SFP+ 10GBASE-T RJ45 80M Copper Transceiver

PN: AE-SFP-10G-T80

Features

- Support 10Gbase-T / on line port
- Support 10Gbase-R on host port
- Support TX Disable and RX_LOS function
- Hot-Pluggable SFP Footprint
- Low power dissipation (Max 2.2W)
- Compact RJ-45 connector assembly
- Compliant with SFP MSA
- Supports Links up to 80m using Cat.6a/Cat.7 Cable
- Ambient Operating temperature: 0°C to +70°C

Applications

- 10GBase Ethernet over Cat.6a/Cat.7 cable
- 10G BASE-T IEEE 802.3an

Description

10GBASE-T Copper Small Form Pluggable (SFP+) transceivers are based on the SFP Multi Source Agreement (MSA). They are compliant with the 10Gigabit Ethernet and 10GBASE-T standards as specified in IEEE 802.3.

The SFP+ 10GBASE-T 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, FHY IC be reset.

Serial Communication Protocol

The Copper SFPs support the 2-wire serial communication protocol outlined in the SFP MSA. These SFP use a 128 byte EEPROM with an address of A0H.

+3.3V Volt Electrical Power Interface

The Copper SFP+ has an input voltage range of +3.3V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.

Table 1. Absolute Maximum Ratings

Parameter	Symbol	Min		Typ	Max	Units	Notes/Conditions
Supply Current	Is			500	650	A m	2W max power over full range of voltage and temperature. See caution note below
Input Voltage	Vcc	3. 13		3.3	3.47	V	Referenced to GND

Maximum Voltage	Vmax				4	V	
Surge Current	Isurge				350	A m	Hot plug above steady state current. See caution note below

Caution: Exceeding any one of these values may destroy the device permanently.

Table 2. General specifications

Parameter	Symbol	Min	Typ	Max	Units	Notes/Conditions
Data Rate	BR		10.3		Gb/sec	IEEE 802.3 compatible.
Cable Length	L			80	m	Category Cat.6a/Cat7 UTP. BER <10-12

Table 3. Environmental Condition

Parameter	Symbol	Min	Typ	Max	Units	Notes/Conditions
Operating Temperature	Top	0		70	°C	Operating Case temperature
Storage Temperature	Tsto	-40		85	°C	Ambient temperature

Low-Speed Signals, Electronic Characteristics.

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

Parameter	Symbol	Min.	Max.	Unit	Note/Condition
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

Pin Descriptions

Pin	Signal Name	Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	1
2	TX FAULT	Transmitter Fault Indication	3	Not used
3	TX DISABLE	Transmitter Disable	3	2
4	MOD-DEF2	Module Definition 2	3	3
5	MOD-DEF1	Module Definition 1	3	3
6	MOD-DEF0	Module Definition 0	3	3
7	RS0	Rate Select 0. No Connection Required	3	
8	LOS	Loss of Signal. High indicated no linked. Low indicated linked.	3	RX_LOSS
9	RS1	Rate Select 1. No Connection Required	1	1
10	VeeR	Receiver ground	1	1
11	VeeR	Receiver ground	1	1
12	RD-	Received Inverted Data Out. AC Coupled	3	
13	RD+	Received Non-inverted Data Out. AC Coupled	3	
14	VeeR	Receiver Ground	1	1
15	VccR	Receiver Power	2	
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	1
18	TD+	Transmit Non-Inverted Data In. AC Coupled	3	
19	TD-	Transmit Inverted Data In. AC Coupled.	3	
20	VeeT	Transmitter Ground	1	1

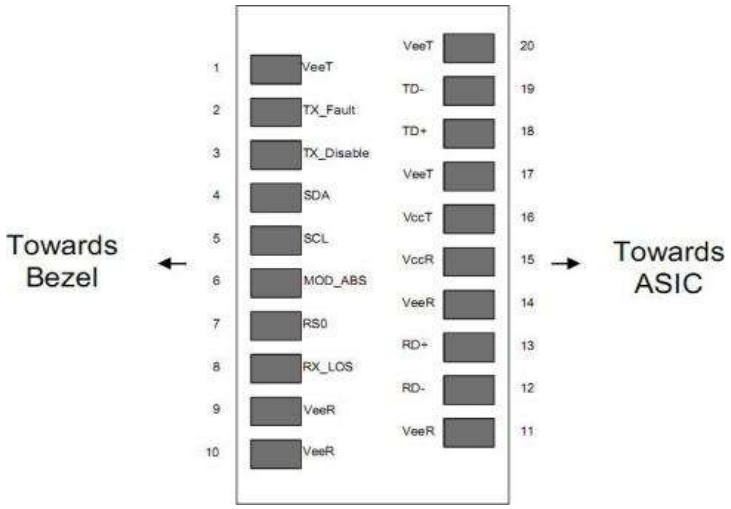
Notes:

