

GPON-ONU-B+

GPON SFP ONU Optical Module

Product Features

- Support ITU-T 984.2/984.5 GPON Networks application
- Single fiber bi-directional data links with asymmetric 1.244Gbps Tx and 2.488Gbps Rx
- 1310nm burst-mode transmitter with DFB laser
- 1490nm continuous-mode receiver with APD-TIA
- 2-wire interface for integrated digital diagnostic Monitoring
- Transmitter Burst On (optional high active or low active)
- Transmitter state indication (TX_SD)
- Receiver state indication (optional RX_SD or Rx_LOS)
- SFP package with SC/UPC receptacle optical interface
- Single +3.3V power supply
- Operation case temperature -40~85°C for industrial and -10~70°C for commercial
- RoHS6 compliance

Operating Condition

Parameter	Unit	Min.	Typical	Max.
Storage Temperature	°C	-40		85
Operating Case Temp for C-temp	°C	0		70
Operating Case Temp for I-temp	°C	-40		85
Power Supply Voltage	V	3.15	3.3	3.45
Supply Current	mA		200	400
Bit Rate for Tx	Gbps		1.244	
Bit Rate for Rx	Gbps		2.488	

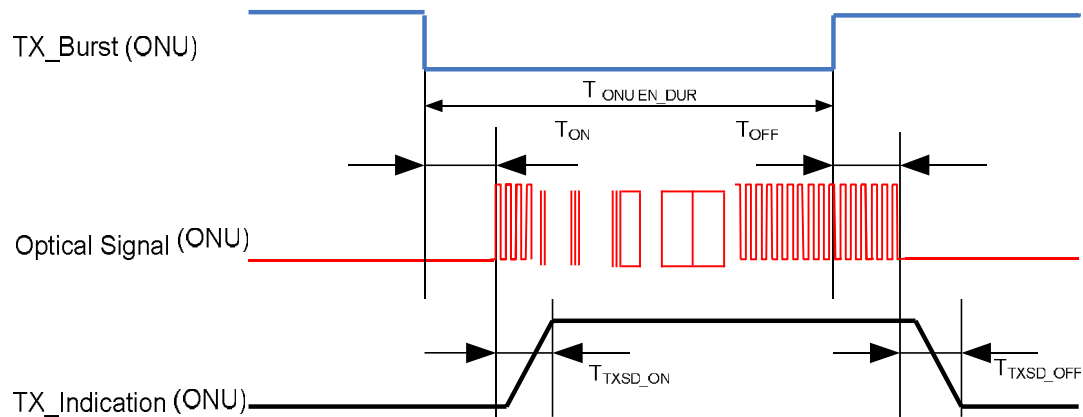
Characteristics

All performance is specified at whole working temperature and conditions

Parameter	Unit	Min.	Typical	Max.
Transmitter				
TX Central Wavelength	nm	1290	1310	1330
Spectral Width (-20dB)	nm			1
Side Mode Suppression Ratio (SMSR)	dB	30		
Mean Launched Power	dBm	0.5		5
Mean Launched Power (TX Off)	dBm			-45

Extinction Ratio	dB	10		
Optical Return Loss Tolerance	dB	-15		
Transmitter and dispersion Penalty	dB			1
Transmitter Mask (PRBS2 ²³ -1@1.244G)	Compliant With ITU-T G984.2			
Receiver				
Receive Wavelength	nm	1480	1490	1500
Sensitivity (PRBS2 ²³ -1@2.488G, ER=8.2, BER<10 ⁻¹⁰)	dBm			-28
Overload (PRBS2 ²³ -1@2.488G, ER=8.2, BER<10 ⁻¹⁰)	dBm	-8		
Loss of signal De-assert Level	dBm			-29
Loss of signal assert Level	dBm	-39		
LOS Hysteresis	dB	0.5		6
WDM Filter isolation to 1441 nm ~1450 nm, 1530 nm ~1539 nm	dB	25		
WDM Filter isolation to 1250 nm ~1441 nm, 1539 nm~ 1625 nm	dB	36		
Electrical Interface Characteristics				
Data Input Swing Differential/TX	mV	200	-	2000
Data Output Swing Differential/RX	mV	400		1600
Date Differential Impedance	Ω	90	100	110
LVTTL Output High	V	2.4		V _{cc}
LVTTL Output Low	V	0		0.4
LVTTL Input High	V	2.0		V _{cc} +0.3
LVTTL Input Low	V	0		0.8
Timing Characteristics				
Turn On Time at Burst mode (T _{ON})	ns			12.8
Turn Off Time at Burst mode (T _{OFF})	ns			12.8
TX-SD Assert Time (T _{TXSD_ON})	ns			100
TX-SD De-assert Time (T _{TXSD_OFF})	ns			100
LOS Assert Time (T _{LOSA})	us			100
LOS De-assert Time (T _{LOSD})	us			100

