ISO 9001:2000 Certified Company

Product Specification

10Gbps 10KM SFP+ Transceiver

AT-SFPP1310GLRI

V20160818

Product Features

- Up to 10Gbps data links
- 10km with 9/125μm SMF
- 1310nm DFB laser
- Duplex LC Connector
- Hot-pluggable SFP+ footprint
- Single 3. 3V power supply

Applications

- Operating temperature: -40°C to 85°C √ 10GBase-LR/LW 10G Ethernet
- RoHS √ 1200-SM-LL-L 10G FC
- Digital Diagnostic Monitor compatible
- Power Consumption < 0.8W

1. Product Description

The AT-SFPP1310GLRI is a 10Gbps enhanced small form factor pluggable SFP+ transceiver compatible with 10GBASE-LR/LW and 10G Fiber Channel 1200-SM-LL-L. It is suitable for single-mode fiber (SMF) communications in 10Gbps Ethernet and 10G Fiber Channel.

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2. Regulatory Compliance

Transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc	-0.5	4	V
Storage Temperature	Ts	-40	85	°C
Operating Case Temperature	Tc	-40	85	°C

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	-40		85	°C
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			200	mA
Data Rate			10		GBps
Max Link Length on 9/125µm SMF	Lmax		10		km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λc	1260	1310	1360	nm
Spectral Width (-20dB)	σ			1	nm
Average Output Power	Pout	-5		0	dBm
Extinction Ratio	ER	3.5			dB
Average Launch Power of Off	Poff			-30	dBm

Transmitter					
Receiver					
Centre Wavelength	λc	1200	1310	1600	nm
Receiver Sensitivity	P_{IN}			-14	dBm
Receiver Overload	Pmax	0.5			dBm
LOS De-Assert	LOS_D			-20	dBm
LOS Assert	LOS_A	-23			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	250		1200	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
Receiver					
Data Output Swing Differential	Vout	250		800	mV
Rx-Los Fault	Vlf	2.0		V_{CCHOST}	V
Rx-Los Normal	Vln	0		0+0.8	V
Output rise and fall time	Tr, Tf	30			ps

7. Pin Descriptions

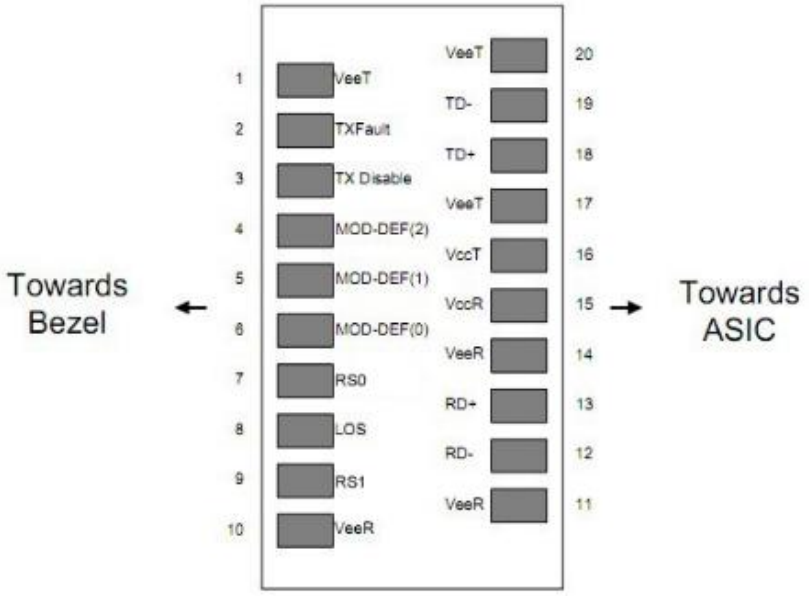


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	7.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	7.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	7.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	7.3
7	RS0	Rate Select0, optionally controls SFP+ module receiver. When high input signaling rate>4.25 GBd and when low input signaling rate<4.25GBd	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	7.4
9	RS1	Rate Select1, optionally controls SFP+ module receiver. When high input signaling rate>4.25 GBd and when low input signaling rate<4.25GBd	
10	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
11	VEER	Receiver Ground (Common with Transmitter Ground)	7.1
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)	7.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	7.1
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)	7.1

Notes:

7.1 Circuit ground is internally isolated from chassis ground.

7.2 Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

7.3 Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.

