Optical Communication System

Datasheet

10GBASE-T SFP+ Copper RJ-45 30m Transceiver

SFP-10G-T

Features

- Hot-pluggable SFP footprint
- Support 10GBASE-T/ 5GBASE-T/ 2.5GBASE-T/ 1000BASE-T
- Compact RJ-45 connector assembly
- RoHS compliant and lead-free
- Commercial Temperature Range: 0 to 70°C
- Single +3.3V power supply
- 10 Gigabit Ethernet over Cat6a/Cat7 cable

Application

- 10GBASE-T 10G Ethernet

Description

10GBASE-T SFP+ copper transceivers are based on the SFP Multi-Source Agreement (MSA). They are compatible with the 10GBASE-T / 5GBASE-T / 2.5GBASE-T / 1000BASE-T standards as specified in IEEE Std 802.3. 10GBASE-T SFP+ copper transceivers use the SFP's RX_LOS pin for link indication. If pull up SFP's TX_DISABLE pin, PHY IC will be reset.

I. Product Specifications

1. General Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Notes/Conditions
Bit Rate	BR	1		10	Gb/sec	IEEE 802.3 compatible. See Notes 1 below

Note:
1. Clock tolerance is +/- 50ppm

2. Environmental Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Notes/Conditions
Operating Temperature	Top	0		65	° C	Case temperature
Storage Temperature	Tsto	-40		85	° C	Ambient temperature

Note:
Automatic crossover detection is enabled. External crossover cable is not require.

II. Transmission Distances

Standard	Cable	Reach	Host Port
10GBASE-T	Cat6a/Cat7	30m	XFI
5GBASE-T/2.5GBASE-T	Cat5e	50m	5GBASE-R/2.5GBASE-X
1000BASE-T	Cat5e	100m	1000BASE-FX

III. 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

Low-Speed Signals, Electronic Characteristics					
Parameter	Symbol	Min	Max	Unit	Notes/Conditions
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

IV. +3.3V Volt Electrical Power Interface

The SFP-10G-T has an input voltage range of 3.3 V +/- 5%. The 4V maximum voltage is not allowed for continuous operation.

Parameter	Symbol	Min	Typ.	Max	Unit	Notes/Conditions
Supply Current	Is		700	900	mA	3.0W 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		TBD		mA	Hot plug above steady state current. See caution note below.

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA.

V. High-Speed Electrical Interface

All high-speed signals are AC-coupled internally.

Parameter	Symbol	Min	Typ.	Max	Unit	Notes/Conditions
High-Speed Electrical Interface, Transmission Line-SFP						
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3

TxOutput Impedance	Zout,TX		100		Ohm	Differential, for allfrequencies between1MHz and 125MHz
RxInput Impedance	Zin,RX		100		Ohm	Differential, for allfrequencies between1MHz and 125MHz
High-Speed Electrical Interface, Host-SFP						
Single ended data inputswing	Vinsing	250		1200	mV	Single ended
Single ended data outputswing	Voutsing	350		800	mV	Single ended
Rise/Fall Time	Tr,Tf		175		psec	20%-80%
TxInput Impedance	Zin		50		Ohm	Single ended
RxOutput Impedance	Zout		50		Ohm	Single ended

VI. Serial Communication Protocol

All ADOP.COM SFPssupport the 2-wire serial communication protocol outlined in the SFP MSA. These SFPs use an MCU, can be accessed with address of A0h.

Parameter	Symbol	Min	Typ.	Max	Unit	Notes/Conditions
Serial Bus Timing, Requirements						
I^2C Clock Rate		0		200,000	Hz	

