

GPON Class C+++ SFP OLT Transceiver GOXS-BI4312-20PONC+++

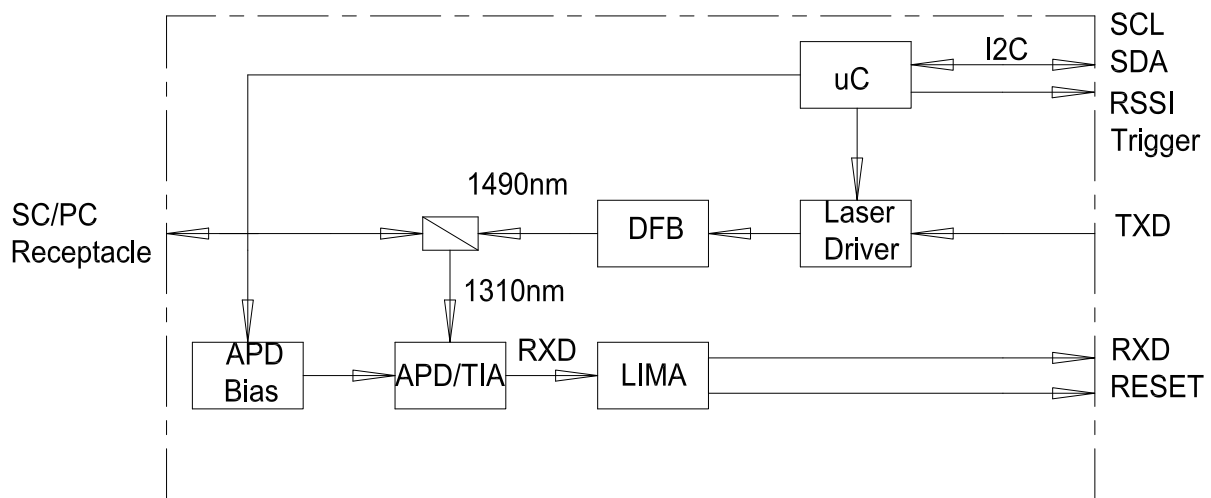
1. Features

- SFP with SC/PC Connector Transceiver
- 1490 nm DFB Tx with isolator
- 1310 nm APD Rx
- Digital diagnostics SFF-8472 Compliant
- 2488 Mbps continuous mode Transmission
- 1244 Mbps Burst mode receiver Data Rate
- RX Fast Burst Mode Detection
- Provide fast RSSI function
- Operation case temperature: 0~70°C
- Class C+++ link budget
- Comply with ITU-T G984.2 Amendment 1
- Complies with RoHS directive (2002/95/EC)

2. Application

- GPON OLT Class C+++
- FTTx

3. Function Diagram



4. Recommended Operating Conditions

| Parameter | Symbol | Min. | Max. | Unit |
|----------------------------|------------------|------|------|------|
| Storage Temperature | T _{STG} | -40 | 85 | °C |
| Operating Case Temperature | T _C | 0 | 70 | °C |
| Power Supply Voltage | V _{CC} | 3.1 | 3.5 | V |
| Total Power Supply Current | I _{CC} | - | 500 | mA |

5. Transmitter Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Units | Notes |
|---------------------------------|-----------------------------------|------|-------|------|-------|-------|
| Optical Transmitter Power | P ₀ | 7 | - | 9 | dBm | 1 |
| Optical Transmitter Power off | POFF | - | - | -39 | dBm | |
| Output Center Wavelength | λ | 1480 | - | 1500 | nm | |
| Output Spectrum Width | $\Delta\lambda$ | - | - | 1.0 | nm | |
| Side Mode Suppression Ratio | SMSR | 30 | - | - | dB | |
| Extinction Ratio | ER | 8.2 | - | - | dB | |
| Optical Rise Time | - | - | - | 160 | ps | |
| Optical Fall Time | - | - | - | 160 | ps | |
| Optical Eye Diagram | Compliant with ITU-T G.984.2 Mask | | | | | |
| Tolerance to Tx Back Reflection | - | -15 | - | - | dB | |
| Data Rate | - | - | 2.488 | - | Gb/s | |
| Differential Input Voltage | V _{PP} | 300 | - | 1200 | mV | |
| Differential Input Impedance | Z _{IN} | 80 | 100 | 120 | ohm | |
| Tx_fault Output Voltage- High | V _{IH} | 2.4 | - | - | V | |
| Tx_fault Output Voltage- Low | V _{IL} | - | - | 0.4 | V | |
| Tx_Dis Input Voltage- High | V _{IH} | 2.0 | - | - | V | |
| Tx_Dis Input Voltage- Low | V _{IL} | - | - | 0.8 | V | |

Note 1: 2.488Gbps continuous-mode , PRBS2²³-1.

