IPBM-06

Datasheet

MESH Bluetooth Low Energy (BLE) 4.0 Module

Module No.: IPBM-06

Version: V1.0

Date: 2018-1-28

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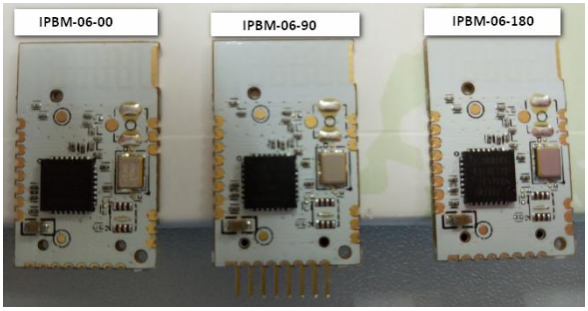
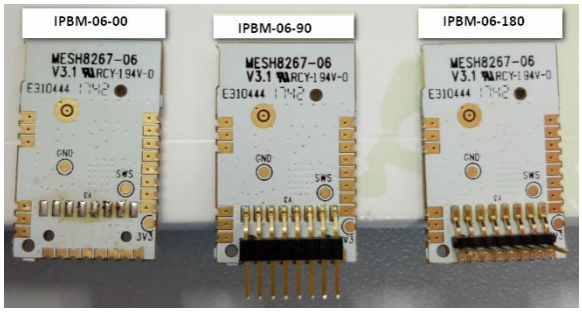
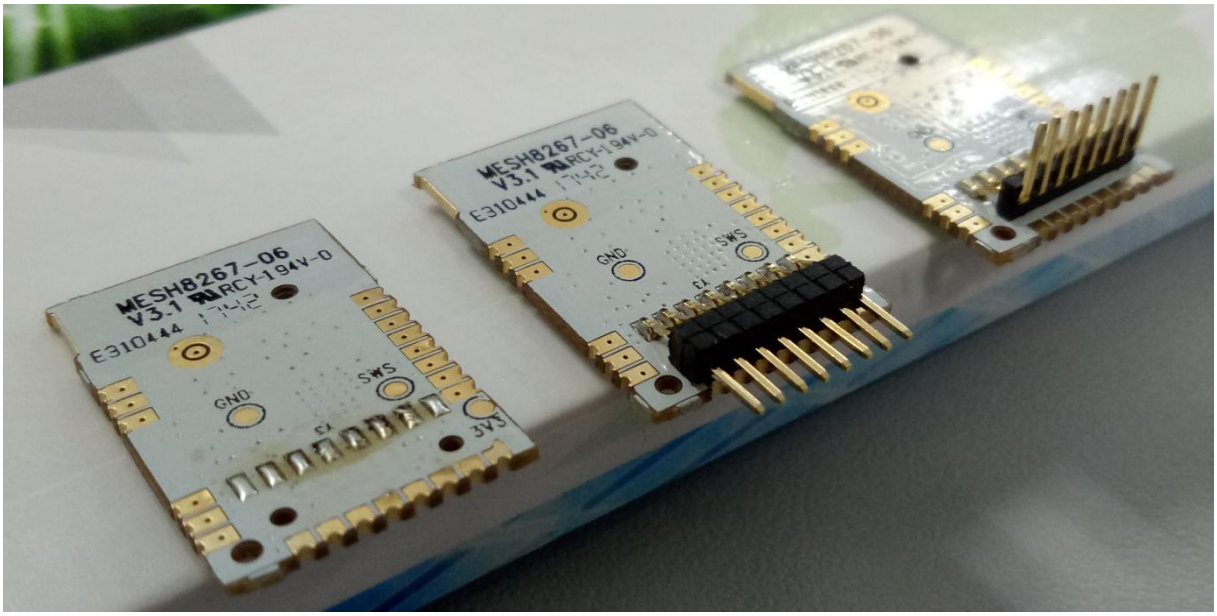
Content







1. Introduction

The IPBM-06 with optional internal PCB printing antenna and IPEX RF connector is MESH Bluetooth Low Energy (BLE) solution which is fully Bluetooth 4.0 standard compliant and allows easy connectivity with Bluetooth Smart Ready devices. IPBM-06 supports BLE slave and master mode operation, including broadcast, encryption, connection updates, and channel map updates. It is RoHS-compliant and 100% lead (Pb)-free. With internal 512KBytes Flash and 16KB SDRAM are programmable for more applications, 14bits ADC with PGA, 6 channels PWM, three quadrature decoders, GPIOs.

8 pins are easy installation with removable to be an SMT module (PCB stamp holes linking) in the mean time.

2. Features

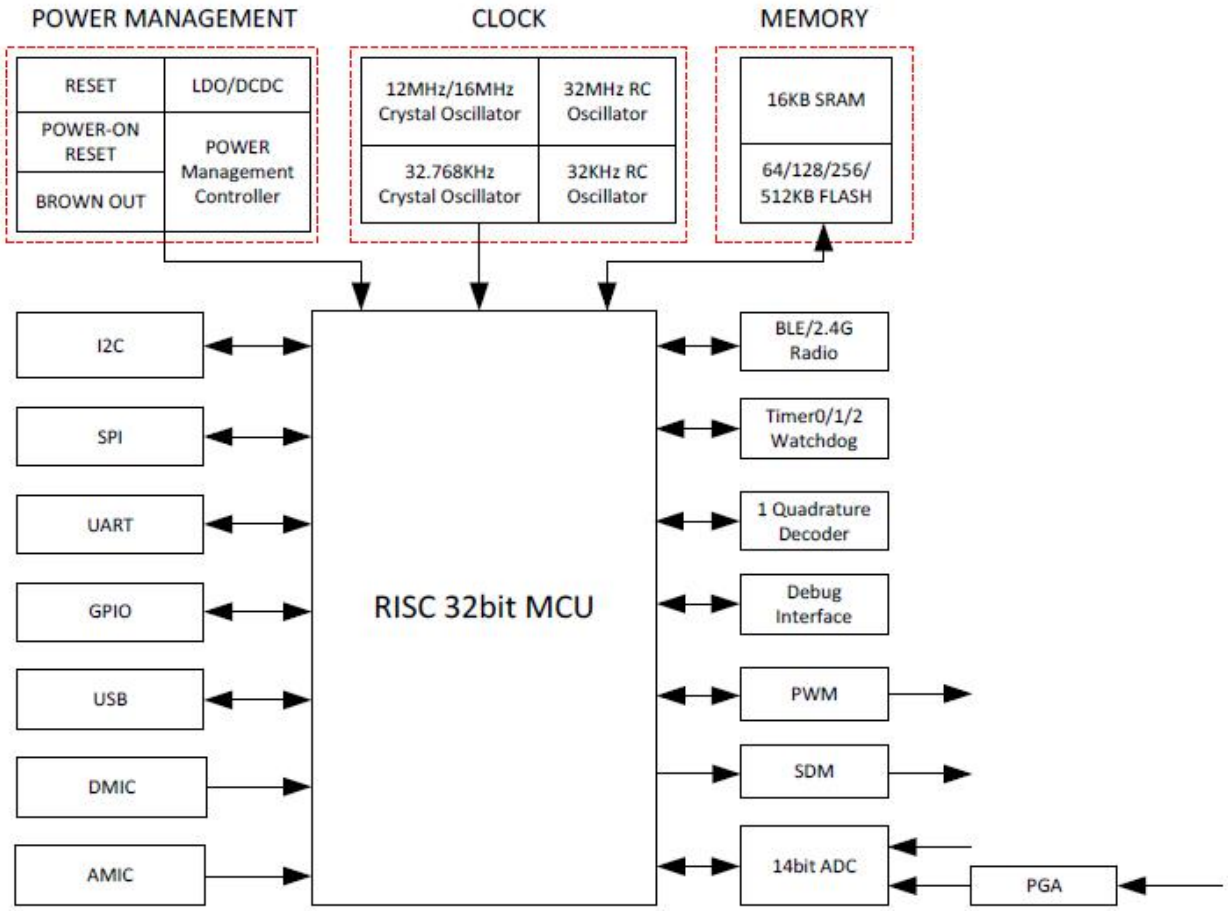
- TLSR8267/9F512 system on chip
- Built-in Flash 512KBytes
- Built-in 16KB(TLSR8267) , 32KB(TLSR8269) SDRAM
- Compact size 22 x 14 x 2.8mm
- Up to 6 channels PWM
- Embedded Hardware AES
- Host Controller Interface (HCI) over UART, I2C and USB 2.0 in full speed
- Class 1 supported with 8dBm maximum TX power
- Operation Temperature: ET Version:-40 to 85 ℃, AT version: -40℃~+125℃
- Bluetooth 4.0 1Mbps, Boost Mode: 2Mbps
- TX RF Power: +7dBm
- RX :-92dBm BT4.0 Sensitivity
- RSSI Monitoring
- Embedded LDO
- Battery monitoring
- Low power consumption
- 100k program/erase, 20 years data retention

3. Applications

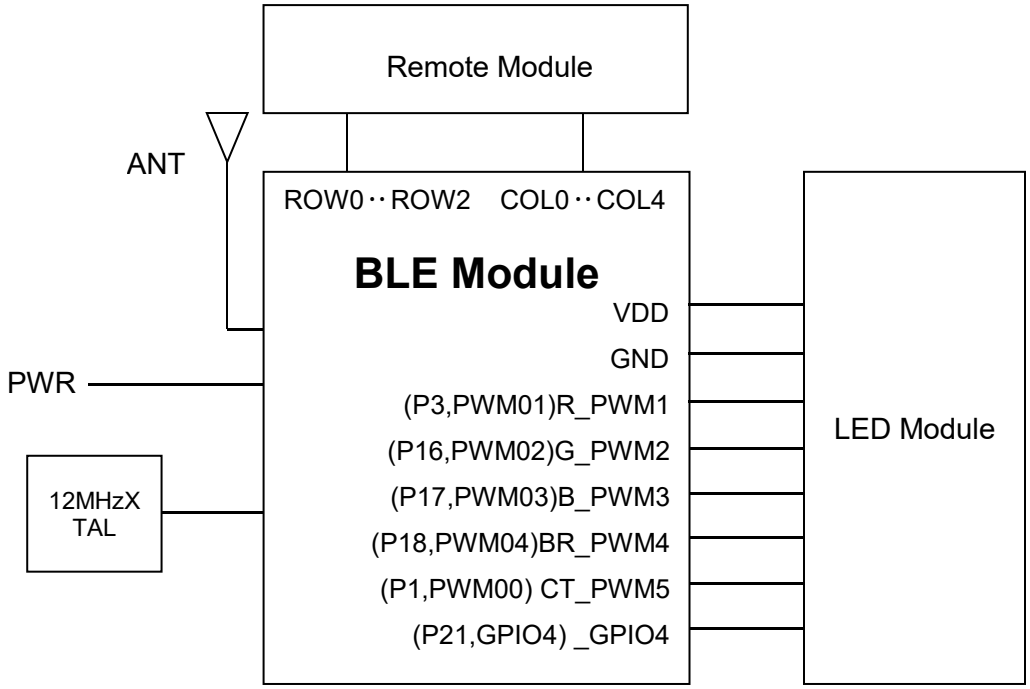
- Smart Devices Switch, Remote Control and 3D glasses
- LED Lighting control
- Smartphone accessories
- Wireless Microphone
- Health monitoring
- Sports and fitness tracking
- Wearable devices
- PC and tablet peripherals, including Mouse / Keyboard

4. Module Diagram

TLS8267 SoC diagram

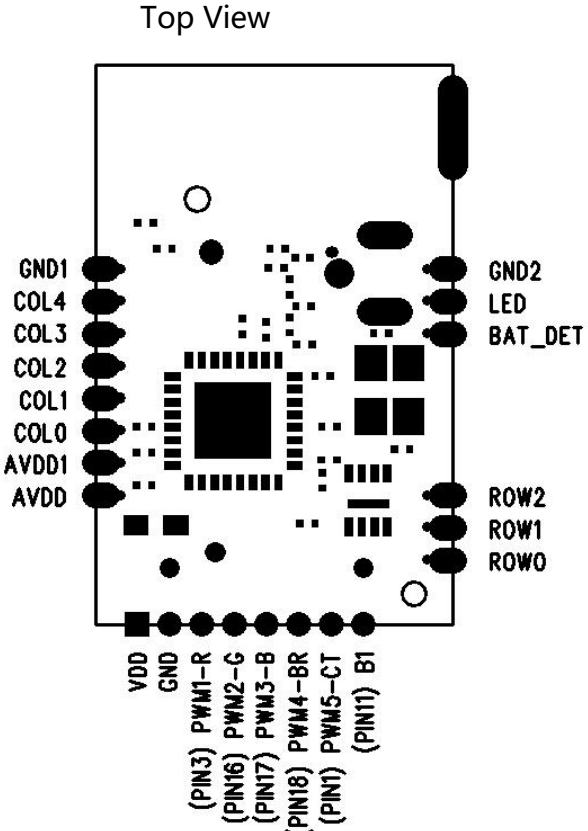


BLE Module diagram



PCBA top view diagram

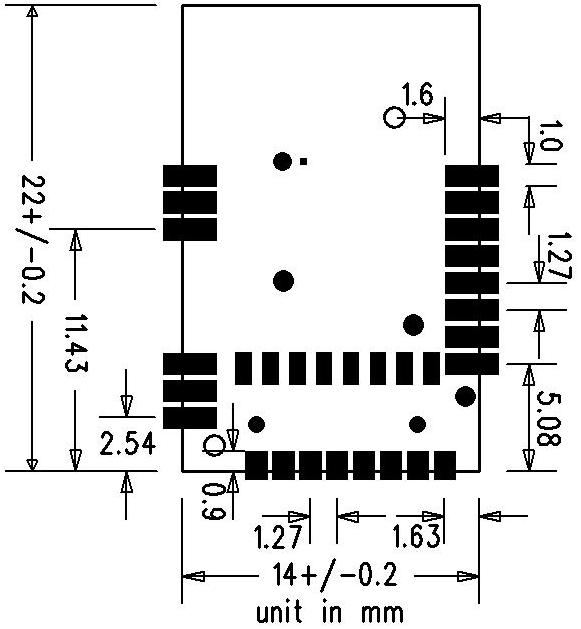
Dimension unit: mm



Dimension Diagram

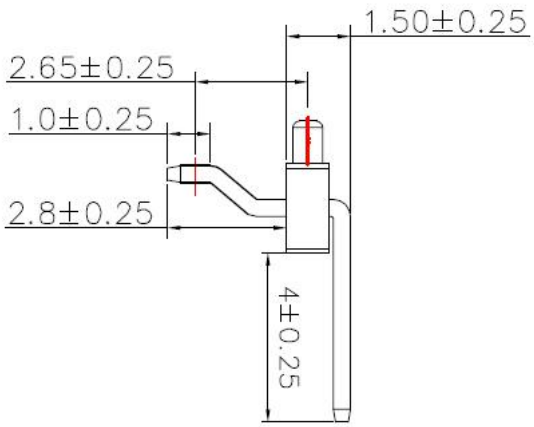
Dimension unit: mm

Bottom View



PCB Thickness: 0.8+/-0.15mm

Side View



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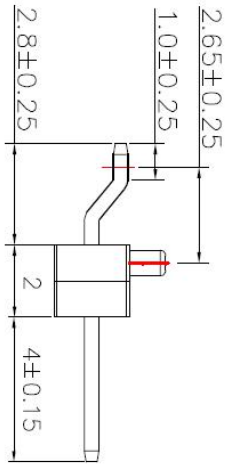

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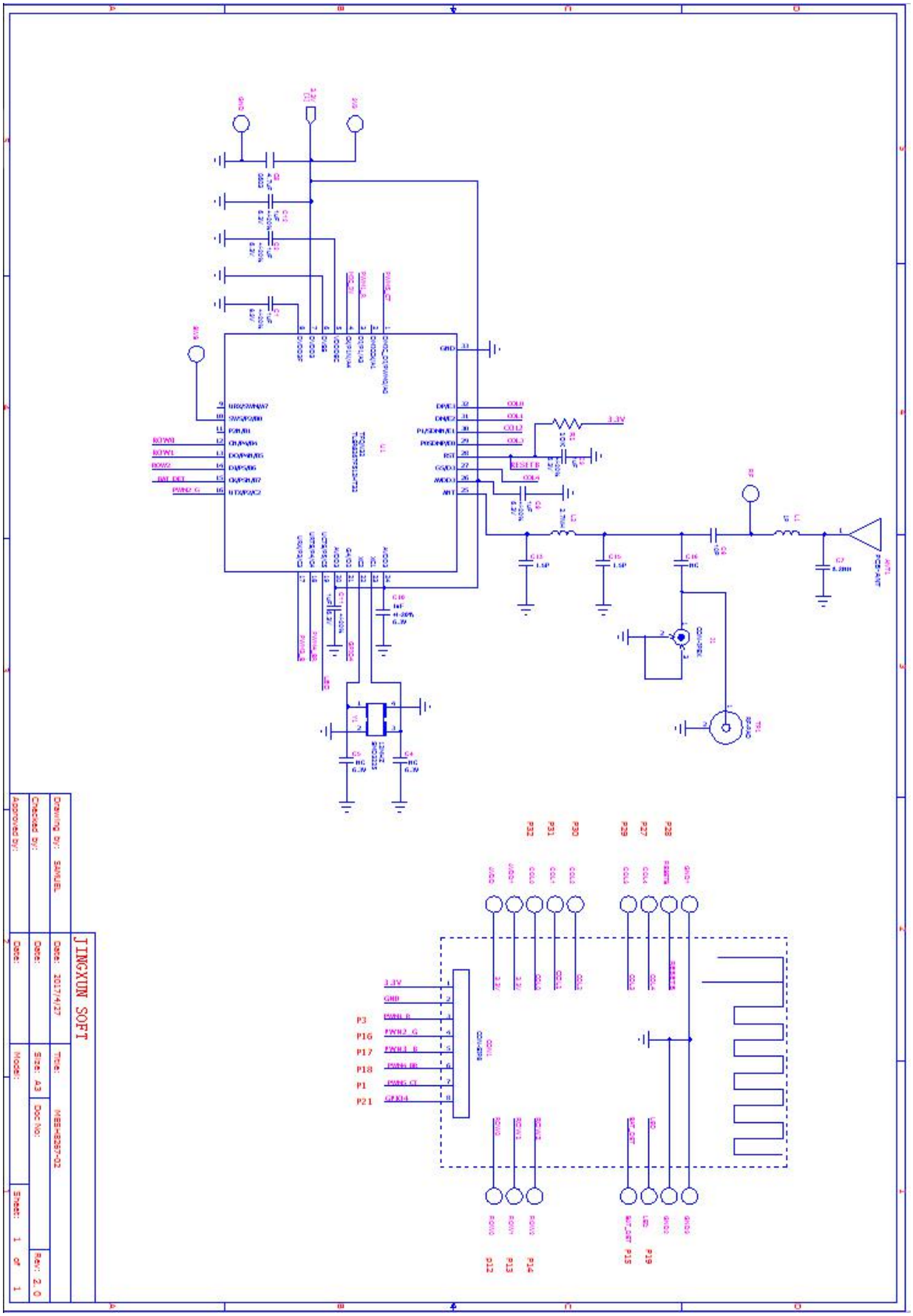
5. Module Schematic



6. Pins Description

Pin	NAME	Inter	I/O	Description
1	VDD	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V
2	GND	Ground	-	Ground
3	PWM1-R	Analog	I/O	SoC TLSR8267F512P3 PWM01 Red (R)
4	PWM2-G	Analog	I/O	SoC TLSR8267F512P16 PWM02 Green (G)
5	PWM3-B	Analog	I/O	SoC TLSR8267F512P17 PWM03 Blue (B)
6	PWM4-BR	Analog	I/O	SoC TLSR8267F512P18 PWM04 Bright (BR)
7	PWM5-CT	Analog	I/O	SoC TLSR8267F512P1PWM00Control (CT)
8	B1	Digital	I/O	SoC TLSR8267F512P11 B1
9	ROW0	Analog	I/O	SoC TLSR8267F512P12 Remote Port
10	ROW1	Analog	I/O	SoC TLSR8267F512P13 Remote Port
11	ROW2	Analog	I/O	SoC TLSR8267F512P14 Remote Port
12	BAT_DET	Analog	I/O	SoC TLSR8267F512P15 Remote Control Battery Test
13	LED	Analog	I/O	SoC TLSR8267F512P19 Remote Light
14	GND2	Ground		Ground
15	GND1	Ground		Ground
16	COL4	Analog	I/O	SoC TLSR8267F512P27 Remote Port
17	COL3	Analog	I/O	SoC TLSR8267F512P29 Remote Port
18	COL2	Analog	I/O	SoC TLSR8267F512P30 Remote Port
19	COL1	Analog	I/O	SoC TLSR8267F512P31 Remote Port
20	COL0	Analog	I/O	SoC TLSR8267F512P32 Remote Port
21	AVDD1	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V
22	AVDD	Power	I	DC 3.3V input, Max 3.6V, Min 3.0V

7. Electronic Specification

Item	Specification
RF Transmitting Power Level	7 dBm Max
RF Receiver Sensitivity	-93 dBm at 1Mbps
Flash	512kb

Antenna	Printed PCB Antenna 0 dBi Gain
Linking Distance	30 M Out of Sight
RAM	16 KB x 32 bits
Data Rate	250 kbps, 500 kbps, 1 Mbps, 2 Mbps
Physical Connectors	1 x 8 pins 1.27mm pitch through terminal 14 holes PCB board edge stamp holes
Operation Voltage	2.9V to 3.6V
Operation Temperature	-40 to 125 ℃
Security	128 Bit AES encryption
Interface	PWM, UART, I2C, USB. GPIO
EMC	To be approved

8. Power Consumption

Operation Mode	Consumption
Operation (TX/RX) 0dBm	30mA
Standby (Deep Sleep) depend on firmware	0.7uA (optional by firmware)

9. Antenna Specification

ITEM	UNIT	MIN	TYP	MAX
Frequency	MHz	2400		2500
V.S.W.R				2.0
Gain(AVG)	dBi	0		
Maximum input power	W			1
Characteristics TYPE	Meander IFA			
Polarization	Vertical			
Radiated Pattern	Omni-directional			
Impendence	50			
SIZE	14 X 4 X 22 mm			

Optional internal antenna by PCB printing antenna.

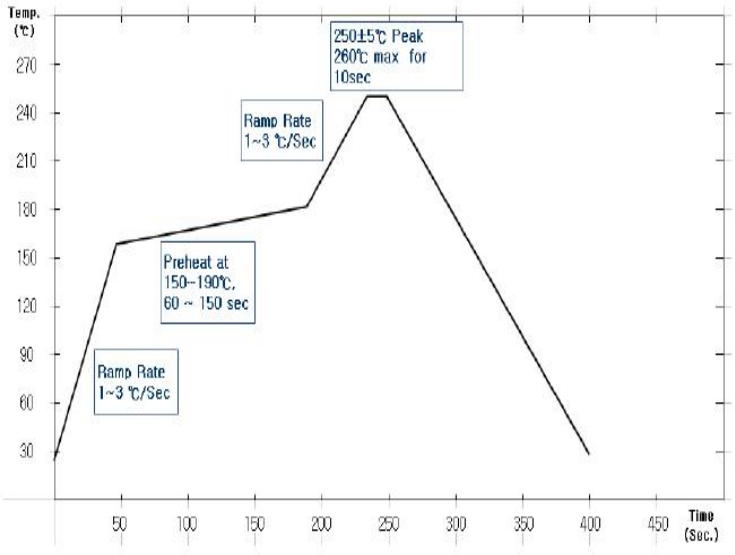
10. Ordering Information

Part Number	Description
IPBM-06-00-I_V3.1	Internal Printing PCB Antenna, SMT mounted form
IPBM-06-90-I_V3.1	Internal Printing PCB Antenna, vertically mounted with pin header
IPBM-06-135-I_V3.1	Internal Printing PCB Antenna, 135 degree mounted with pin header
IPBM-06-180-I_V3.1	Internal Printing PCB Antenna, horizontally mounted with pin header
IPBM-06-00-E_V3.1	External Antenna with IPEX connector, SMT mounted form
IPBM-06-90-E_V3.1	External Antenna with IPEX connector,vertically mounted with pin header
IPBM-06-135-E_V3.1	External Antenna with IPEX connector, 135 degree mounted with pin header
IPBM-06-180-E_V3.1	External Antenna with IPEX connector, horizontally mounted with pin header

11. Package

Tray plate: **To Be Defined**

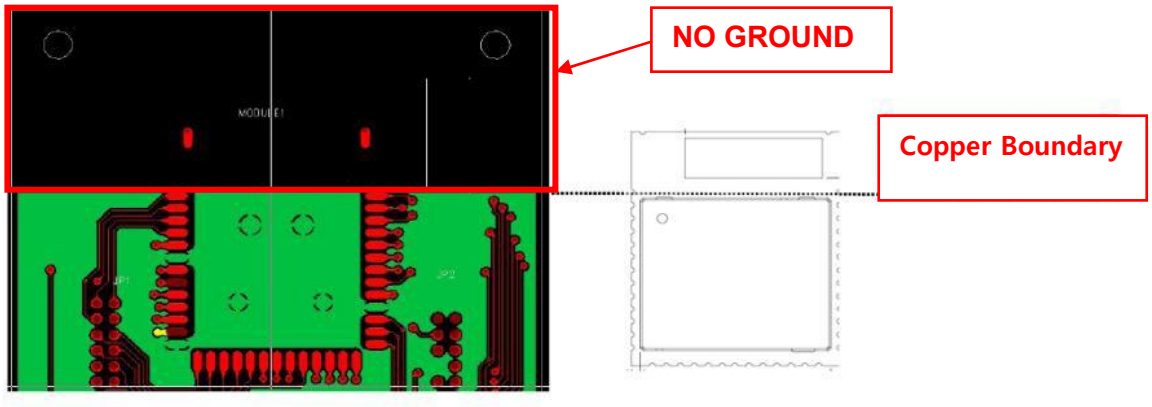
12. Reflow Profile



13. Application Design Note

To Be Discussed

14. Antenna Design



Influence of GND on Antenna

a) The GND interrupts the emission of antenna but isessential.
) RF vertical GND is important in antennadesign.
c) Normally, the emission rate is improved as more GND is secured and edged GND of antenna is cut.

15. FCC Compliance

FCC statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.

"Contains Transmitter module FCC ID: 2AOYS-IPBM06"

The modular must be installed in the host that assign by Shenzhen Jingxun Software Telecommunication Technology Co., Ltd., if other host types used would need further evaluation and possible C2PC if they are not significantly similar to the one tested.