1. Circuit ground is connected to chassis ground

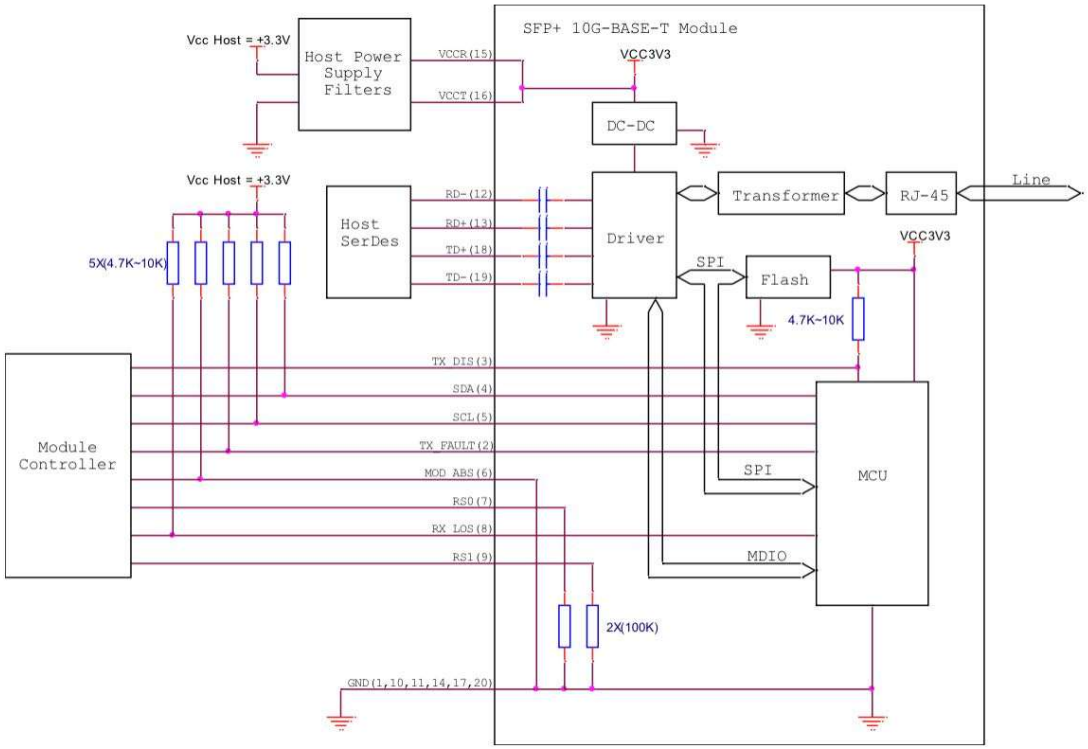
2. TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7K – 10K resistor. It's rates are: Low (0-0.8V): Transmitter on; (> 0.8, < 2.0V): Undefined; High (2.0-3.3465V): Transmitter Disabled; Open: Transmitter Disable.

3. Mod-Def 0, 1, 2. These are the module definition pins. They should be pulled up with a 4.K – 10KΩ resister on host board. The pull-up voltage shall be VccT or VccR. Mod-Def 0 is ground by module to indicate that the module is present. Mod-Def 1 is the clock line of two wire serial interface for serial ID. Mod-Def 2 is the data line of two wire serial interface for serial ID.

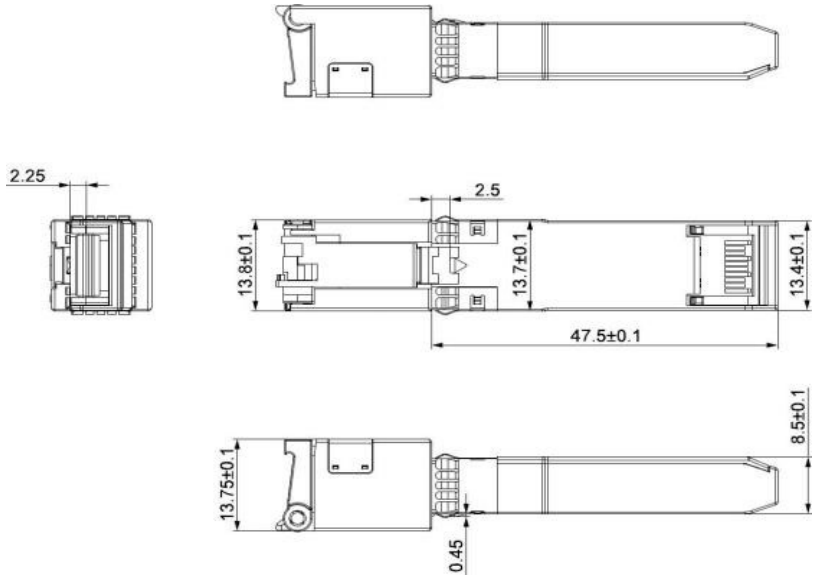
Pin Assignment



Basic Circuit 10G BASE-T block diagram



Mechanical Dimensions



Ordering information

Part Number	Product Description
AE-SFP-10G-T80	SFP+ 10GBASE-T RJ45 80M Copper Transceiver, 0ºC ~ +70ºC