6. Receiver Characteristics :

| Parameter | Symbol | Min. | Typ. | Max. | Units | Notes |
|-----------------------------------|----------------------------|---------------------------|-------|---------------------------|-------|-------|
| Wavelength of Operation | - | 1260 | - | 1360 | nm | - |
| Data Rate | - | - | 1.244 | - | Gb/s | - |
| Sensitivity | Sen | - | - | -33 | dBm | 1 |
| Saturation Optical Power | Sat | -15 | - | - | dBm | 1 |
| Burst Packet Detect sensitivity | - | - | - | -33 | dBm | 1 |
| Receiver Reflectance | - | - | - | -12 | dB | |
| Receiver Burst-mode Dynamic Range | - | 15 | - | - | dB | 2 |
| Data Output Voltage - High | VOH | V _{ccR} -1.05 | - | V _{ccR} -0.85 | V | - |
| Data Output Voltage - Low | VOL | V _{ccR} -1.84 | - | V _{ccR} -1.60 | V | - |
| Data Output Differential Swing | - | 400 | - | 1600 | mV | |
| RSSI accuracy | - | -3 | - | 3 | dB | 3 |
| BPD Output Voltage- High | VIH | 2.4 | - | - | V | 4 |
| BPD Output Voltage- Low | VIL | - | - | 0.4 | V | 4 |
| Guard Time | T _{GUARD} | - | 32 | - | bits | - |
| Rest Width | T _{RESET} | - | 16 | - | bits | |
| Reset-Low | | 0 | | 0.8 | V | |
| Reset-High | | 2.0 | | V _{cc} | V | |
| Receiver Amplitude Recovery Time | T _{RECOVERY} | - | 24 | 32 | bits | |
| Signal Detect De-Assert Time | | | | 12.8 | ns | |
| Signal Detect Assert Time | | | | 50 | ns | |
| Optical Signal During Time | T _{ONT} EN_DUR | 550 | - | - | ns | 5 |
| RSSI Trigger Delay | T _D | 50 | - | - | ns | 6 |
| RSSI Trigger Width | T _w | 500 | - | - | ns | |

Note 1: Measured with 1310nm, 1.244Gbps PRBS2²³-1 burst-mode optical input, ER=10dB,

BER=1x10⁻⁴(PRE-FEC); Single burst packet length is 40us and packet interval is 40us.

Note 2: Input optical power level difference of adjacent burst packets.

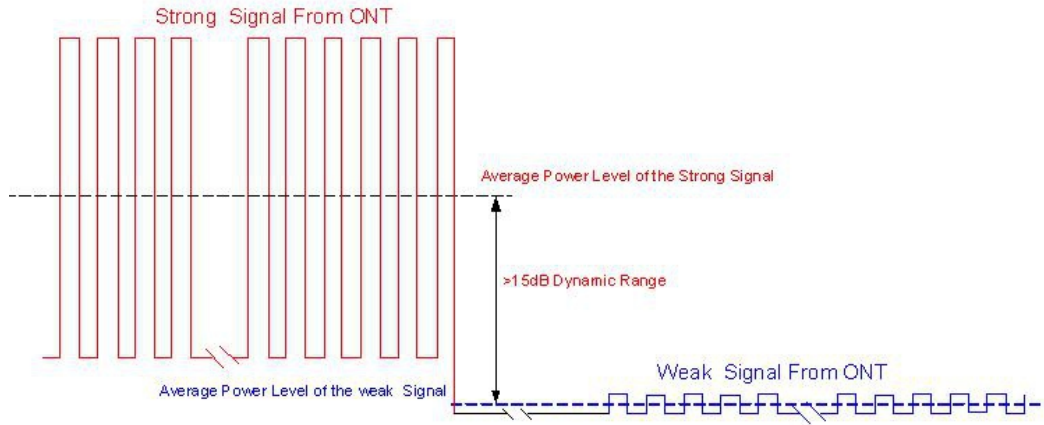
Note 3: Receiver optical power ranged from -8dBm to -28dBm, measured with 1310nm, 1.244Gbps PRBS2⁷-1 burst-mode optical input, ER=10dB, 50%duty cycle.

