



# OCTECH 10/100/1000BASE-T SFP Transceiver



## Description

The OCTECH 10/100/1000BASE-T Copper Small Form Pluggable (SFP) is based on the SFP Multi Source Agreement (MSA). It is compatible with the Gigabit Ethernet and 10/100/1000BASE-T standards as specified in IEEE Std 802.3

*ALL OF OUR TRANSCEIVERS ARE TIER 1 LASERS, MANUFACTURED TO OEM SPECIFICATIONS, ROHS (LEAD FREE), TAA COMPLIANT AND COMPLIANT WITH THE SFP MSA (MULTISOURCE AGREEMENT)AND COME WITH A LIFETIME WARRANTY.*

## Features

- Support 10/100/1000BASE-T operation in host systems with SGMII interface.
- Up to 1.25Gbps bi-direction data links.
- Hot-pluggable SFP footprint.
- Fully metallic enclosure for low EMI.
- Low power dissipation (1.05 W typical).
- Compact RJ-45 connector assembly.
- 100m transmission over unshielded twisted pair(UTP) Category 5 Cable
- Access to physical layer IC via 2-wire serial bus

## Applications

- LAN 1000Base-T.
- 1.25 Gigabit Ethernet over Cat 5 cable.
- Switch to switch interface.
- Router/Server interface.

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## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ	Max.
Maximum Supply Voltage	Vcc	-0.5		4.0
Storage Temperature	Vcc	-40		85

## Normal Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Temperature	Top	0		70	°C
Supply Voltage	Vcc	3.14	3.3	3.46	V

## Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes/Conditions
<b>+3.3 Volt Electrical Power Interface</b>						
Supply Current	Icc		300	3350	mA	
Input Voltage	Vcc	3.13	3.3	3.47	V	
Surge Current	I <sub>surge</sub>			30	mA	
<b>Low-Speed Signals, Electronic Characteristics</b>						
SFP Output LOW	VOL	0		0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
SFP Output HIGH	VOH	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	VIL	0		0.8	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector.
SFP Input HIGH	VIH	2		Vcc + 0.3	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector.
<b>High-Speed Electrical Interface, Transmission Line-SFP</b>						
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3
Tx Output Impedance	Z <sub>out, Tx</sub>		100		Ohm	Differential, for all frequencies between 1 MHz and 125MHz
Rx Input Impedance	Z <sub>in, RX</sub>		100		Ohm	Differential, for all frequencies between 1 MHz and 125MHz

## Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes/Conditions
<b>High-Speed Electrical Interface, Host-SFP</b>						
Single ended data input swing	Vin	250		1200	mV	Single Ended
Single ended data output swing	Vout	350		800	mV	Single Ended
Rise/Fall Time	Tr, Tf		175		psec	20%-80%
Tx Input Impedance	Zin		50		Ohm	Single Ended
Rx Output Impedance	Zout		50		Ohm	Single Ended

## General Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes/Conditions
Datarate		10		1000	Mbps	
Distance				100	m	Category 5 UTP. BER <10 <sup>-12</sup>

