

GPON OLT SFP Transceiver

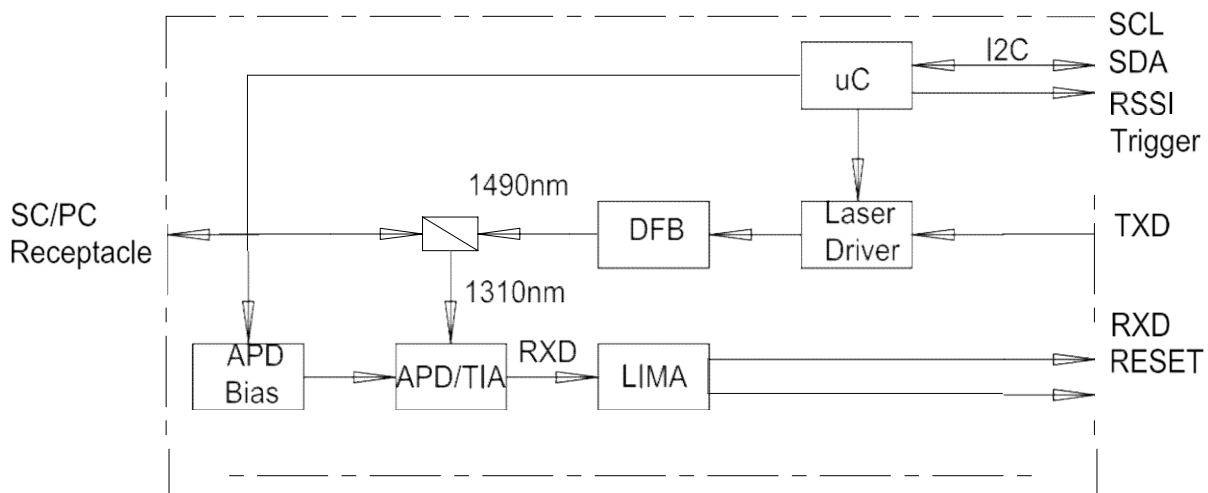
1. Features

- 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 or -40~85°C
- Class B+/C+/C++/D link budget
- Comply with ITU-T G984.2 Amendment 1
- Complies with RoHS directive (2002/95/EC)

2. Application

- GPON OLT
- FTTx

3. Function Diagram



4. Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature	TSTG	-40	85	°C	
Operating Case Temperature	TC	0	70	°C	
Operating Case Temperature	TC	-40	85	°C	
Power Supply Voltage	VCC	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(B+)	P ₀	1.5	-	5	dBm	1
Optical Transmitter Power(C+)		3	-	7		
Optical Transmitter Power(C++)		4.5	-	10		
Optical Transmitter Power(D)		6	-	10		
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(B+)	Sen	-	-	-28	dBm	1
Sensitivity(C+/C++)		-	-	-32	dBm	
Sensitivity(D)		-	-	-35	dBm	
Saturation Optical Power(B+)	Sat	-8	-	-	dBm	
Saturation Optical Power(C+/C++)		-12	-	-	dBm	
Saturation Optical Power(D)		-15	-	-	dBm	
Receiver Reflectance	-	-	-	-12	dB	
Receiver Burst-mode Dynamic Range	-	15	-	-	dB	2
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 _{ONTEN_DUR}	525	-	-	ns	5
RSSI Trigger Delay	T _D	25	-	-	ns	6
RSSI Trigger Width	T _W	500	-	-	ns	

Note 1: Measured with 1310nm, 1.244Gbps PRBS²³-1 burst-mode optical input, ER=10dB, BER=1x10⁻¹⁰; Single burst packet length is 40us and packet interval is 40us.

