GPON ONU SFP Optical Module

Product Features

- Support ITU-T G.984 GPON Networks application
- Support ITU-T G.988 ONU management and control interface (OMCI) specification
- Support Dying Gasp function (optional)
- Configurable 1G or 2.5G UNI
- 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
- SFP package with SC/UPC or SC/APC receptacle optical interface
- Single +3.3V power supply
- Operation case temperature -40~85°C for industrial and 0~70°C for commercial
- RoHS6 compliance

Operating Condition

Parameter	Unit	Min.	Typical	Max.
Storage Temperature	°C	-40		85
Operating Relative Humidity	%	5		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
Power Consumption	W			2
Bit Rate for Tx	Gbps	1.244		
Bit Rate for Rx	Gbps	2.488		

Characteristics

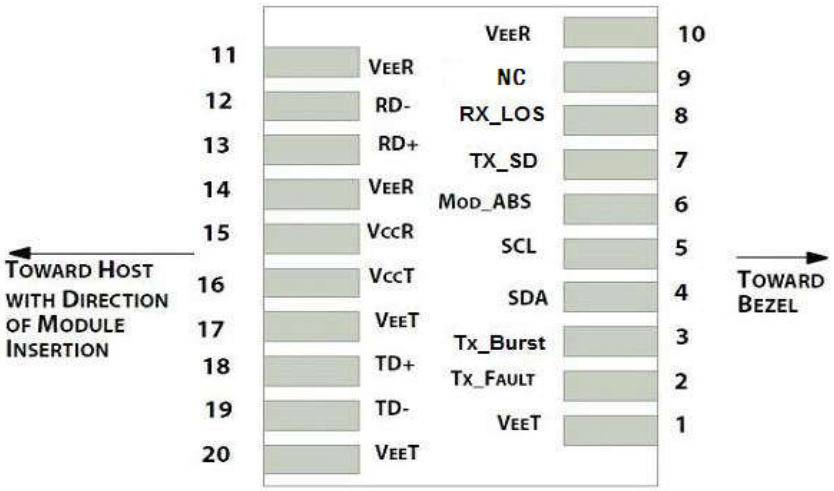
All performance is specified at whole working temperature and conditions

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

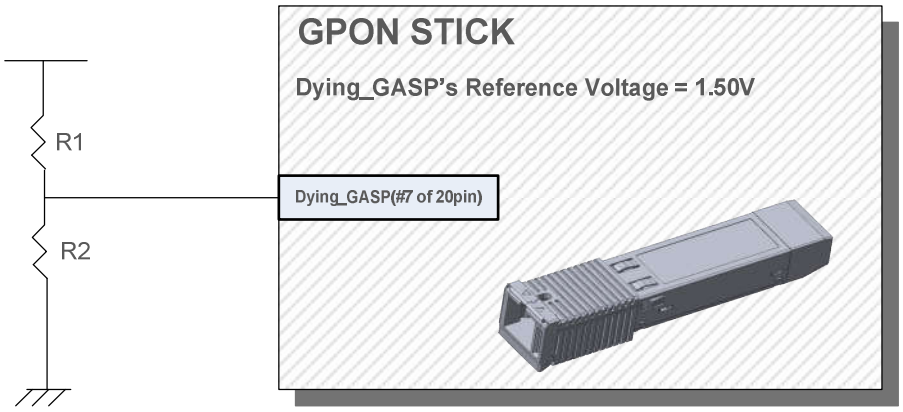
Mean Launched Power (TX Off)	dBm			-45
Extinction Ratio	dB	10		
Optical Return Loss Tolerance	dB	-15		
Transmitter and dispersion Penalty	dB			1
Transmitter Mask ($PRBS2^{23}$-1@1.244G)	Compliant With ITU-T G984.2			
Receiver				
Receive Wavelength	nm	1480	1490	1500
Sensitivity ($PRBS2^{23}$-1@2.488G, 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		Vcc
LVTTL Output Low	V	0		0.4
LVTTL Input High	V	2.0		Vcc+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

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, transmitter on when Tx_Burst low
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	Dying_Gasp	LVTTL-I	Dying_Gasp Input Reference Voltage Level
8	RX_LOS	LVTTL-O	Loss of Receiver Signal Indication
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



Dying_Gasp Features



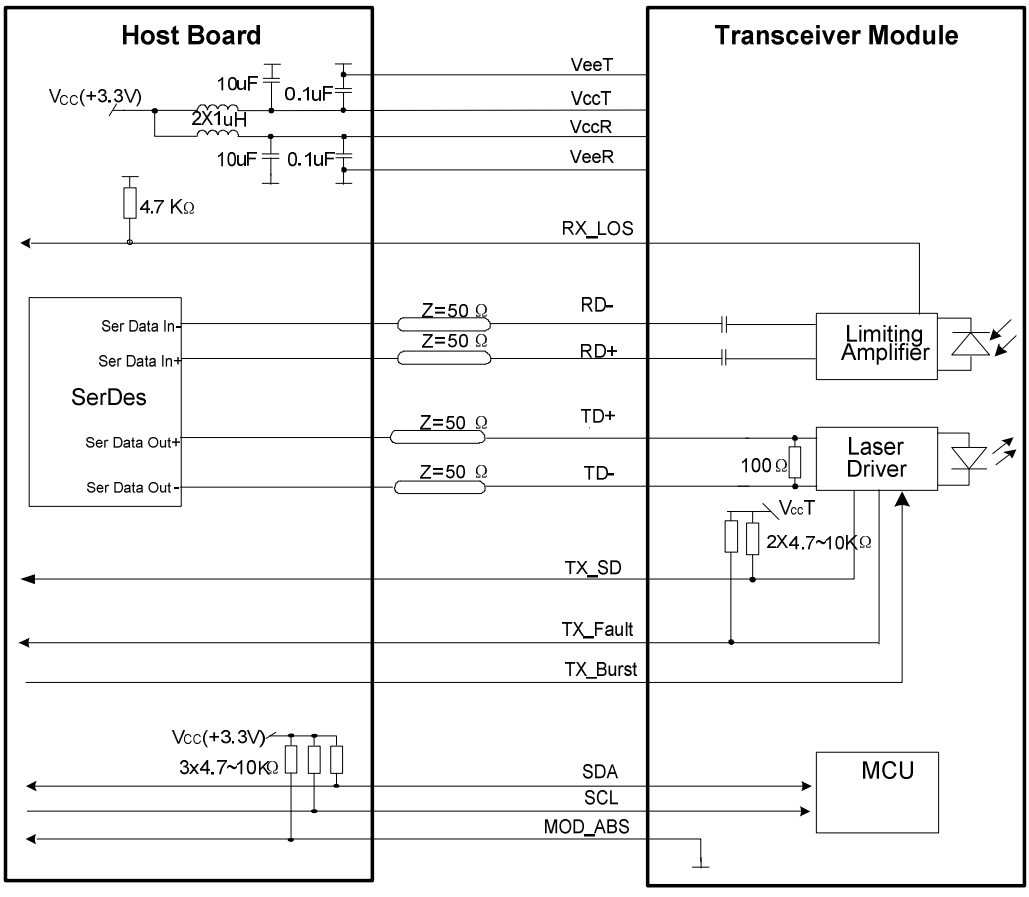
Operation

(1) If Dying_GASP Reference Voltage Hysteris can over 26mV, 80mV or 130mV,
The GPON STICK send PLOAMu message with "DYING_GASP Status" to OLT

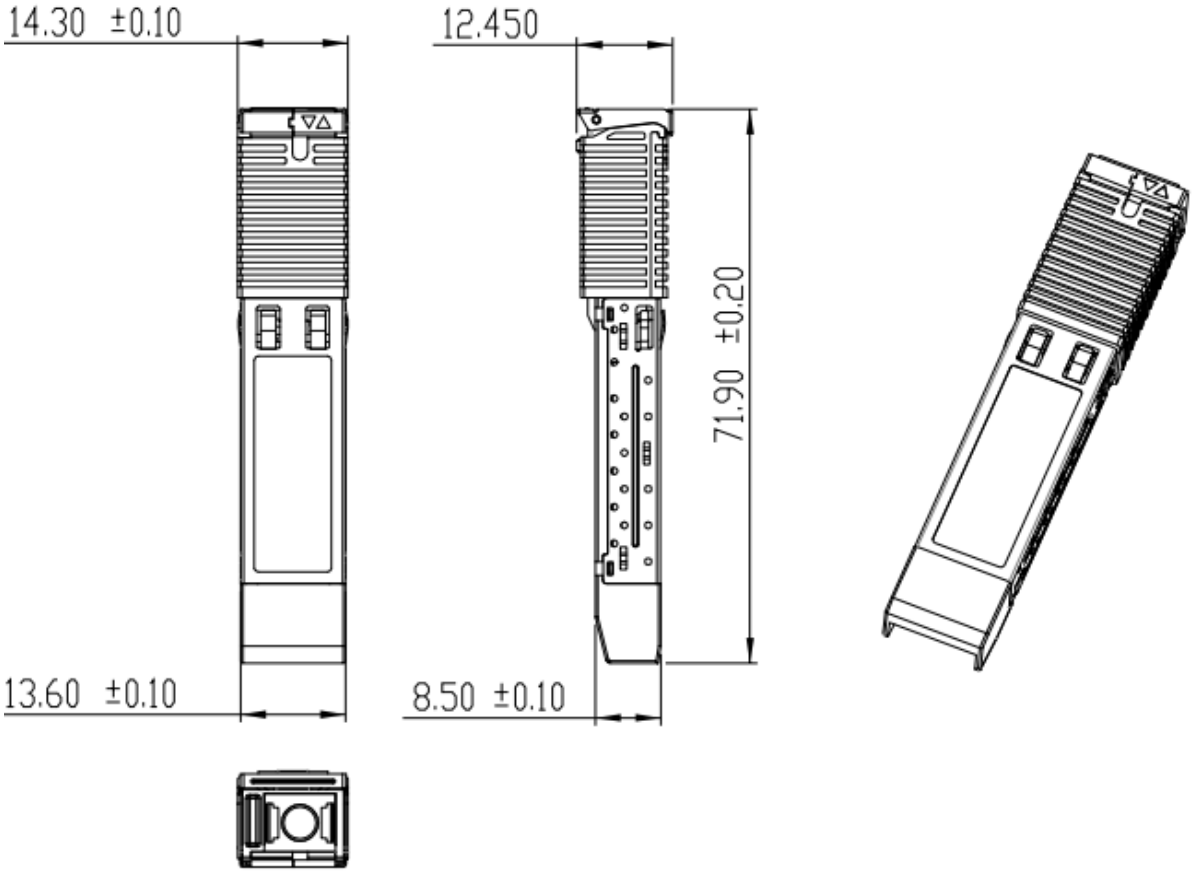
(2) To activate this Dying_Gasp Features, System Operator or OLT system can configure Dying_Gasp Registers with 26mV, 80mV or 130mV

(3) Default Dying_Gasp Register is 80mV

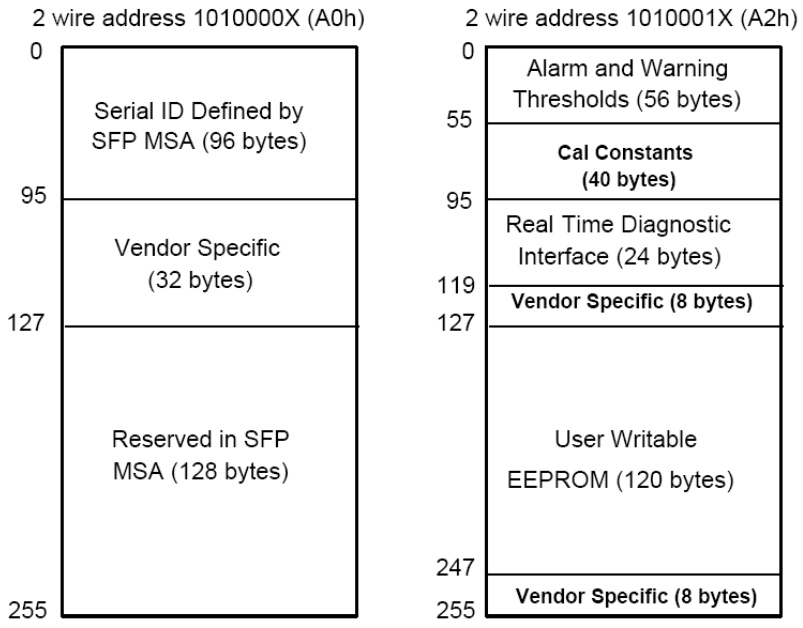
Typical Interface Circuit



Mechanical Diagram



EEPROM Memory Map



A0 EEPROM definition table (the registers in red color are writable)

TYPE	OFFSET		#	NAME
	HEX	DEC	Bytes	
BASE	0x00	0	1	Identifier
	0x01	1	1	Ext. Identifier
	0x02	2	1	Connector
	0x03	3 月 10 日	8	Transceiver
	0x0b	11	1	Encoding
	0x0c	12	1	Bit Rate, Nominal
	0x0d	13	1	Rate Identifier
	0x0e	14	1	Length (SMF, km)
	0x0f	15	1	Length (SMF, 100m)
	0x10	16	1	Length (50um)
	0x11	17	1	Length (62.5um)
	0x12	18	1	Length (copper)
	0x13	19	1	Length (OM3)
	0x14	20 - 35	16	Vendor name
	0x24	36	1	Transceiver
	0x25	37 - 39	3	Vendor OUI
	0x28	40 - 55	16	Vendor PN
	0x38	56 - 59	4	Vendor rev
	0x3c	60 - 61	2	Wavelength
	0x3e	62	1	Reserved
	0x3f	63	1	CC_BASE
EXTENDED	0x40	64	1	Options
	0x41	65	1	Options
	0x42	66	1	BR, max
	0x43	67	1	BR, min
	0x44	68 - 83	16	Vendor SN
	0x54	84 - 85	2	Date (Year)
	0x56	86 - 87	2	Date (Month)
	0x58	88 - 89	2	Date (Day)
	0x5a	90 - 91	2	Lot Code
	0x5c	92	3	Diagnostic Monitoring Type
	0x5d	93		Enhanced Options
	0x5e	94		SFF8472 Compliance
	0x5f	95		CC_EXT
VENDOR	0x60	96 - 127		Vendor Specific
	0x80	128 - 255		Reserved