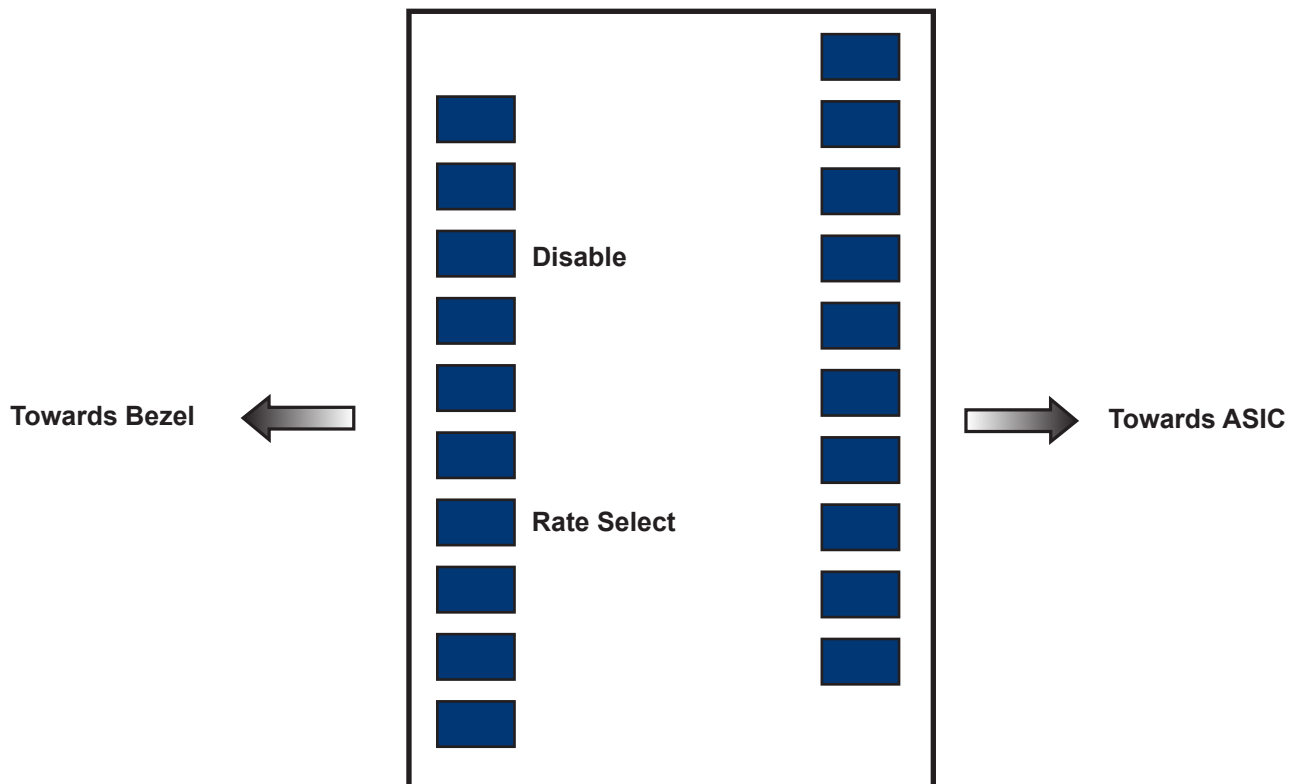
## Pin Function Definitions

Pin Number	Name	Function	Plug Seq.	Notes
1	Vee T	Transmitter Ground	1	
2	TX Fault	Trasmitter Fault Indication	3	Not used
3	TX Disable	Transmitter Disable	3	1
4	MOD-DEF2	Module Definition 2	3	2
5	MOD-DEF1	Module Definition 1	3	2
6	MOD-DEF0	Module Definition 0	3	2
7	Rate Select	Not Connect	3	Function not available
8	LOS	Loss of Signal	3	Not used
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Received Data Out	3	
13	RD+	Received Data Out	3	
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	
19	TD-	Inv. Transmit Data In	3	
20	VeeT	Transmitter Ground	1	

## Notes:

- 1) PHY disabled on TDIS > 2.0V or open, enabled on TDIS < 0.8V, used to reset the module.
- 2) Should be pulled up with 4.7k – 10k Ohms on host board to a voltage between 2.0V and 3.6V. MOD\_DEF(0) pulls line low to indicate module is plugged in.

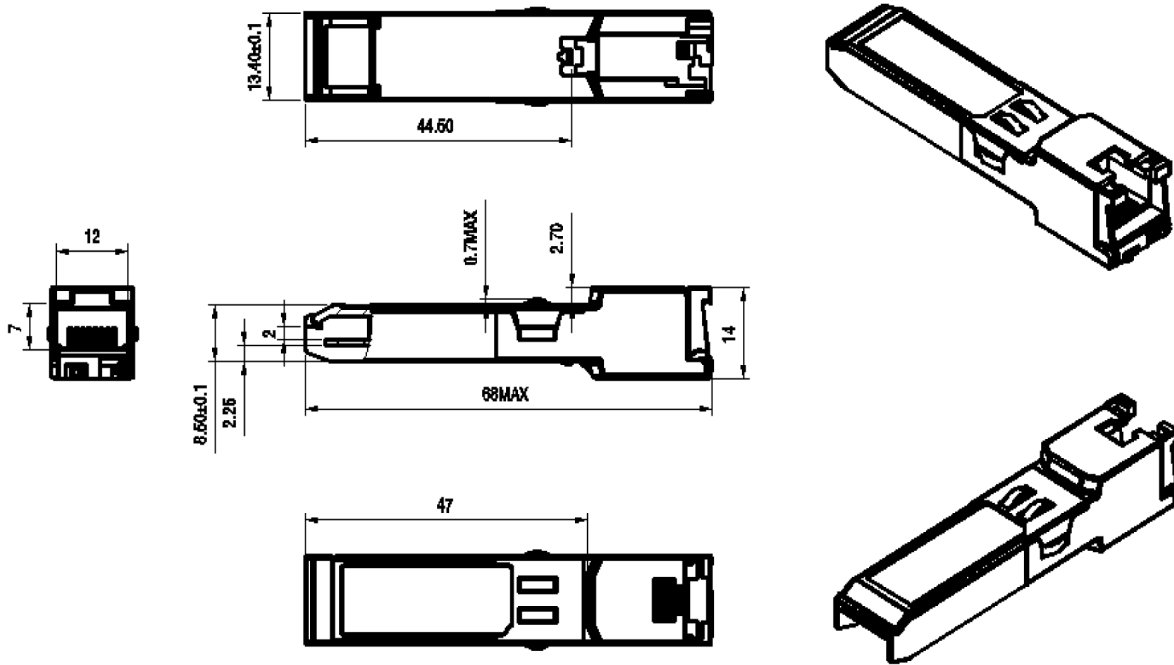
## SFP Transceiver Electrical Pad Layout



## Serial Communication Protocol

The OCTECH 1000BASE-T Copper SFP supports the 2-wire serial communication protocol outlined in the SFP MSA. This SFP uses a 128 byte EEPROM with an address of A0h. The 10/100/1000BASE-T physical layer IC can also be accessed via the 2-wire serial bus at address ACh.

## Mechanical Specifications



Pin Number	Data Rate	Link type	Distance	Connector
1000BASE-T	10/100/1000M	Cat 5	100m	RJ45

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 .....% %\$' `GnWUa cfY; `Yb`8 fžHfUVi W`7 Ubncbž75` - &\* +-  
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