

Product Description

The AC-B-SFPGMAA-I-xx SFP GPON ONU stick module has been designed for FTTx applications. AC-B-SFPGMAA-I-xx is an GPON ONU device designed with the ITU-T G984 standard . It is a cost-effective GPON customer premise system and can provide 1244Mbps upstream / 2488Mbps down-stream Broadband services by connecting subscriber's switches or routers. As compared to other broadband access technologies such as xDSL and cable modem, Passive Optical Network (PON) technology offers some competitive advantages, including a long-term life expectancy of the fiber infrastructure, lower operating costs through the reduction of "active" components, greater distance support between equipment nodes, and most importantly, much greater bandwidth. Well satisfying the high speed access demand, GPON has a more prosperous perspective. AC-B-SFPGMAA-I-xx provides the core functionality of an ITU-T G984.5 GPON Optical Network Terminal (ONT) . In addition, the device also offers some advanced functions such as DBA,AES, FEC, PLOAM,OMCI. A powerful Network Processor is provided to allow for traffic prioritization, local address filtering, and statistics gathering. A dedicated processor provides management control and responds to in-band OAM commands and Host Interface messages for configuration and statistics gathering. By means of configuring personal variables accordingly, the customer can get a device that will fit various application very well.

Applications

- Home Gateway
- Network switch,router and MDU

- Single fiber Bi-directional with 2488Mb/s Downstream.
- Single fiber Bi-directional with 1244Mb/s Upstream
- 1310nm DFB Burst Mode Laser
- 1490nm CW Mode Receiver
- Optical link measurement and diagnosis
- Downstream AES decryption
- Highly flexible 802.1Q VLAN support
- Single 3.3V DC supply
- SFP Package Outline
- Single Fiber, Full Duplex Operation
- SC/APC Optical Connector
- 2X10 Electrical SFP Connector
- Operating Temperature Range:
Industrial : -40 to 85 °C
- Power Consumption < 2w
- RoHs Compliance
- Supporting 1000BASE-X/2500BASE-X SGMII/HSGMII interface

Ordering Information		
Part Number	Optical Interface	Case Temperature
AC-B-SFPGMAA-I-xx	SC/APC Receptacle	-40 to 85 °C

Absolute Maximum Ratings					
Parameter	Symbol	Min	Max	Units	Notes
Storage Ambient Temperature	T _{stg}	-40	+85	°C	Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
Relative Humidity - Storage	RH _S	0	95	%	
Relative Humidity - Operating	RH _O	5	80	%	
Module Supply Voltage	V _{CC}	GND	3.6	V	
Tx_DIS Logic HIGH State	Tx_DIS _H	2.0	V _{CC}	V	LVTTTL
Tx_DIS Logic LOW State	Tx_DIS _L	0	0.8	V	
Tx_FAULT Logic HIGH State	Tx_Fault _H	2.4	-	V	LVTTTL (Open Collector/Drain)
Tx_FAULT Logic LOW State	Tx_Fault _L	-	0.4	V	
Rx_LOS Logic HIGH State	Rx_LOS _H	2.4	-	V	LVTTTL (Open Collector/Drain)
Rx_LOS Logic LOW State	Rx_LOS _L	-	0.4	V	

Recommended Operating Conditions						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Case Temperature	T _{CASE}	0	25	70	°C	Temperature = C
		-40	25	85	°C	Temperature = I
Module Supply Voltage	V _{CC}	3.135	3.3	3.465	V	
Module Supply Current (Tx and Rx)	I _{IN}	-	550	-	mA	
Module Power Dissipation	P _D	-	-	2	W	
Optical upstream Data Rate	BR	-	1244	-	Mbps	
Optical downstream Data Rate	BR	-	2488	-	Mbps	

Transmitter Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	Conditions / Notes
Tx_Data Differential Input Voltage	V_{ID}	300	-	1200	mV	
Bit Rate(TX)	BR_{TX}	-	1250	-	Mbps	
Tx_DIS = HIGH (Transmitter OFF)	V_{OH}	2.0	-	V_{CC}	V	
Tx_DIS = LOW (Transmitter ON)	V_{OL}	0	-	0.8	V	

