IPBM82-18

Datasheet

MESH Bluetooth Low Energy (BLE) 5.0 Module

Module No.: IPBM82-18

Version: V1.0

Date: 2019-02-25

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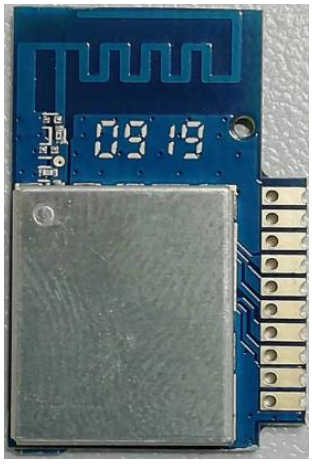
Change History:

Version	Description	Prepared By	Date
V1.0	1st edition		2019/02/25

Content



1. Introduction

The IPBM82-18 with internal PCB printing antenna is MESH Bluetooth Low Energy (BLE) solution which is fully Bluetooth 5.0 standard compliant and allows easy connectivity with Bluetooth Smart Ready devices. IPBM82-18 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 are programmable for more applications, 14bits ADC with PGA, 5 channels PWM, three quadrature decoders, GPIOs.

10 golden-finger pins are easy installation with SMT workmanship or PCB-Through-PCB by automatically wave-soldering machine in the mean time.

2. Features

- TLSR82XXF512ET system on chip
- Built-in Flash 512KBytes
- Compact size 24.8 x 16mm
- Up to 5 channels PWM
- Embedded Hardware AES
- Host Controller Interface (HCI) over UART
- Class 1.5 supported
- Operation Temperature:

  -40 to 105 ℃（IPBM82-18-O-H-IS000）
- Bluetooth 5.0 1Mbps, Boost Mode: 2Mbps

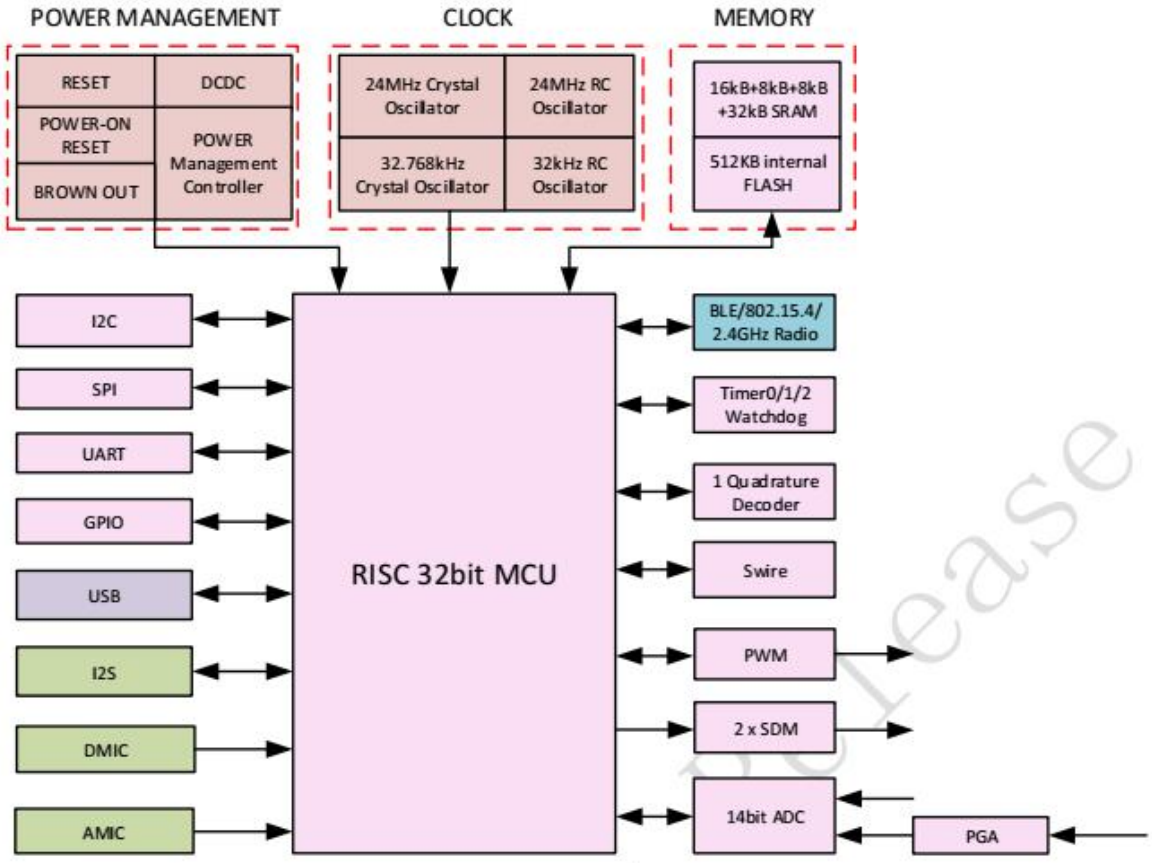
- RSSI Monitoring
- Embedded LDO
- Battery monitoring
- Low power consumption
- 100k program/erase, 20 years data retention