7.4 LOS is open collector output. Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8. EEPROM & DDM THRESHOLD

8.1 EEPROM

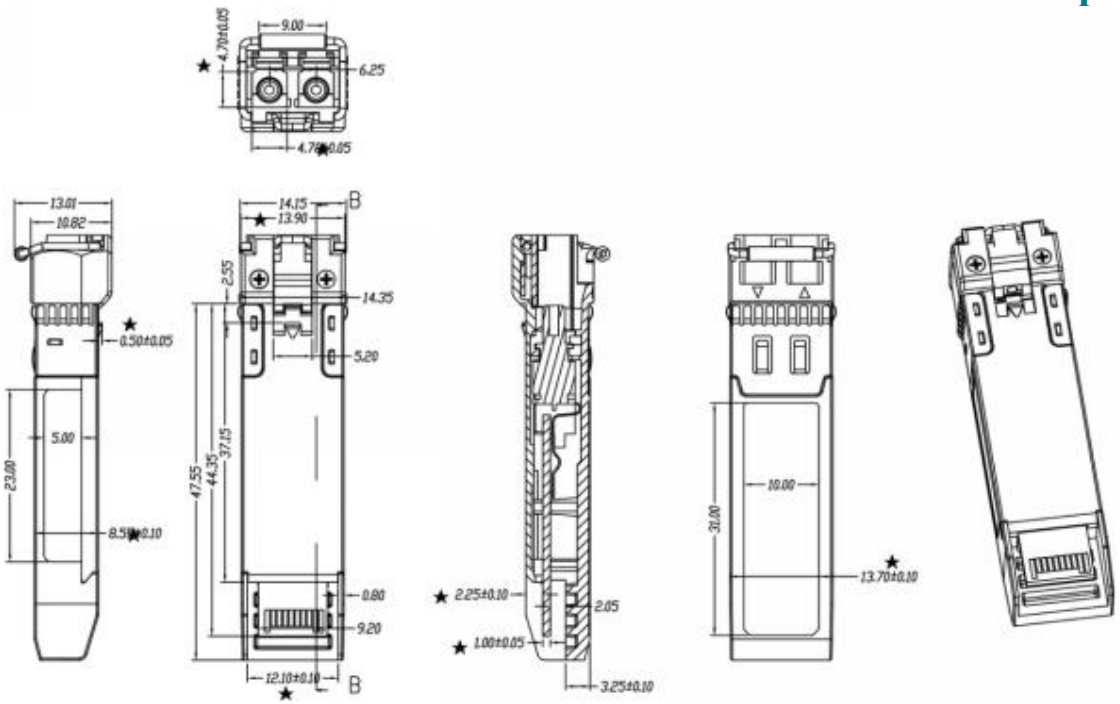
2 wire address 1010000X (A0h)

0~95 Serial ID Defined by SFP MSA (96 bytes)
96~127 Vendor Speific (32 bytes)
128~255 Reserved (128 bytes)

8.1 DDM THRESHOLD

	Low Alarm	Low Warn	High Warn	High Alarm
Temperature	-45℃	-40℃	85℃	90℃
Voltage	3V	3.1V	3.6V	3.7V
Tx Bias	15mA	20mA	75mA	80mA
Tx Power	-12dBm	-8dBm	0.5dBm	3.5dBm
Rx Power	-18dBm	-16dBm	0.5dBm	3.5dBm

9. Mechanical Specifications



Ordering Information

Part No.	Data Rate	DDM	Wave	Fiber Type	Dist.	Temp.	Optical Interface
AT-SFPP1310GLRI	10Gbps	yes	1310nm	SMF	10km	-40~85℃	LC

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20160818	20160818	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated