

Product Specification

1.25Gbps BiDi LC 10Km SFP Transceiver

AT-SFPGEBD131510D-L

AT-SFPGEBD131510D-LI

Product Features



- Up to 1.25Gbps data links
- 10Km with 9/125 μ m SMF *1
- 1310nm FP /1550nm PIN laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS

Applications

√ 1.25Gbps 1000Base-LX

| PART NUMBER | WAVE LENGTH TX/RX | DISTANCE | LASER | TEMPERATURE |
|-----------------------------|-------------------|----------|--------|--------------|
| AT-SFPGEBD131510D-L | 1310/1550nm | 10Km | FP/PIN | COM 0~70°C |
| AT-SFPGEBD131510D-LI | 1310/1550nm | 10Km | FP/PIN | IND -40~85°C |

1. Product Description

The AT-SFPGEBD131510D-L/I series SFPs are small form factor pluggable (SFP) transceivers compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

ANDA TELECOM 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 | 3.6 | V |
| Storage Temperature | | Ts | -40 | 85 | °C |
| AT-SFPGEBD131510D-L | Operating Case Temperature | Tc | 0 | 70 | °C |
| AT-SFPGEBD131510D-LI | Operating Case Temperature | Tc | -40 | 85 | °C |

4. Recommended Operating Conditions

| Parameter | | Symbol | Min. | Typical | Max. | Unit |
|--|----------------|------------------|------|---------|------|------|
| AT-SFPGEBD13151 0D-L | Operating Case | T _c | 0 | | 70 | °C |
| | Temperature | | | | | |
| AT-SFPGEBD13151 0D-LI | Operating Case | T _c | -40 | | 85 | °C |
| | Temperature | | | | | |
| Power Supply Voltage | | V _{CC} | 3.15 | 3.3 | 3.45 | V |
| Power Supply Current | | I _{CC} | | | 300 | mA |
| Data Rate | | | | 1.25 | | GBps |
| Max Link Length on 9/125µm SMF | | L _{max} | | 10 | | km |

5. Optical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|------------------------|------------------|------|---------|------|------|
| Transmitter | | | | | |
| Centre Wavelength | λ_c | 1300 | 1310 | 1320 | nm |
| Spectral Width (RMS) | σ | | | 4 | nm |
| Average Output Power | P _{out} | -9 | | -3 | dBm |
| Extinction Ratio | ER | 9 | | | dB |
| Optical Rise/Fall Time | tr/tf | | | 2 | ns |
| Receiver | | | | | |
| Centre Wavelength | λ_c | 1540 | 1550 | 1560 | nm |
| Receiver Sensitivity | P _{IN} | | | -23 | dBm |

| | | | | | |
|-------------------|-----------|-----|--|-----|-----|
| Receiver Overload | P_{MAX} | 1 | | | dBm |
| LOS De-Assert | LOS_D | | | -30 | dBm |
| LOS Assert | LOS_A | -35 | | | dBm |
| LOS Hysteresis | | 0.5 | | 4.5 | dB |

6. Electrical Characteristics

| Parameter | Symbol | Min. | Typical | Max. | Unit |
|--------------------------------|-----------|------|---------|--------------|----------|
| Transmitter | | | | | |
| Input Differential Impedance | Z_{in} | 90 | 100 | 110 | Ω |
| Data Input Swing Differential | V_{in} | 500 | | 2400 | mV |
| Tx-Dis Disable | V_d | 2.0 | | V_{cc} | V |
| Tx-Dis Enable | V_{en} | 0 | | 0.8 | V |
| TX-Fault (Fault) | | 2.0 | | $V_{cc}+0.3$ | V |
| TX-Fault (Normal) | | 0 | | 0.8 | V |
| Receiver | | | | | |
| Data Output Swing Differential | V_{out} | 370 | | 2000 | mV |
| Rx-Los Fault | V_{lf} | 2.0 | | $V_{cc}+0.3$ | V |
| Rx-Los Normal | V_{ln} | 0 | | 0+0.8 | V |