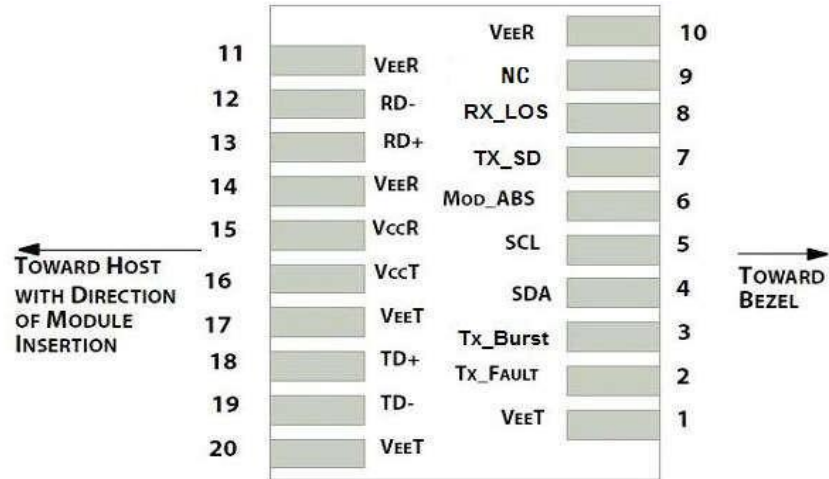
Burst Mode Transmitter Timing (TS23446-SSCA, TX_Burst signal low active transmitter on)