VII. Pin Description

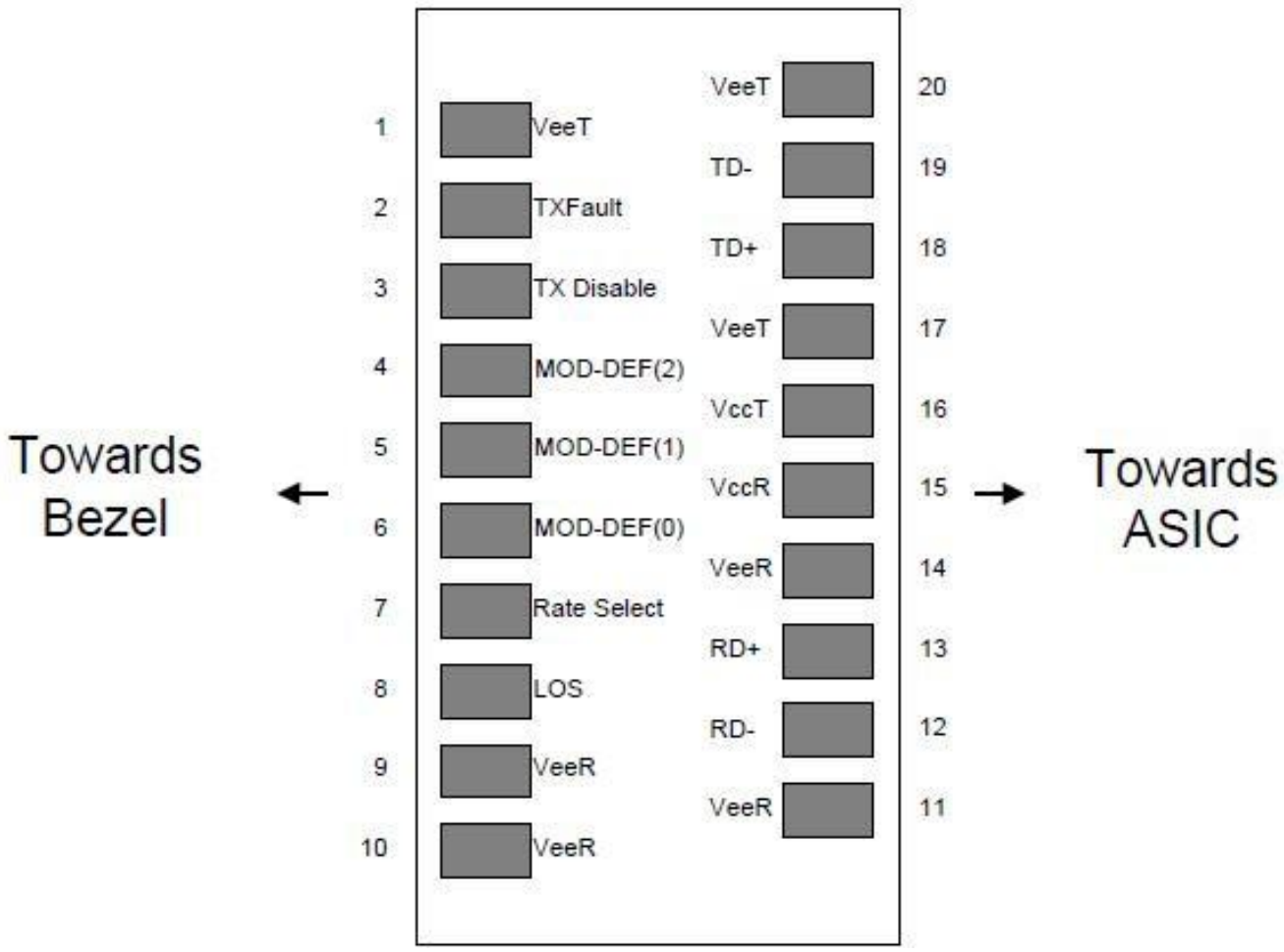


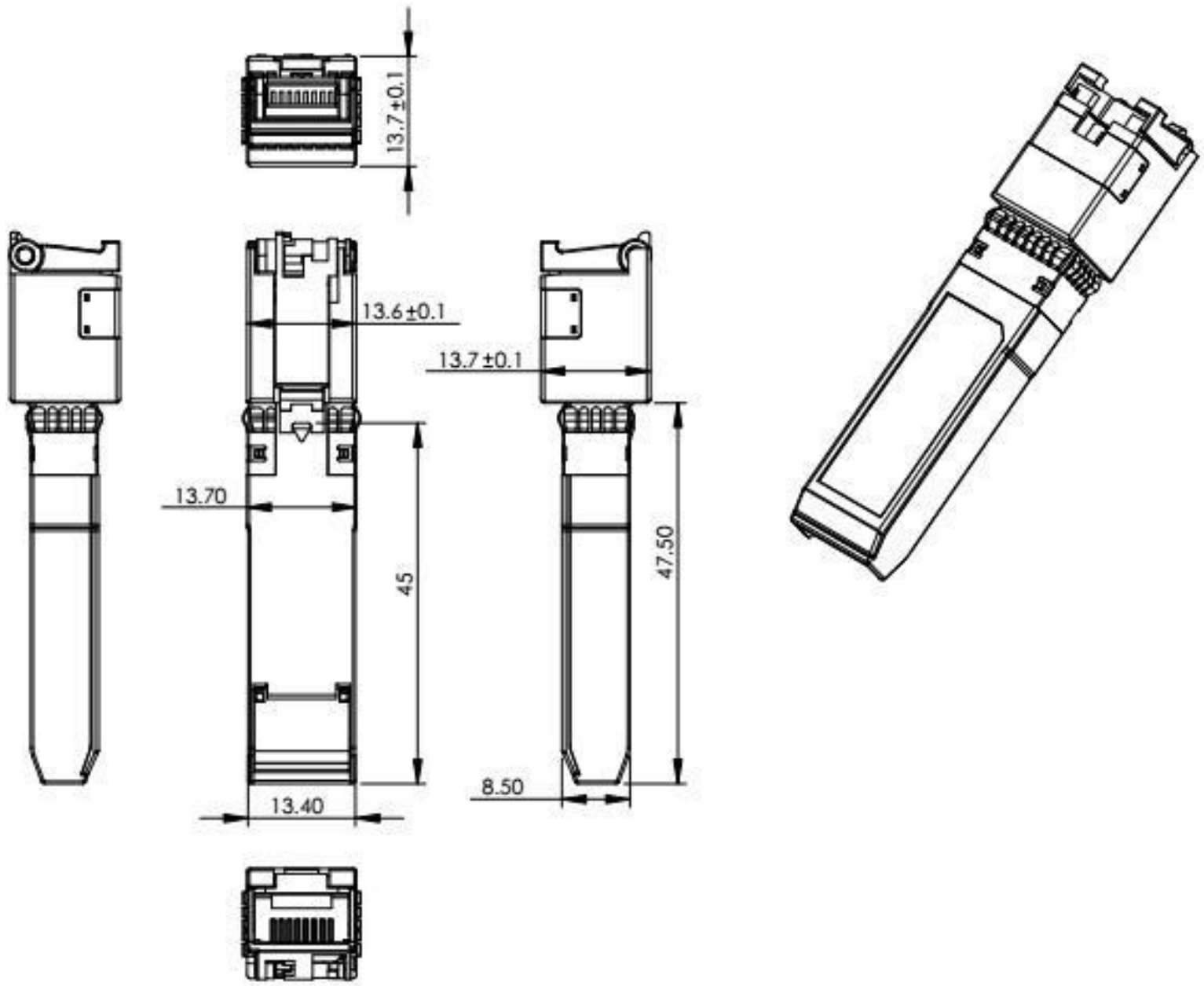
Figure 1. Diagram of Host Board Connector Block Pin Numbers and Names.