7. Pin Descriptions

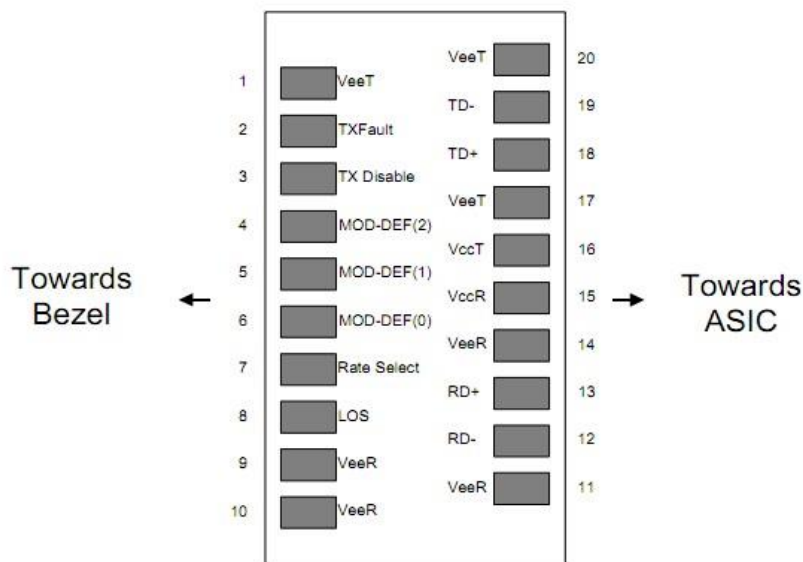


Diagram of Host Board Connector Block Pin Numbers and Names

| Pin | Symbol | Description | Ref. |
|-----|-------------|--|------|
| 1 | VEET | Transmitter Ground (Common with Receiver Ground) | 6.1 |
| 2 | TFAULT | Transmitter Fault. Not supported. | |
| 3 | TDIS | Transmitter Disable. Laser output disabled on high or open. | 6.2 |
| 4 | MOD_DEF(2) | Module Definition 2. Data line for Serial ID. | 6.3 |
| 5 | MOD_DEF(1) | Module Definition 1. Clock line for Serial ID. | 6.3 |
| 6 | MOD_DEF(0) | Module Definition 0. Grounded within the module. | 6.3 |
| 7 | Rate Select | No connection required | |
| 8 | LOS | Loss of Signal indication. Logic 0 indicates normal operation. | 6.4 |
| 9 | VEER | Receiver Ground (Common with Transmitter Ground) | 6.1 |

| | | | |
|----|------|--|-----|
| 10 | VEER | Receiver Ground (Common with Transmitter Ground) | 6.1 |
| 11 | VEER | Receiver Ground (Common with Transmitter Ground) | 6.1 |
| 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) | 6.1 |
| 15 | VCCR | Receiver Power Supply | |
| 16 | VCCT | Transmitter Power Supply | |
| 17 | VEET | Transmitter Ground (Common with Receiver Ground) | 6.1 |
| 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) | 6.1 |

Notes:

6.1 Circuit ground is internally isolated from chassis ground.

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

6.3 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.

6.4 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 (A0hex)