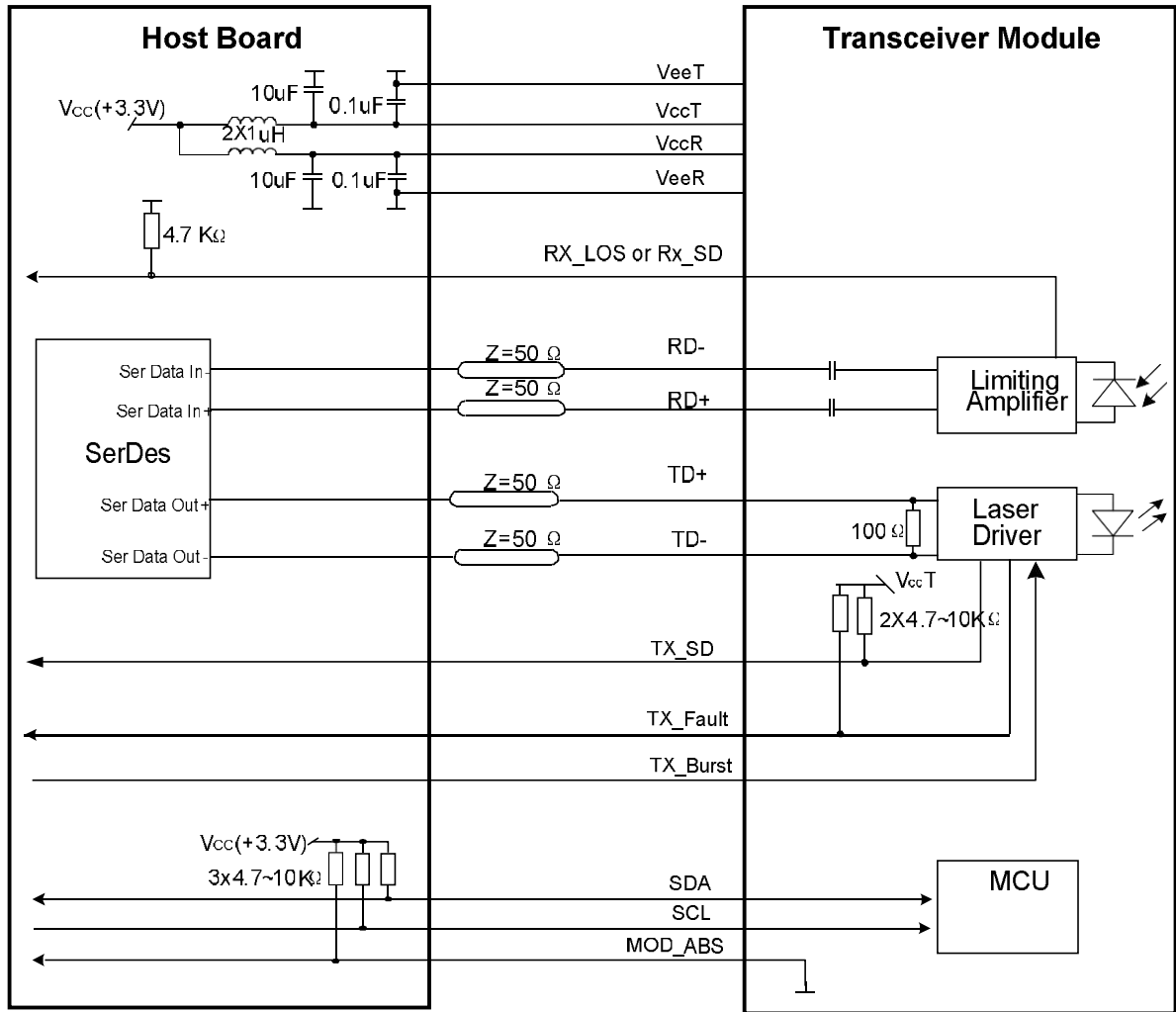
PIN Definition

Pin No.	Symbol	Level / Logic	Description
1	VeeT		Module Transmitter Ground
2	Tx_Fault	LVTTL-O	Module Transmitter Fault
3	Tx_Burst	LVTTL-I	Transmitter Burst Control, D23446-SSC(H)A & D23446-SSC(H)C active low for transmitter on D23446-SSC(H)B & D23446-SSC(H)D active high for transmitter on
4	SDA	LVTTL-I	2-Wire Serial Interface Data Line
5	SCL	LVTTL-I/O	2-Wire Serial Interface Clock
6	MOD_ABS	LVTTL-O	Module Absent, connected to ground in the module
7	TX_SD	LVTTL-O	Tx Signal Detect, active high when transmitter on
8	Rx_LOS or RX_SD	LVTTL-O	Receiver Signal Indication D23446-SSC(H)A & D23446-SSC(H)B is Rx_LOS, active high when loss of input optical signal D23446-SSC(H)C & D23446-SSC(H)D is Rx_SD, active high when received input optical signal
9	NC		
10	VeeR		Module Receiver Ground
11	VeeR		Module Receiver Ground
12	RD-	CML-O	Receiver Inverted Data Output, AC-coupled
13	RD+	CML-O	Receiver Non-Inverted Data Output, AC-coupled
14	VeeR		Module Receiver Ground
15	VccR		Module Receiver 3.3V Supply

16	VccT		Module Transmitter 3.3V Supply
17	VeeT		Module Transmitter Ground
18	TD+	LVPECL-I	Transmitter Non-Inverted Data Input, DC-coupled
19	TD-	LVPECL-I	Transmitter Inverted Data Input, DC-coupled
20	VeeT		Module Transmitter Ground