Note 4: BPD assert low when module receive "Reset" signal, assert high when burst package is detected and latch to high state until next "Reset" signal.

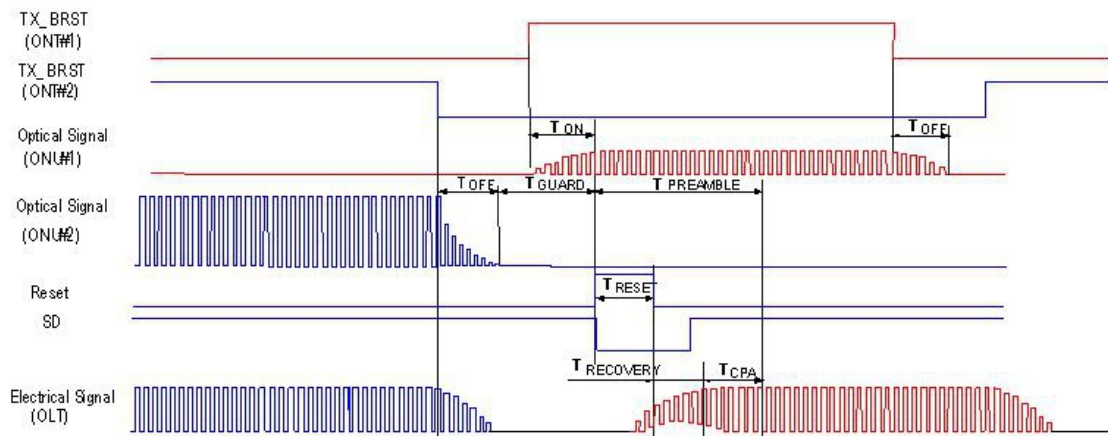
Note 5: For RSSI Measurement

Note 6: Refer to first bit of the preamble

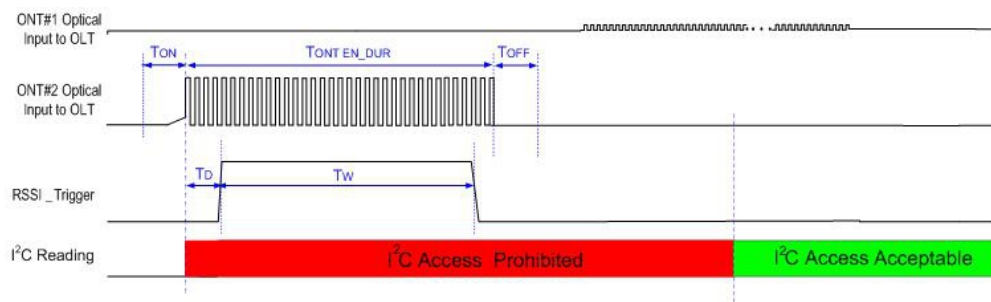
7. Burst Mode Receiver Dynamic Range



8. Timing Parameter Definitions in Burst Mode Sequence



9. RSSI Timing Sequence



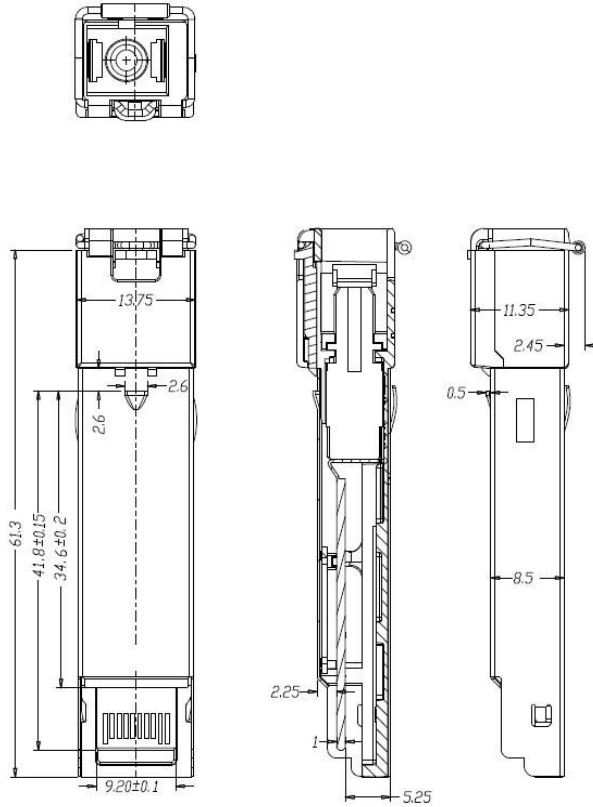
10. Digital Diagnostic Monitoring Accuracy