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

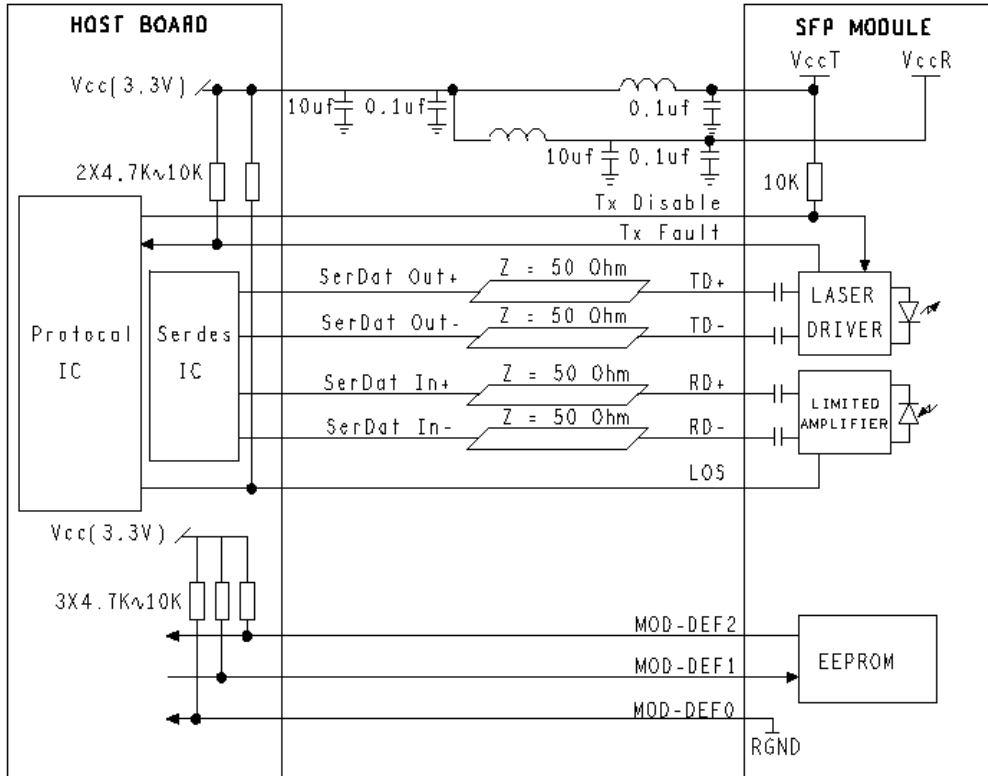
8.2 DDM THRESHOLD

AT-SFPGEBD131510D-L/I

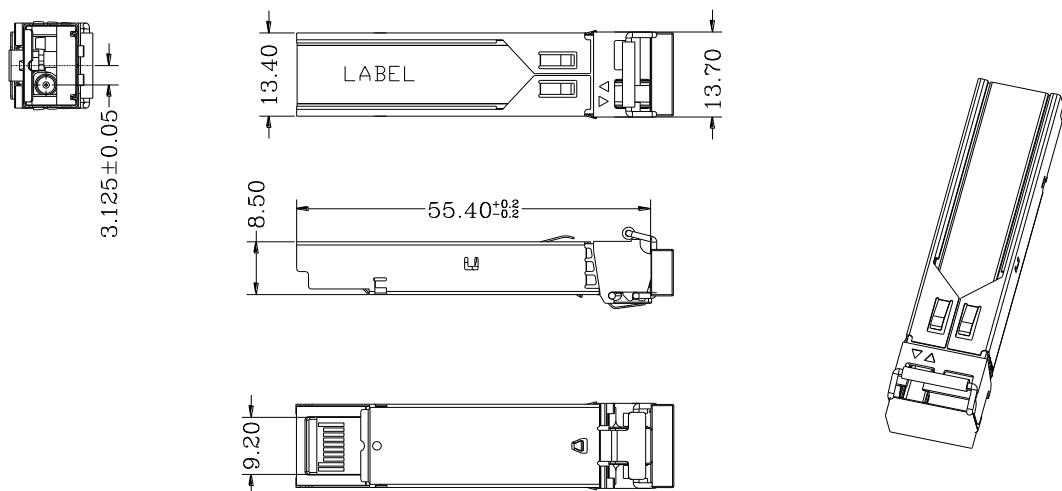
| | | Low Alarm | Low Warn | High Warn | High Alarm |
|---------------------------------|--------------------------|-----------|----------|-----------|------------|
| Temp | AT-SFPGEBD131510D-L I | -45°C | -40°C | 85°C | 90°C |
| Temp | AT-SFPGEBD131510D-L | -5°C | 0°C | 70°C | 75°C |
| Voltage | | 3V | 3.1V | 3.6V | 3.7V |
| Tx Bias AT-SFPGEBD131510D-L | | 3mA | 4mA | 70mA | 75mA |
| Tx Bias AT-SFPGEBD131510D-LI | | 3mA | 4mA | 125mA | 130mA |
| Tx Power | | -13.5dBm | -9.5dBm | -1dBm | 1dBm |

| | | | | |
|----------|--------|--------|-------|------|
| Rx Power | -23dBm | -19dBm | -3dBm | 1dBm |
|----------|--------|--------|-------|------|

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

11. LABEL

ANDA TELECOM offers label OEM design and print.

Label barcode supports code128 and 2D barcode

SIZE: 30mm * 9mm

Ordering Information

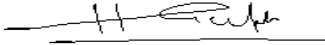
| Part No. | Data Rate | DDM | TX/RX | Fiber Type | Dist. | Temp. | Optical Interface |
|--------------------------|-----------|-----|-------------------|------------|-------|----------|-------------------|
| AT-SFPGEBD131510D -L | 1.25Gbps | yes | 1310nm/ 1550nm | SMF | 10km | 0~70°C | BiDi LC |
| AT-SFPGEBD131510D -LI | 1.25Gbps | yes | 1310nm/ 1550nm | SMF | 10km | -40~85°C | BiDi LC |

VERSION UPDATE:

| VERSION NO. | DATE | UPDATED INFORMATION |
|-------------|----------|---|
| V20161010 | 20161010 | <ol style="list-style-type: none"> EEPROM& DDM Threshold updated "LABEL" added Ordering information updated Product picture updated |
| V20170815 | 20170815 | <ol style="list-style-type: none"> More items added into list |

NOTICE:

ANDA TELECOM reserves the right to make changes to this product in this specification without notice, in order to improve product performance.



(Harish Gupta)



Authorised Signatory