3. Applications

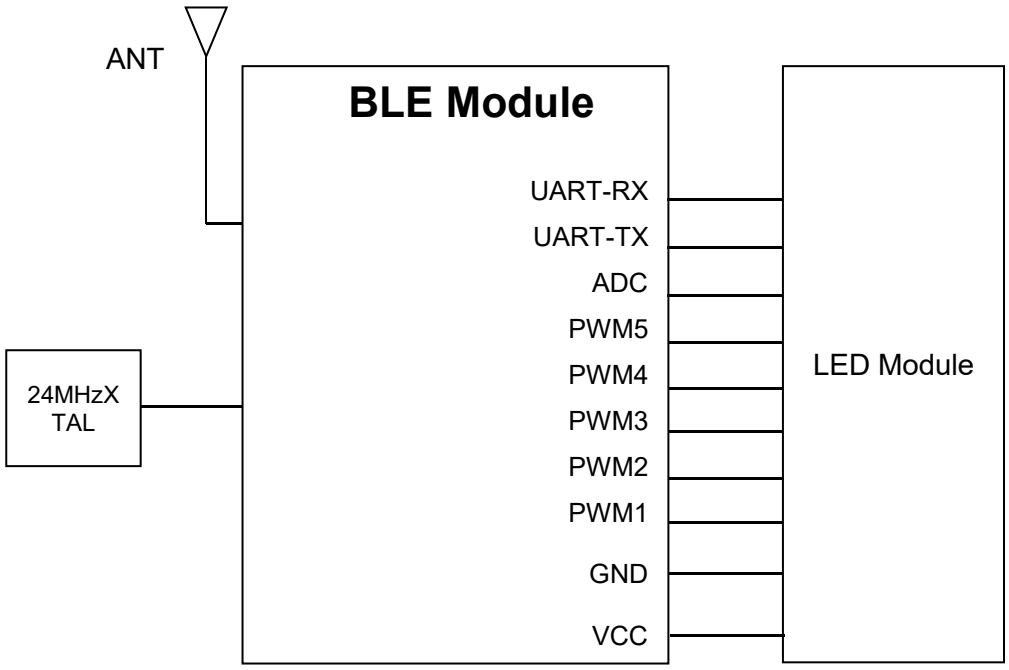
- Smart Devices Switch, Remote Control and 3D glasses
- LED Lighting control
- Smartphone accessories
- Wireless Microphone
- Health monitoring
- Sports and fitness tracking
- Wearable devices
- PC and tablet peripherals, including Mouse / Keyboard

4. Module Diagram

TLS82XX SoC diagram



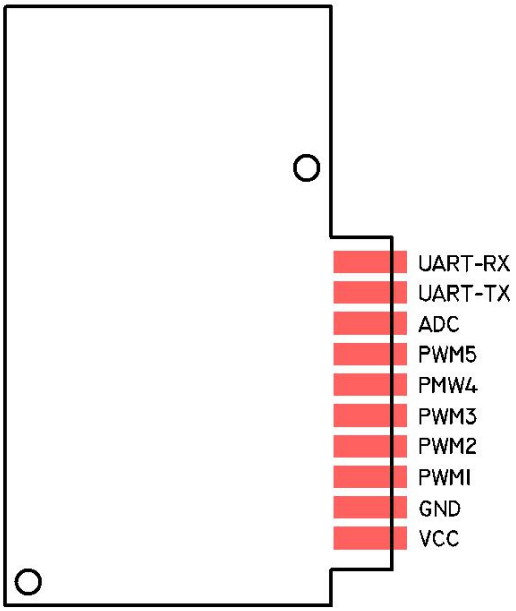
BLE Module diagram



Module Pins Assignments/Dimensions/Recommended Layout

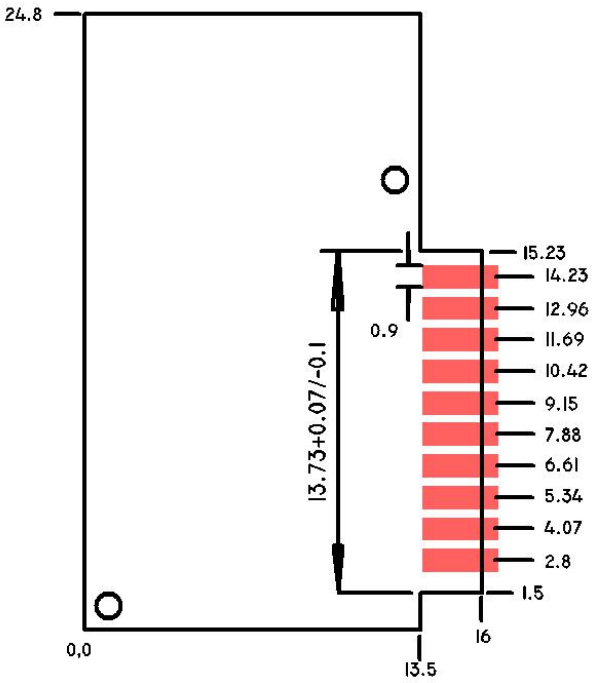
1.Pin Assignments

Top View



2.Dimension Diagram

Dimension unit: mm



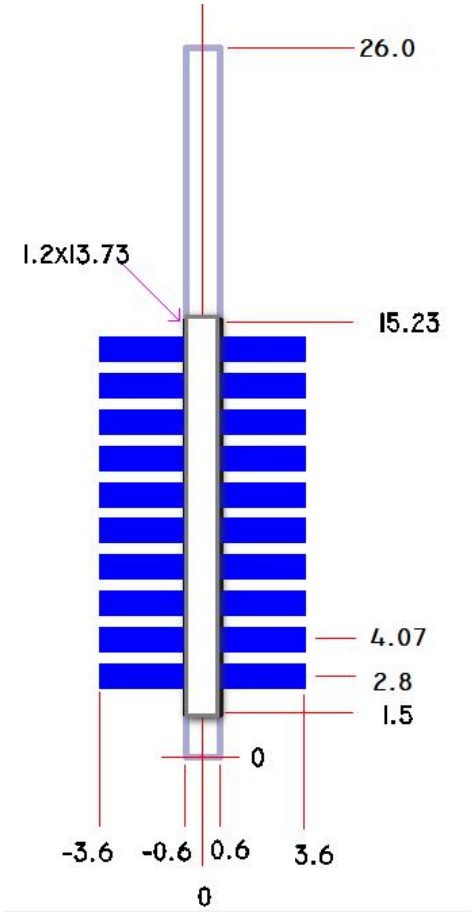
Specified tolerance control: 13.73+0.07/-0.1

PCB Thickness: 1.2+/-0.1mm

※All dimension tolerance meet GB/T1804-m unless other specified.

