

DATA SHEET

MODULETEKSFP-GE-T-xxxx-C10

1000BASE-T SFP (Small Form Pluggable) Copper Transceiver
1.25 Gigabit Ethernet

SFP-GE-T-xxxx-C10 Overview

ModuleTek's SFP-GE-T-xxxx-C10 Copper SFP transceivers are high performance integrated duplex data link for bi-directional communication over CAT 5 unshielded twisted pair copper cable. The transceiver module is compliant with the SFP Multi-Source Agreement (MSA) and 1000BASE-T standards as specified in IEEE 802.3. With the hot pluggability, the module offers a flexible and easy way to be installed into SFP MSA compliant ports at any time without the interruption of the host equipment operating online.

Product Features

- Up to 1.25Gb/s bi-directional data links
- Compliant with IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab
- Compliant with SFP MSA
- Hot-pluggable SFP footprint
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- RJ-45 connector
- Auto-sense MDI/MDIX
- Single power supply 3.3V
- RoHS Compliant
- Operating temperature range: 0°C to 70°C

Applications

1.25 Gigabit Ethernet

Ordering Information

Part Number	Description	Operating Temperature Range
SFP-GE-T-AUTO-C10	1000BASE-T SFP Copper RJ-45 Connector 100m Auto Negotiation default mode, commercial temperature	0°C to70°C
SFP-GE-T-FULL-C10	1000BASE-T SFP Copper RJ-45 Connector 100m not support Auto Negotiation default mode, commercial temperature	0°C to70°C
SFP-GE-T-SGMII-C10	1000BASE-T SFP Copper RJ-45 Connector 100m SGMII default mode, commercial temperature	0°C to70°C
For More Information: ModuleTek Limited Web: www.moduletek.com Email: sales@moduletek.com		

Host Compatible Selection

Part Number	Link Indicator on RX_LOSP Pin	Compatible with 1000BASE-X auto-negotiation
SFP-GE-T-AUTO-C10	NO	YES
SFP-GE-T-FULL-C10	YES	NO
SFP-GE-T-SGMII-C10	NO	NO

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR	10		1000	Mb/sec	1
Cable Length	CL			100	m	2
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T _{OP}	0		70	°C	3
Storage Temperature	T _{STO}	-40		85	°C	4
Supply Current	I _S		320	375	mA	
Input Voltage	V _{CC}	3.14	3.3	3.46	V	
Maximum Voltage	V _{MAX}			4	V	

Notes:

1. IEEE 802.3 compatible
2. Category 5 UTP
3. Case temperature
4. Ambient temperature

High Speed Electrical Interface Host-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended Input swing	V _{IN_PP}	250		1200	mV	
Single ended output swing	V _{OUT_PP}	275		800	mV	
Rise Time /Fall Time(20%-80%)	T _R /T _F		175		ps	
Tx Input impedance	Z _{IN}		50		ohm	1
Rx Output impedance	Z _{OUT}		50		ohm	1

Notes:

1. Single ended

High Speed Electrical Interface Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Line Frequency	F_L		125		MHz	1
Tx Output Impedance Differential	Z_{OUT_TX}		100		Ohm	2
Rx Input Impedance Differential	Z_{IN_RX}		100		Ohm	2

Notes:

1. 5-level encoding
2. For all frequencies between 1MHz and 125MHz

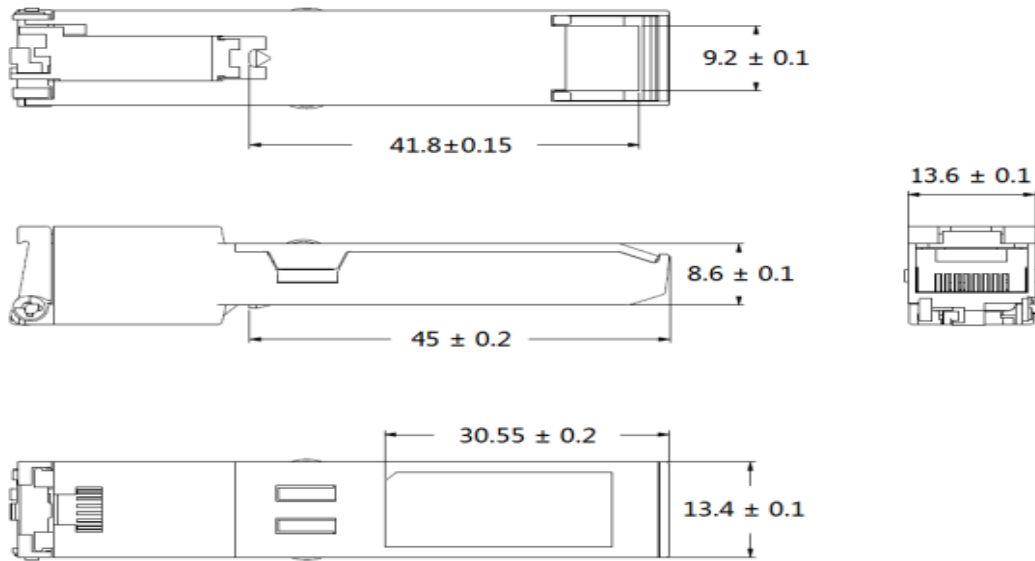
Low Speed Electrical Signal

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
SFP Output Low	V_{OL}	0		0.5	V	1
SFP Output High	V_{OH}	Host_V _{CC} -0.5		Host_V _{CC} +0.3	V	1
SFP Input Low	V_{IL}	0		0.8	V	1
SFP Input High	V_{IH}	2		V _{CC} +0.3	V	1

Notes:

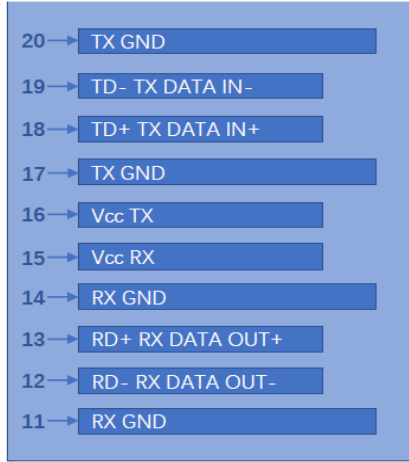
1. External 4.7-10k ohm pull-up resistor required

Dimensions

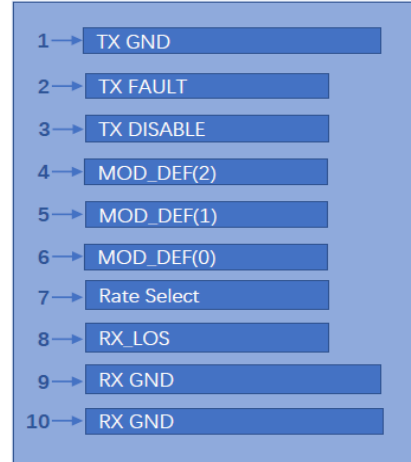
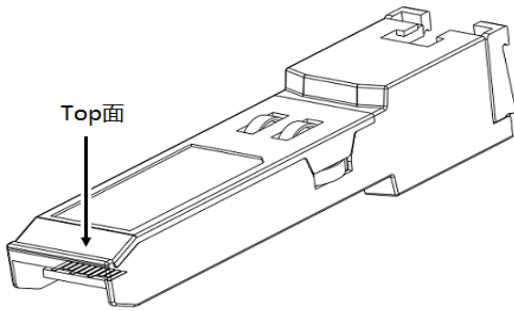


ALL DIMENSIONS ARE ± 0.2 mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

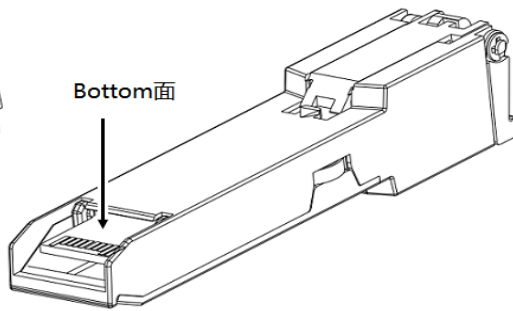
Electrical Pad Layout



Top of Board



Bottom of Board



Pin Assignment

PIN #	Symbol	Description	Remarks
1	V _{EET}	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault. Not supported	
3	TX_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)	2Module 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	
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 connected to chassis ground
- 2.Disabled: T_{DIS}>2V or open, Enabled: T_{DIS}<0.8V
3. Should Be pulled up with 4.7k –10k ohm on host board to a voltage between 2V and 3.6V

References

1. IEEE standard 802.3. IEEE Standard Department, 2005.
2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), INF-8074i.
3. Marvell Corporation–Alaska Ultra 88E1111 Integrated 10/100/1000 Gigabit Ethernet Transceiver.