



100BASE-T 100m SFP Copper OPTX-SFP-GE-T

Product Features

- 1.25 Gigabit Ethernet over Cat 5 cable
- Electrical interface specifications per SFF-8431
- Management interface specifications per SFF-8432 and SFF-8472
- Support 10/100/1000 BASE-T Operation
- Up to 100m over Cat 5 cable
- Single +3.3V power supply
- Class 1 laser safety certified
- 1.2W maximum power consumption with established link
- Operating temperature Options: 0~70°C; -40~85°C
- RoHS Compliant

Applications

- High speed storage area networks
- Switched Backplane Applications
- Switch to Switch Interface

Description

The **OPTX-GE-T** is full-duplex throughput of 10/100/1000Mbps by transporting data over shielded and unshielded twisted pair category 5 cable with 5-level PAM (Pulse Amplitude Modulation) signals. The module takes signals from both the twisted pair category 5 cable and the SERDES interface. Pin count overhead between the MAC and the PHY is minimized, and Gigabit Ethernet operation is achieved with maximum space savings



Specification

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Operating Temperature	TOP	-40	-	85	°C	Case temperature
Storage Temperature	TSTO	-40	-	85	°C	Ambient temperature
Operating Relative Humidity	RH	5	-	95	%	
Serial Bus Timing Requirements						
Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
I ² C Clock Rate		0	-	100,000	Hz	

+3.3V Electrical Power Interface

Parameter	Symbol	Min	Typ	Max	Units	Notes
Supply Current	IS	-	320	400	mA	
Input Voltage	VCC	3.13	3.3	3.47	V	
Maximum Voltage	VMAX	-	-	3.8	V	

Low-Speed Signals, Electronic Characteristics

Parameter	Symbol	Min	Max	Units	Notes
SFP Output LOW	VOL	0	0.5	V	
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	measured at host side of connector
SFP Input HIGH	VIH	2	VCC+0.3	V	

High-Speed Electrical Interface, Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Line Frequency	fL	-	125	-	MHz	5-level encoding, per IEEE802.3
Tx Output Impedance	ZOUT,TX	-	100	-	Ohm	Differential, for all frequencies be-
Rx Input Impedance	ZIN,RX	-	100	-	Ohm	tween 1MHz and 125MHz



High-Speed Electrical Interface, Host-SFP

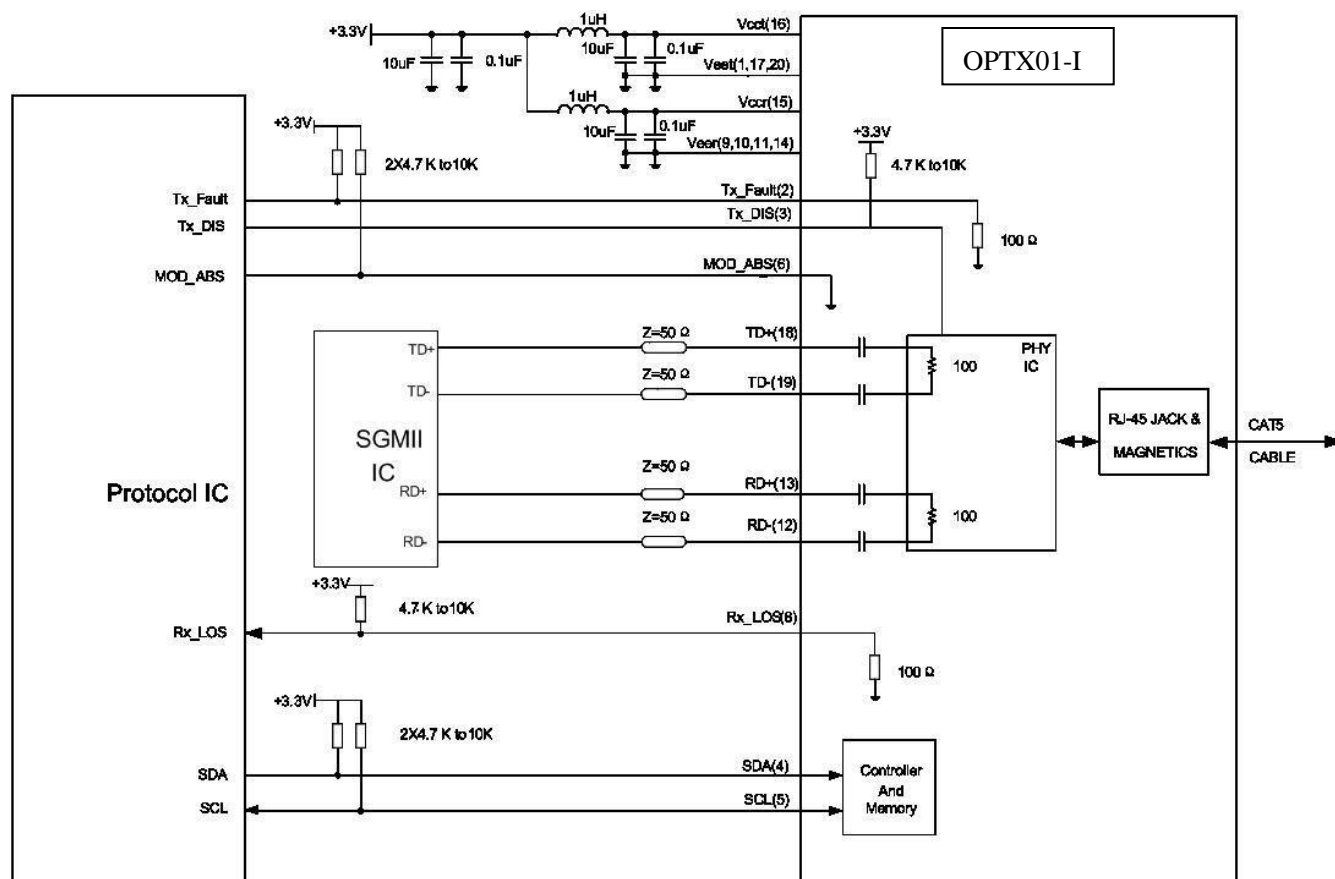
Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Transmitter Differential Input Voltage	VIN	500	-	2400	mV	Differential voltage swings
Receiver Differential Output Voltage	VOUT	700	-	1600	mV	Differential voltage swings
Rise and Fall Time	tr / tf	-	175	-	ps	20% - 80%
Tx Input Impedance	ZIN	-	50	-	Ohm	Single ended
Rx Output Impedance	ZOUT	-	50	-	Ohm	Single ended

General

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Data Rate	BR	10		1000	Mb/sec	IEEE802.3 compatible.
Cable Length	L	-	-	100	m	Category 5 UTP. BER <10 ⁻¹²



Electrical Interface



Serial Communication Protocol

EEPROM Serial ID Memory Contents at address A0

All OptiX² SFP support the 2-wire serial communication protocol outlined in the SFP MSA. These SFP use an 128 byte E2PROM with an address of A0h.

Internal ASIC Registers

The 1000BASE-T physical layer IC can also be accessed via the 2-wire serial bus at address ACh



Pin Description

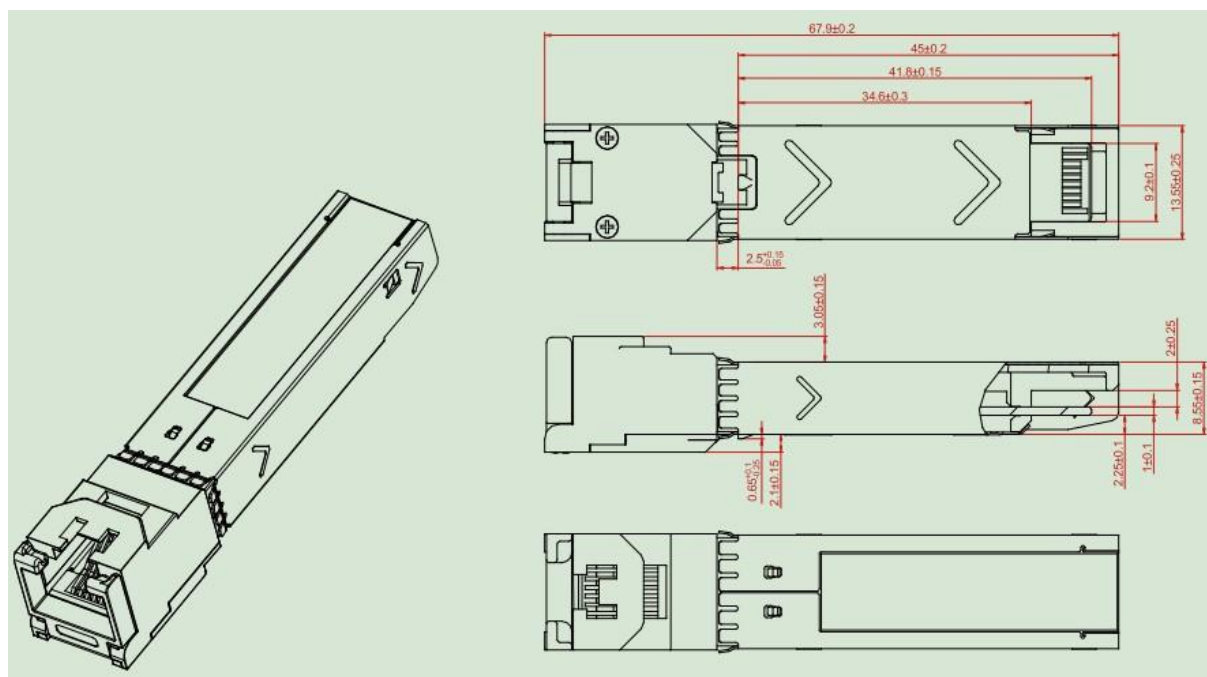
Pin	Symbol	Name/Description	Note
1	V _{EET}	Transmitter ground (common with receiver ground)	1
2	T _{FAULT}	Transmitter Fault. Not supported	
3	T _{DIS}	Transmitter Disable. PHY disabled on high or open	2
4	MOD_DEF(2)	Module Definition 2. Data line for serial ID	3
5	MOD_DEF(1)	Module Definition 1. Clock line for serial ID	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication.	4
9	V _{EER}	Receiver ground (common with transmitter ground)	1
10	V _{EER}	Receiver ground (common with transmitter ground)	1
11	V _{EER}	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V _{EER}	Receiver ground (common with transmitter ground)	1
15	V _{CCR}	Receiver power supply	
16	V _{CCT}	Transmitter power supply	
17	V _{EET}	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	V _{EET}	Transmitter ground (common with receiver ground)	1

Notes:

1. Circuit ground is isolated from chassis ground
2. PHY disabled on TxDIS > 2.0V or open, enabled on TxDIS < 0.8V
3. 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.
4. LVTTTL compatible with a maximum voltage of 2.5V.



Mechanical Dimensions



Ordering Information

Part No	Package Type	Temp	Reach	RoHS
OPTX-GE-T	SFP Copper	0~70°C	100m	Compliant
OPTX-GE-T-HT	SFP Copper	-40~85°C	100m	Compliant

NOTICE:

OptiX² reserves the right to make changes to this product in this specification without notice, in order to improve product performance.