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

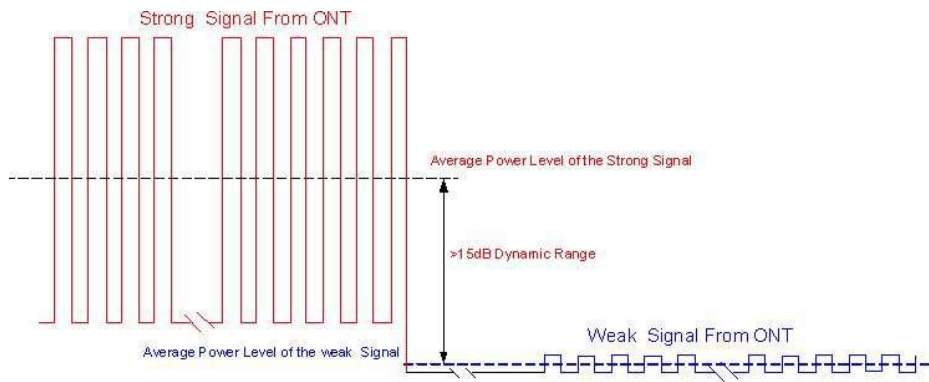
Note 3: Receiver optical power ranged from -8/-12/-15dBm to -28/-32/-33/-35dBm, measured with 1310nm, 1.244Gbps PRBS²³-1 burst-mode optical input, ER=10dB, 50%duty cycle.

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.

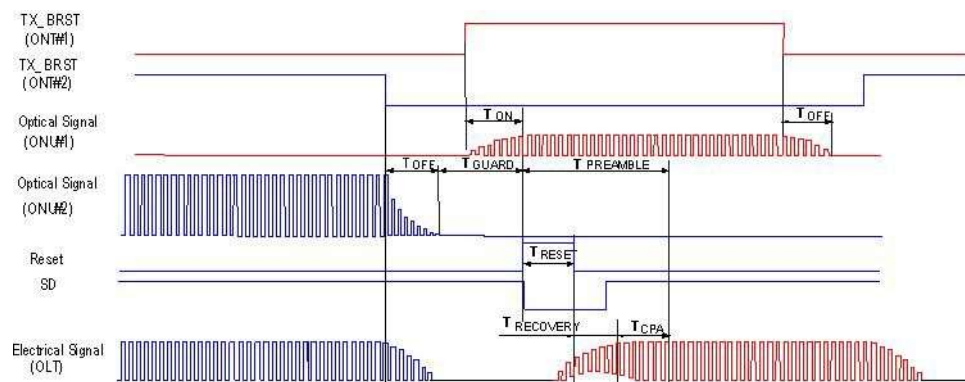
Note 5: For RSSI Measurement

Note 6: Refer to first bit of the preamble

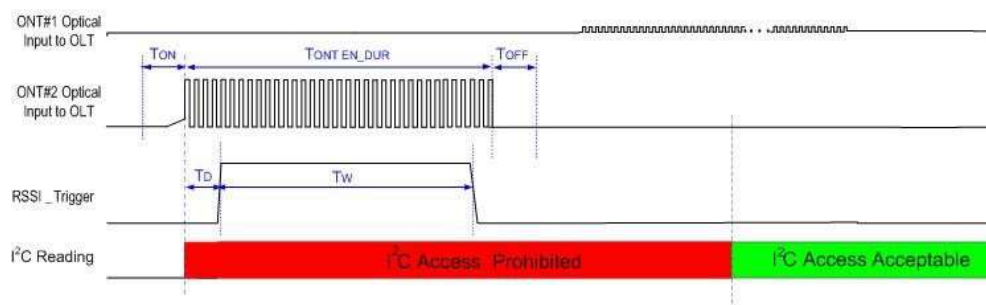
7. Burst Mode Receiver Dynamic Range



8. Timing Parameter Definitions in Burst Mode Sequence



9. RSSI Timing Sequence



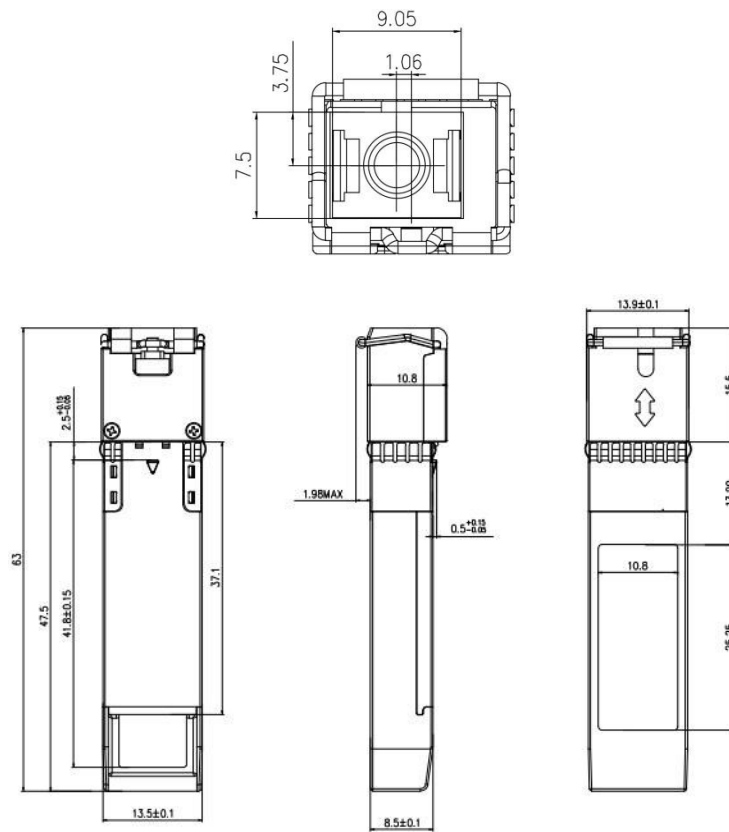
10. Digital Diagnostic Monitoring Accuracy

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

11. Pin Definitions

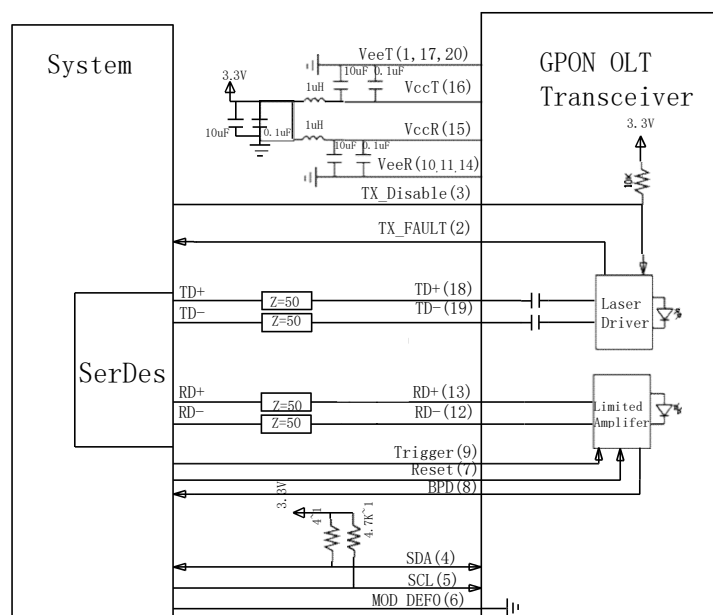
Pin#	Name	Function
1	VeeT	Transmitter Ground
2	TX_Fault	Transmitter Fault Indication, LVTTTL Output, Active High
3	TX_Disable	Transmitter Disable, LVTTTL Input. Optical output power is off when this PIN is high or left unconnected.
4	SDA	I2C Data
5	SCL	I2C Clock
6	MOD-DEF(0)	Internally grounded
7	Reset	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,AC coupled
13	RD+	Received Data Out, LVPECL,AC 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
AE-GOLT-B+	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class B+/ 0~70°C/SC receptacle	Yes
AE-GOLT-IB+	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class B+/ -40~85°C/SC receptacle	Yes
AE-GOLT-C+	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class C+/ 0~70°C/SC receptacle	Yes
AE-GOLT-IC+	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class C+/ -40~85°C/SC receptacle	Yes
AE-GOLT-C++	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class C++/ 0~70°C/SC receptacle	Yes
AE-GOLT-IC++	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class C++/ -40~85°C/SC receptacle	Yes
AE-GOLT-D	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class D/ 0~70°C/SC receptacle	Yes
AE-GOLT-ID	SFP GPON OLT/Tx1490/Rx1310/20km/Tx2.488G/Rx1.244G/G984.2 Class D/ -40~85°C/SC receptacle	Yes