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for SerialID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for SerialID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded withinthe module.	3
7	Rate Select	No connection required	

8	LOS	High indicates no linked. low indicates linked.	4
9	VEER	Receiver Ground (Common with Transmitter Ground)	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	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	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	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	VEET	Transmitter Ground (Common with Receiver Ground)	1

Note:
1. Circuit ground is connected to chassis ground
2. PHY disabled on TDIS> 2.0V or open, enabled on TDIS< 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. LVTTL compatible with a maximum voltage of 2.5V.

VIII. Mechanical Specifications



Test Center

ADOP.COM transceivers are tested to ensure connectivity and compatibility in our test center before shipped out. ADOP.COM test center issupported by a variety ofmainstream original brand switches and groups of professional staff, helping our customers make the most efficient use of our products in their systems, network designs and deployments.

The original switches could be found nowhere but at ADOP.COM test center, eg: Juniper MX960 & EX4300 series, Cisco Nexus 9396PX & Cisco ASR 9000 Series, HP 5900 Series & HP 5406R ZL2V3(J9996A), Arista 7050S-64, Brocade ICX7750-26Q & ICX6610-48, Avaya VSP 7000 MDA 2,etc.

Cisco ASR 9000 Series(A9K-MPA-1X40GE)

ARISTA 7050S-64(DCS-7050S-64)

Juniper MX960

Brocade ICX 7750-26Q

Extreme networks X670V VIM-40G4X

Mellanox M3601Q

Dell N4032F

HP 5406R ZL2 V3(J9996A)

AVAYA 7024XLS(7002QQ-MDA)

Test Assured Program

ADOP.COM truly understands the value of compatibility and interoperability to each optics. Every module ADOP.COM provides must run through programming and an extensive series of platform diagnostic tests to prove its performance and compatibility. In our test center, we care of every detail from staff to facilities—professionally trained staff, advanced test facilities and comprehensive original-brand switches, to ensure our customers to receive the optics with superior quality.

Our smart data system allows effective product management and quality control according to the unique serial number, properly tracing the order, shipment and every part.

Our in-house coding facility programs all of our parts to standard OEM specs for compatibility on all major vendors and systems such as Cisco, Juniper, Brocade, HP, Dell, Arista and soon.

With a comprehensive line of original- brand switches, we can recreate an environment and test each optics in practical application to ensure quality and distance.

Finally, we can send DHL, 3-7 days to arrive, to ensure that customers receive goods safely.

Order Information

Part Number	Description
SFP-10G-T	10GBASE-T SFP+ Copper RJ-45 30m Transceiver
SFP-10GSR-85	10GBASE-SR SFP+ 850nm 300m DOM Transceiver
SFP-10GLRM-31	10GBASE-LRM SFP+ 1310nm 220m DOM Transceiver
SFP-10GLR-31	10GBASE-LR SFP+ 1310nm 10km DOM Transceiver
SFP-10GER-55	10GBASE-ER SFP+ 1550nm 40km DOM Transceiver
SFP-10GZR-55	10GBASE-ZR SFP+ 1550nm 80km DOM Transceiver
SFP-10GZRC-55	10GBASE-ZR SFP+ 1550nm 100km DOM Transceiver
SFP-10GSR-85	Dual-Rate 1000BASE-SX and 10GBASE-SR SFP+ 850nm 300m DOM Transceiver
SFP-10GLR-31	Dual-Rate 1000BASE-LX and 10GBASE-LR SFP+ 1310nm 10km DOM Transceiver

Note:
10G SFP+ transceiver module is individually tested on corresponding equipment such as Cisco, Arista, Juniper, Dell, Brocade and other brands, and passes the monitoring of ADOP.COM intelligent quality control system.

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