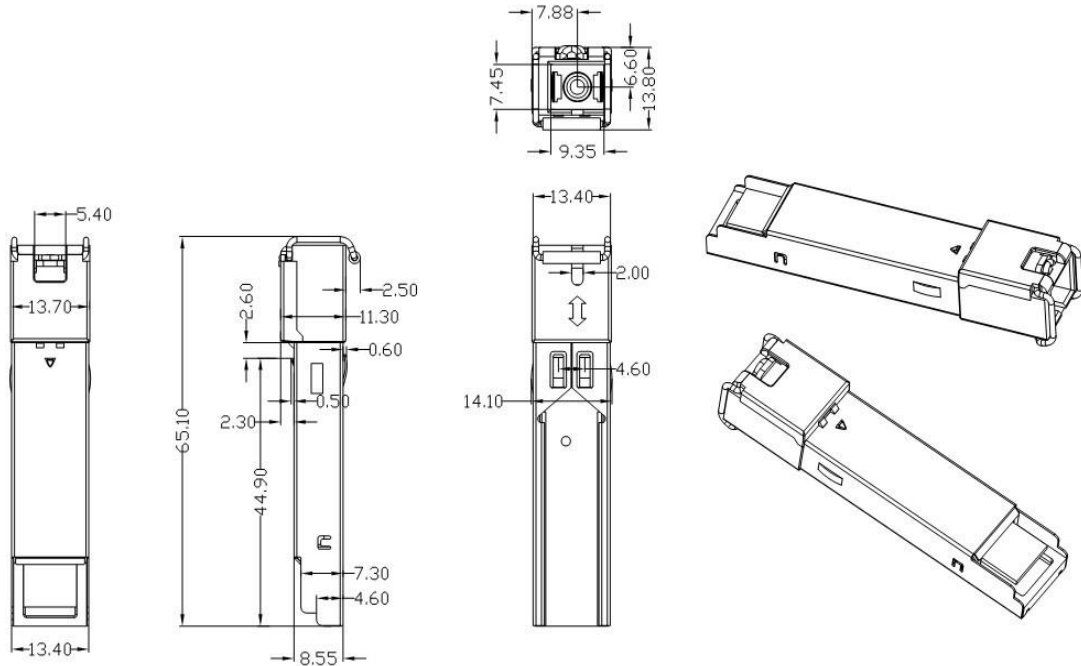


Typical Interface Circuit

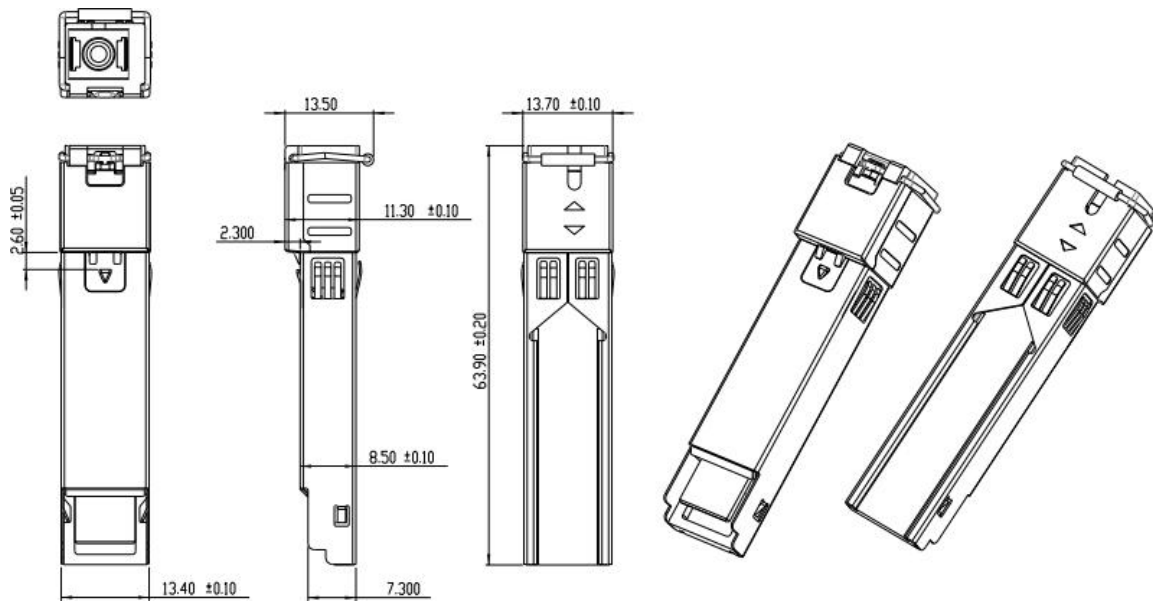


Mechanical Diagram

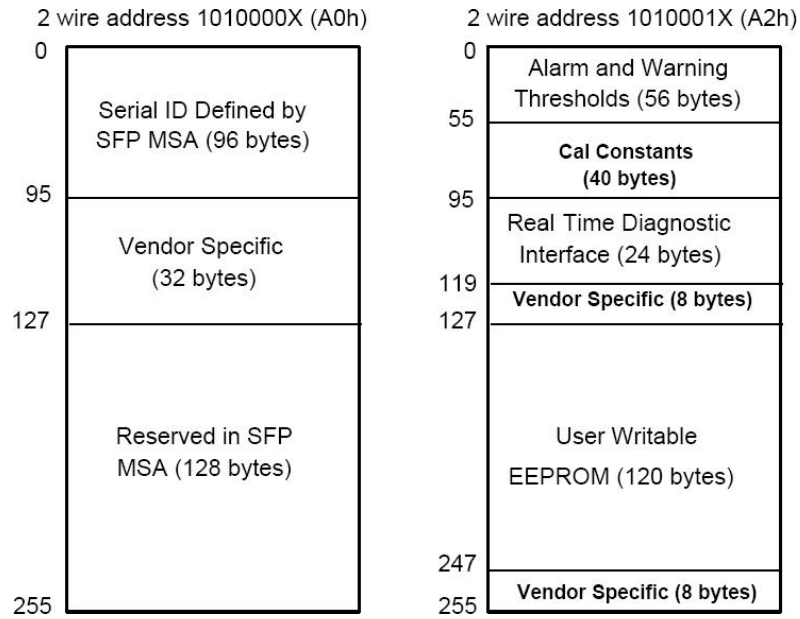
Option1:



Option2:



EEPROM Memory Map



Ordering Information

Ordering P/Ns	Description
TGPON-ONU-B+-LSC	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal low active transmitter on, Rx_LOS signal high active when loss of input signal, SFP form-factor, SC/UPC receptacle connector, Commercial temperature
TGPON-ONU-B+-LSI	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal low active transmitter on, Rx_LOS signal high active when loss of input signal, SFP form-factor, SC/UPC receptacle connector, Industrial temperature
TGPON-ONU-B+-HSC	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal high active transmitter on, Rx_LOS signal high active when loss of input signal, SFP form-factor, SC/UPC receptacle connector, Commercial temperature
TGPON-ONU-B+-HSI	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal high active transmitter on, Rx_LOS signal high active when loss of input signal, SFP form-factor, SC/UPC receptacle connector, Industrial temperature
TGPON-ONU-B+-LDC	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal low active transmitter on, Rx_SD signal high active when received input signal, SFP form-factor, SC/UPC receptacle connector, Commercial temperature
TGPON-ONU-B+-LDI	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal low active transmitter on, Rx_SD signal high active when received input signal, SFP form-factor, SC/UPC receptacle connector, Industrial temperature
TGPON-ONU-B+-HDC	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal high active transmitter on, Rx_SD signal high active when received input signal, SFP form-factor, SC/UPC receptacle connector, Commercial temperature
TGPON-ONU-B+-HDI	GPON SFP ONU, B+, 1.244Gbps Tx 1310nm, 2.488Gbps Rx 1490nm, TX_Burst signal high active transmitter on, Rx_SD signal high active when received input signal, SFP form-factor, SC/UPC receptacle connector, Industrial temperature