Mini-GBIC (SFP)

10G Copper SFP+ Transceiver, 30M

- *Distance: 30M*
- *Operating Temperature: 0°C ~ 70°C*
- *1G/ 2.5G/ 5G/ 10GBase-T Application*

OVERVIEW

Lantech SFP-10GB-T Small Form Factor Pluggable SFP+ Copper transceivers are compliant with the current SFP+ Multi-Source Agreement (MSA) Specification. The high performance designed is integrated full duplex data link at 10Gbps over four pair Category 6a/7 cable up to 30m links. It is specifically designed for high speed communication links that require 10 Gigabit Ethernet over copper cable.

FEATURES & BENEFITS

- **Compliant with IEEE 802.3az, 802.3ab and 802.3 standard**
- **Compliant with SFP+ MSA (SFF-8431, SFF-8432)**
- **Support 10GBase-T/ 5GBase-T/ 2.5GBase-T/ 1000Base-T**
- **Hot Pluggable**
- **Auto-negotiates with other 10GBase-T PHYs**
- **Auto-detect MDI/MDI-X**
- **Support RX_LOS function**
- **I2C 2-wire interface for serial ID and PHY register access**
- **RJ-45 connector**
- **Single +3.3V power supply**
- **10G link length up to 30m with Cat.6a/7, 2.5G/5G link length up to 50m with Cat.5E, 1G link length up to 100m with Cat.5E**
- **RoHS Compliant**

SPECIFICATION

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Ts_T	-40	+85	°C	
Supply Voltage	VccT, VccR	-0.5	+4.0	V	
Storage Relative Humidity	RH	5	95	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	To_P	0	-	+70	°C	
Supply Voltage	Vcc	+3.13	+3.3	+3.47	V	
Supply Current	Icc			880	mA	
Power Consumption @30M	P_{CW}			2.9	W	

General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate	DR	1	10.3125		GB/sec	

Bit Error Rate	BER			10^{-12}		

High-Speed Electrical Interface, Host to SFP+

Vcc= 3.13V to 3.47V, T_{op} = 0 °C to 70 °C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
TD+, TD- Input Voltage Swing	V_{IN}+ / V_{IN}-	250		1200	mV	1
RD+, RD- Output Voltage Swing	Vout+ / Vout-	350		800	mV	1
Rise Time (Receiver)	Tr		175		ps	2
Fall Time (Receiver)	Tf		175		ps	2
Tx Input Impedeance	Zin		50		Ohm	1
Rx Output Impedeance	Zout		50		Ohm	1

Note1: Single ended

Note2: 20% to 80% value

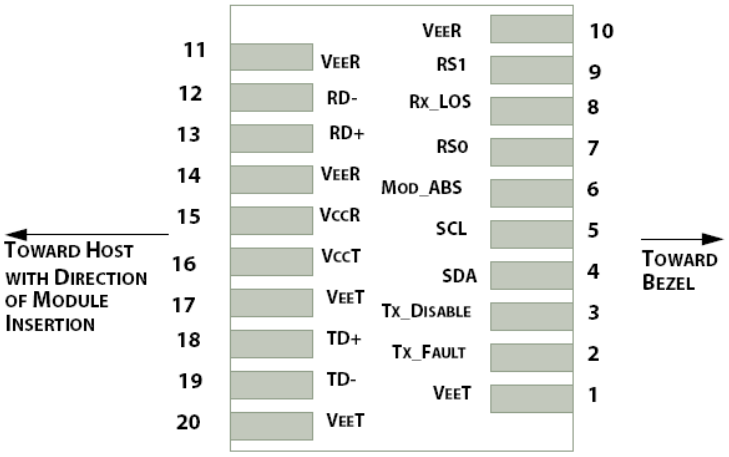
High-Speed Electrical Interface, Cable to SFP+

Vcc= 3.13V to 3.47V, T_{op} = 0 °C to 70 °C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
TX Output Impedance	Zout.TX		100		Ohm	1
RX Output Impedance	Zin.RX		100		Ohm	1

Note1: Differential for frequencies ranging from 125MHz to 10.3125GHz

Pin Assignment:



Host PCB SFP+ pad assignment top view

Pin Descriptions:

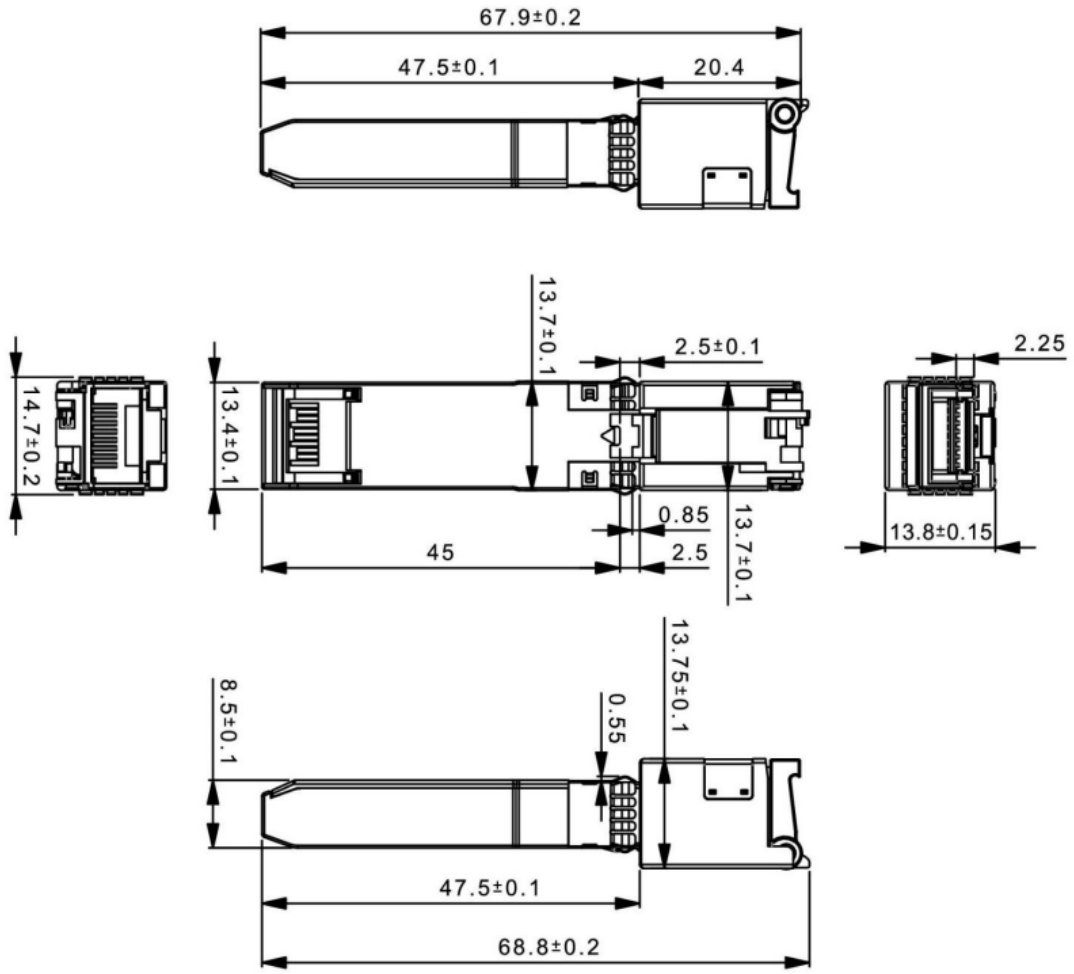
Pin	Name	Function / Description
1	VeeT	Transmitter Ground
2	TX_Fault	Transmitter Fault Indication (1)
3	TX_Disable	Transmitter Disable – Turns off transmitter laser output (2)
4	SDA	2-wire Serial Interface Data Line (SDA: Serial Data Signal) (3)
5	SCL	2-wire Serial Interface Clock (SCL: Serial Clock Signal) (3)
6	Mod_ABS	Module Absent, connected to VeeT or VeeR in the module (3)

7	RS0	Rate Select 0, optionally controls SFP+ module receiver (5)
8	Rx_LOS	Receiver Loss of Signal Indication (4)
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter (5)
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Receiver Inverted Data output, Differential LVPECL, AC coupled
13	RD+	Receiver Non-Inverted Data output, Differential LVPECL, AC coupled
14	VeeR	Receiver Ground
15	VccR	Receiver 3.3V Power Supply
16	VccT	Transmitter 3.3V Power Supply
17	VeeT	Transmitter Ground
18	TD+	Transmitter Non-Inverted Data Input, Differential LVPECL, AC coupled
19	TD-	Transmitter Inverted Data Input, Differential LVPECL, AC coupled
20	VeeT	Transmitter Ground

Note1: TX Fault is not used and is always tied to ground through a 100 ohm resistor.
Note2: TX Disable as described in the MSA is not applicable to the Copper-T module, but is used for convenience as an input to reset the internal PHY IC. This pin is pulled up within the module with a 4.7KΩ resistor.
Low (0 – 0.8 V): Transceiver on ;
Between (0.8 V and 2.0 V): Undefined
High (2.0 – 3.465 V): Transceiver in reset state
Open: Transceiver in reset state
Note3: These are the module definition pins. They should be pulled up with a 4.7K~10KΩ resistor on the host board to supply less than VccT+0.3V or VccR+0.3V. Mod-ABS is grounded by the module to indicate that the module is present.
Note4: LVTTL compatible with a maximum voltage of 2.5V.
Note5: No connect on this module.

DIMENSIONS (unit=mm)

*All dimensions are ±0.2mm unless otherwise specified



ORDERING INFOMATION

Part Number	Speed mode	Link	Temp.
8330-206-V1	10GBase-T @Cat.6a/7 cable	30 meters	0~70°C
	5GBase-T/2.5GBase-T @Cat.5E cable	50 meters	
	1000Base-T @Cat.5E cable	100 meters	

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