| Parameter | Accuracy | Units | Notes |
|-------------------------|----------|-------|-----------------------------|
| Transceiver Temperature | ±3 | °C | Temperature sensor |
| Power Supply Voltage | ±3 | % | V _{cc} =3.13~3.47V |
| TX Bias Current | ±10 | mA | |
| TX Optical Power | ±3 | dB | Average Power |
| Rx Power | ±3 | dB | |

11. Pin Definitions

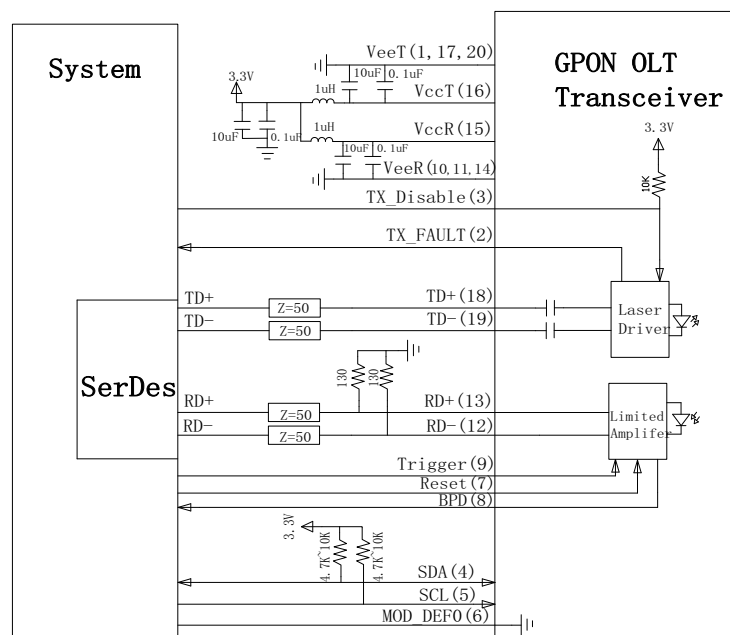
| Pin# | Name | Function |
|------|--------------|---|
| 1 | VeeT | Transmitter Ground |
| 2 | TX_Fault | Transmitter Fault Indication, LVTTTL Output, Active High |
| 3 | TX_Disable | Transmitter Disable, LVTTTL Input. Optical output power is off when this PIN is high or left unconnected. |
| 4 | SDA | I2C Data |
| 5 | SCL | I2C Clock |
| 6 | MOD-DEF(0) | Internally grounded |
| 7 | Reset | Receiver Reset , LVTTTL Input. Set "Reset" high at the end of previous burst, 2 bytes in duration |
| 8 | BPD | Burst Packet Detect, LVTTTL output. BPD assert low when module receives "reset" signal, assert high when incoming burst is present. |
| 9 | RSSI_Trigger | RSSI Trigger Signal from Host, LVTTTL input. |
| 10 | VeeR | Receiver Ground |
| 11 | VeeR | Receiver Ground |
| 12 | RD- | Inv. Received Data Out, LVPECL,DC coupled |
| 13 | RD+ | Received Data Out, LVPECL,DC coupled |
| 14 | VeeR | Receiver Ground |
| 15 | VccR | Receiver Power |
| 16 | VccT | Transmitter Power |
| 17 | VeeT | Transmitter Ground |
| 18 | TD+ | Transmit Data In, LVPECL or CML (AC coupled; internally 100 ohms differential termination) |
| 19 | TD- | Inv. Transmit Data In, LVPECL or CML (AC coupled; internally 100 ohms differential termination) |
| 20 | VeeT | Transmitter Ground |

12. Outline Drawing



Unit:mm

13. Recommended Application Circuit :



14. Order Information:

| Part Number | Product description | RoHS Compliant |
|-----------------------|---|----------------|
| GOXS-BI4312-20PONC+++ | SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.5G/Rx1.25G/ G984.2 Class C+++/ 0~70.C/SC receptacle | Yes |