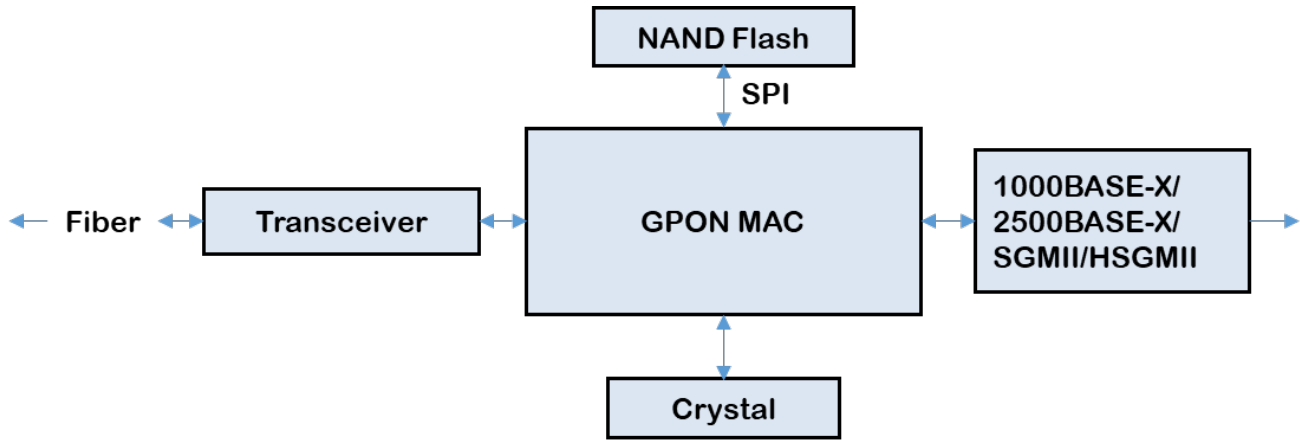
Receiver Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	Conditions / Notes
Rx_Data Differential Output Voltage	V_{OD}	300	-	800	mV	SGMII mode
Bit Rate(RX)	BR_{RX}	-	1250	-	Mbps	SGMII mode
Rx_LOS Logic HIGH State	$V_{LOS,H}$	2.4	-	-	V	LVTTTL(Open Collector/Drain)
Rx_LOS Logic LOW State	$V_{LOS,L}$	-	-	0.8	V	

Transmitter Optical Characteristics						
Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Transmitter Type		1310 nm DFB Burst Mode				
Upstream Signaling Speed	Sup	-	1244	-	Mb/s	
Average Output Power (9/125 μ m SMF)	P_{out}	0	-	5.0	dBm	Note 1
Optical Output with Tx OFF	P_{out}	-	-	-40	dBm	
Tx Wavelength	λ	1290	1310	1330	nm	
Spectral Line Width @-20dB	$\Delta\lambda$	-	-	1.0	nm	
Extinction Ratio	ER	10	-	-	dB	Measured by Ethernet package with random payload.
Side Mode Suppression Ratio	SMSR	30	-	-	dB	

Receiver Optical Characteristics						
Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Receiver Type		1490nm CW Mode				
Downstream Signaling Speed	Sdown	-	2488	-	Mb/s	
Optical Center Wavelength	λ	1480	1490	1500	nm	
Receiver Sensitivity	P_{IN}	-	-	-28.0	dBm	BER<10 ⁻¹⁰ , 2488 Mb/s, PRBS 2 ²³ -1, ER=11dB
Receiver Optical Overload	$P_{IN}(SAT)$	-8	-	-	dBm	
Rx_LOS of Signal Asserted	P_A	-45	-	-	dBm	
Rx_LOS of Signal Deasserted	P_D	-	-	-28.5	dBm	
Rx_LOS of Signal Hysteresis	P_{Hy}	0.5	-	6.0	dB	

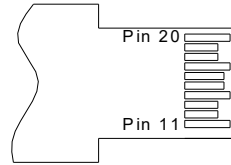
Note 1: Measured with 9/125um G.652 SMF.

AC-B-SFPGMAA-I-xx Block Diagram

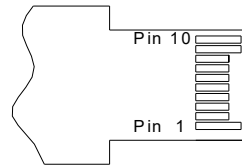


PIN Assignment

TOP VIEW
OF BOARD

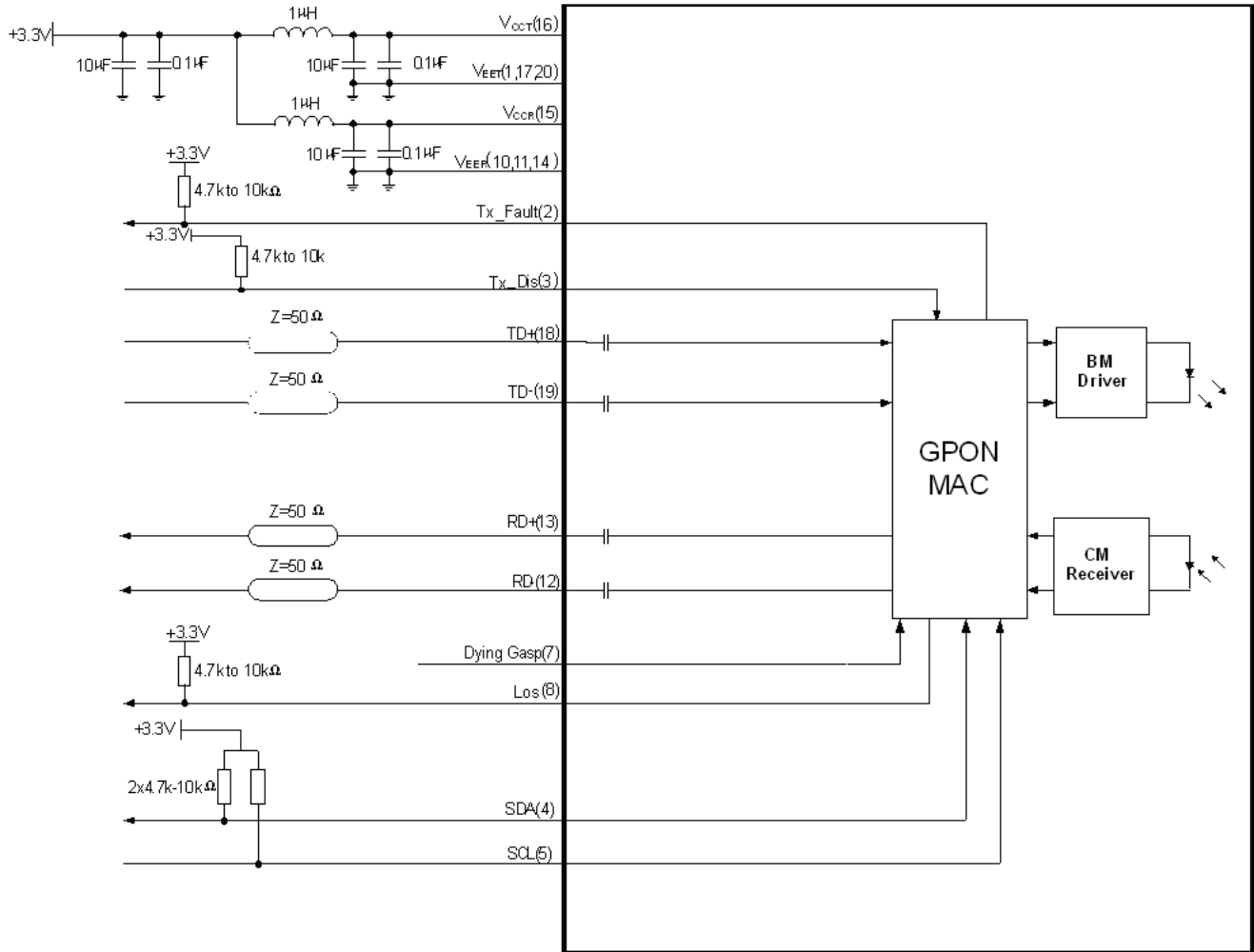


BOTTOM VIEW
OF BOARD

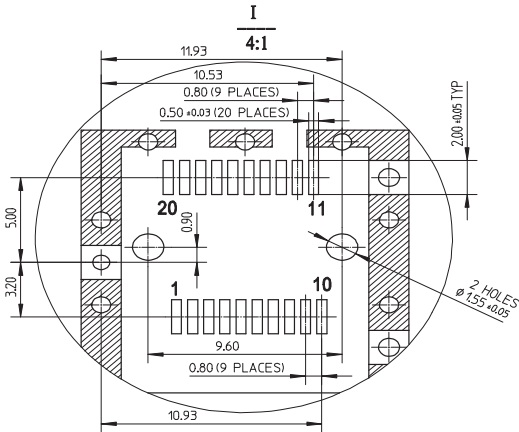


PIN Assignment			
Pin	Symbol	Description	Notes
1	V _{EET}	Transmitter Ground	
2	Tx_FAULT	Transmitter Fault, LOW = Normal Operation, HIGH = Fault Indication	1
3	Tx_DIS	Transmit Disable, LOW = Normal Operation, HIGH = Disables Module	1
4	MOD_DEF 2	Module Definition 2 - Two-Wire Interface - Serial Data	1
5	MOD_DEF 1	Module Definition 1 - Two-Wire Interface - Clock Signal	1
6	MOD_DEF 0	Module Definition 0 - Presence Pin, the MOD_DEF0 Signal set to low level after initialisation of µC and power up the I2C interface	
7	Dying Gasp	Dying Gasp Indication, when high indicates normal operation, low indicates power fail	4
8	LOS	Loss of Signal, When high indicates no optical power; Low indicates normal operation	1
9	V _{EER}	Receiver Ground	
10	V _{EER}	Receiver Ground	
11	V _{EER}	Receiver Ground	
12	RD-	Rx_Data Output (Inverted)	2
13	RD+	Rx_Data Output (Non Inverted)	2
14	V _{EER}	Receiver Ground	
15	V _{CCR}	Receiver DC Power	3.3 V +/- 5%
16	V _{CCT}	Transmitter DC Power	3.3 V +/- 5%
17	V _{EET}	Transmitter Ground	
18	TD+	Tx_Data Input (Non Inverted)	3
19	TD-	Tx_Data Input (Inverted)	3
20	V _{EET}	Transmitter Ground	
Notes			
1. The uncommitted Tx_FAULT, Tx_DIS, MOD_DEF2, MOD_DEF1 and LOS monitor and control pins each require a pull up resistor of 4.7k to 10k Ohms. The pull-up voltage must be 3.3V. 2. The 100Ohms differential Rx Data output is internally AC coupled. Supporting 1000BASE-X/2500BASE-X/SGMII/HSGMII interface 3. The 100Ohms differential Tx Data input is internally AC coupled. Supporting 1000BASE-X/2500BASE-X/SGMII/HSGMII interface 4. Voltage Detect Input for Dying Gasp. When the voltage on this pin is lower than 1.29V+/-5%, a dying gasp event is triggered. A 4.7k Ohm resistor is used to pull up to DC Power in the module.			

