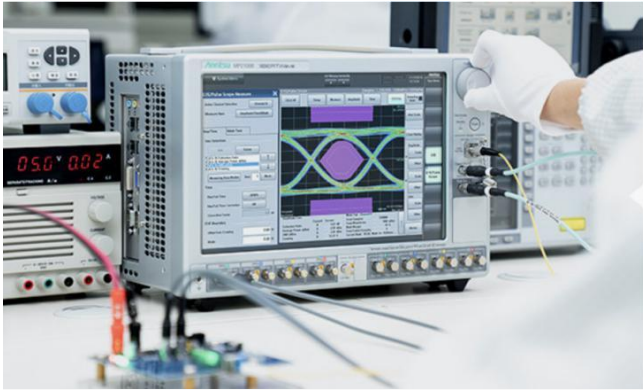


HUAWEI S6720-30L-HI-24S

Above is part of our test bed network equipment. For more information, please click the [Test Bed PDF](#). It will be updated in real time as we expand our portfolio.

II. Performance Testing

Each fiber optical transceiver has been fully tested in FS Assured Program equipped with world's most advanced analytical equipment to ensure that our transceivers work perfectly on your device.



1. TX/RX Signal Quality Testing

Equipped with the all-in-one tester integrated 4ch BERT & sampling oscilloscope, and variable optical attenuator to ensure the input and output signal quality.

- Eye Pattern Measurements: jitter, Mask Margin, etc
- Average Output Power
- OMA
- Extinction Ratio
- Receiver Sensitivity
- BER Curve

2. Reliability and Stability Testing

Subject the transceivers to dramatic changes in temperature on the thermal shock chamber to ensure reliability and stability of the transceivers.

- Commercial: 0 °C to 70 °C
- Extended: -5 °C to 85 °C
- Industrial: -40 °C to 85 °C



3. Transfer Rate and Protocol Testing

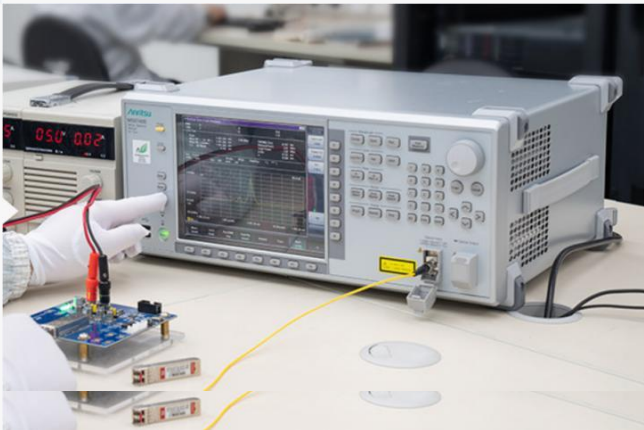
Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI

4. Optical Spectrum Evaluation

Evaluate various important parameters with the Optical Spectrum Analyzer to meet the industry standards.

- Center Wavelength, Level
- OSNR
- SMSR
- Spectrum Width



Order Information

Part Number	Description
SFP-2.5G-T	SFP 2.5GBASE-T Copper RJ-45 100m Transceiver
SFP-2.5G-T-I	SFP 2.5GBASE-T Copper RJ-45 100m Industrial Transceiver