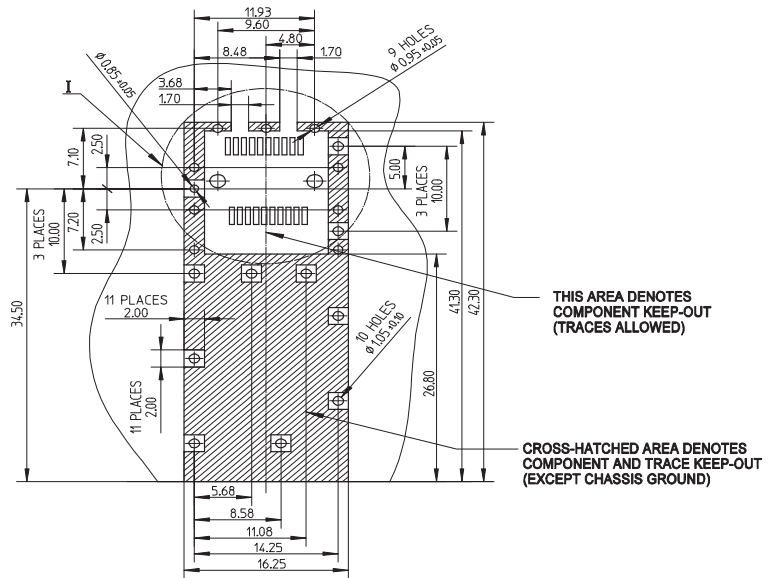
AC-B-SFPGMAA-I-xx Electrical Interface



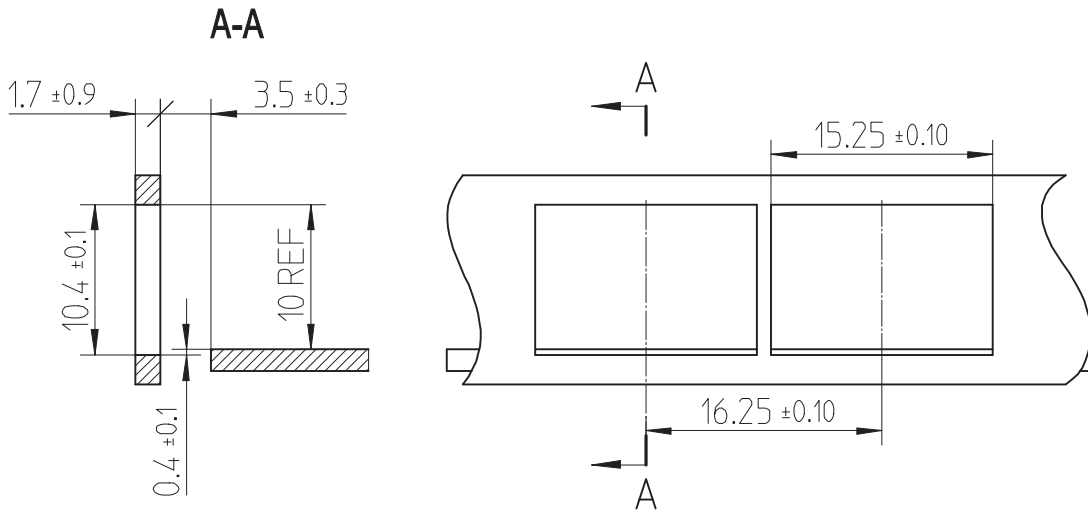
Recommended PCB Layout



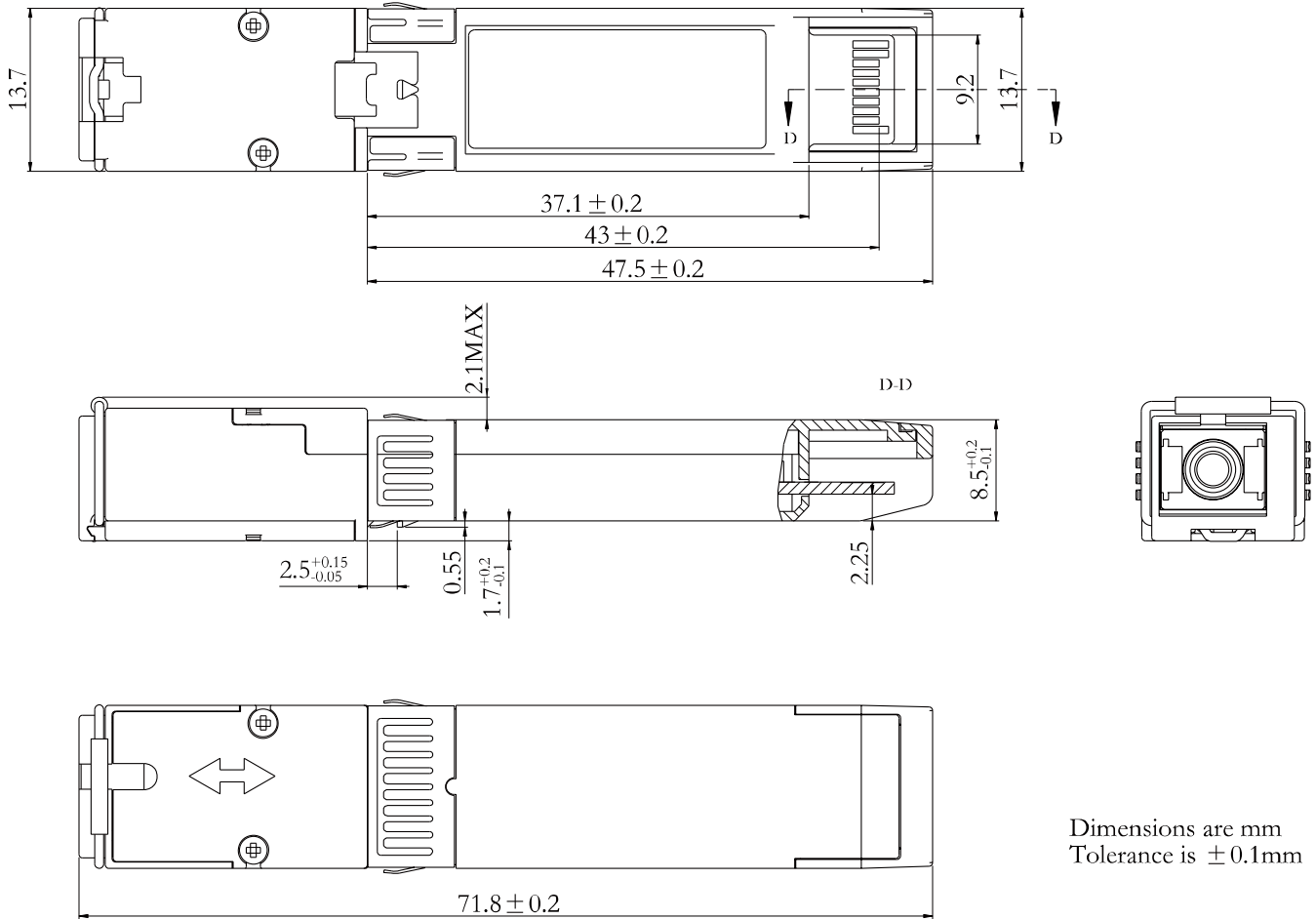
- Notes:**
1. Datum and basic dimensions established by customer
 2. Pads and vias are chassis ground, 11 places
 3. Thru holes, plating optional



Recommended Front Panel Layout



AC-B-SFPGMAA-I-xx 2x10 SFP with SC RECEPTACLE OUTLINE DRAWING



Dimensions are mm
Tolerance is ± 0.1 mm