3. Recommended Layout

Unit: mm

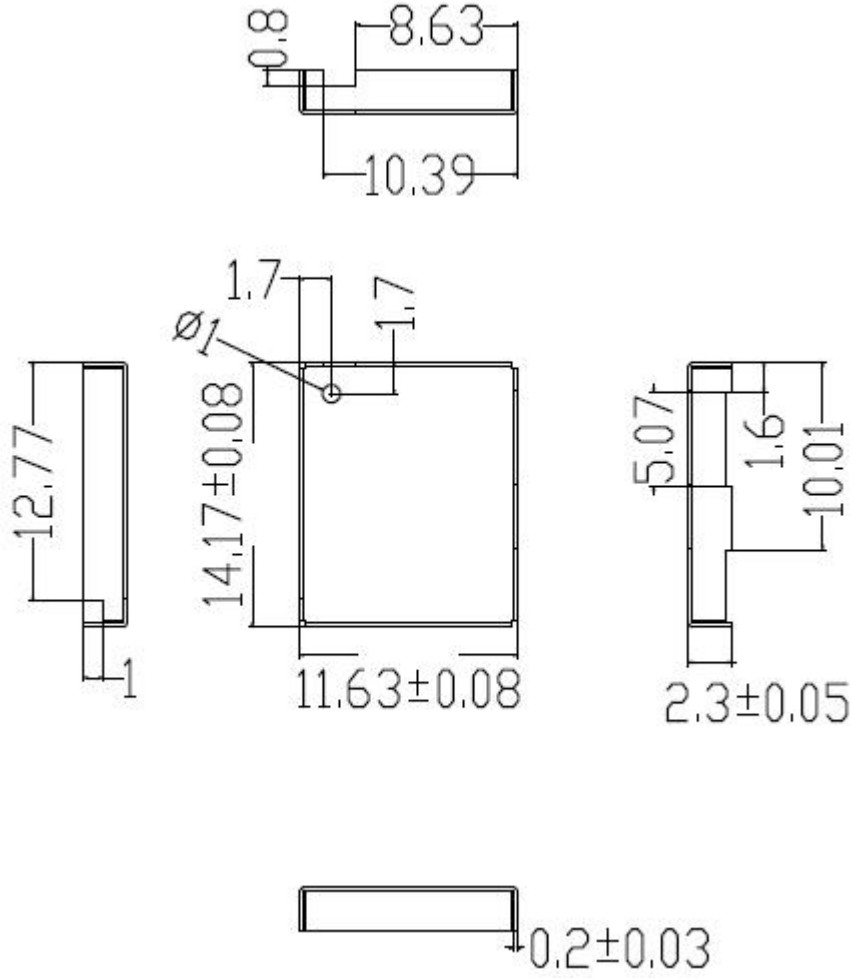


Pad(as blue) size 3x0.9mm, pitch 1.27mm. Need cut off the area 1.2x13.73mm as mechanical slot hole so that PCB golden-fingers of BLE module can be through-inserted and mounted with your PCB by an automatically wave-soldering workmanship.

Please contact your sales consultants for original PCB footprint for the module if needed in case your PCB layout design tool is PADS.

4. Shield cover Size

Unit: mm



5. Module Schematic

Please further contact if needed.

6. Pins Description

Pin	NAME	I/O	Description
1	VCC	P	Power supply，3.3V/50mA
2	GND	P	Ground
3	PWM1	I/O	SoC TLSR82xxF512 Pin14 , PWM output
4	PWM2	I/O	SoC TLSR82xxF512 Pin15 , PWM output
5	PWM3	I/O	SoC TLSR82xxF512 Pin21 , PWM output
6	PWM4	I/O	SoC TLSR82xxF512 Pin23 , PWM output
7	PWM5	I/O	SoC TLSR82xxF512 Pin24 , PWM output
8	ADC	I	SoC TLSR82xxF512 Pin16 , A/D input
9	UART-TX	O	SoC TLSR82xxF512 Pin6 , UART TX
10	UART-RX	I	SoC TLSR82xxF512 Pin17 , UART RX

7. Electronic Specification

Item	Min	TYP	Max	Unit
RF Specifications				
RF Transmitting Power Level	7	8	9.5	dBm
RF Receiver Sensitivity @FER<30.8%, 1Mbps	-94.5	-95.5	-96.5	dBm
RF TX Frequency tolerance		+/-10	+/-15	KHz
RF TX Frequency range	2402		2480	MHz
RF Channel	CH0		CH39	/
RF Channel Space		2		MHz
AC /DC Characteristics				
Operation Voltage	3.0	3.3	3.6	V
Supply voltage rise time (from 1.6V to 2.8V)			10	ms
Input High Voltage	0.7VDD		VDD	V
Input Low Voltage	VSS		0.3VDD	V
Output High Voltage	0.9VDD		VDD	V
Output Low Voltage	VSS		0.1VDD	V

8. Power Consumption

Operation Mode	Consumption
Operation (TX/RX) 0dBm	5.4mA
Standby (Deep Sleep) depend on firmware	0.4uA (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	50Ω			
SIZE	---			

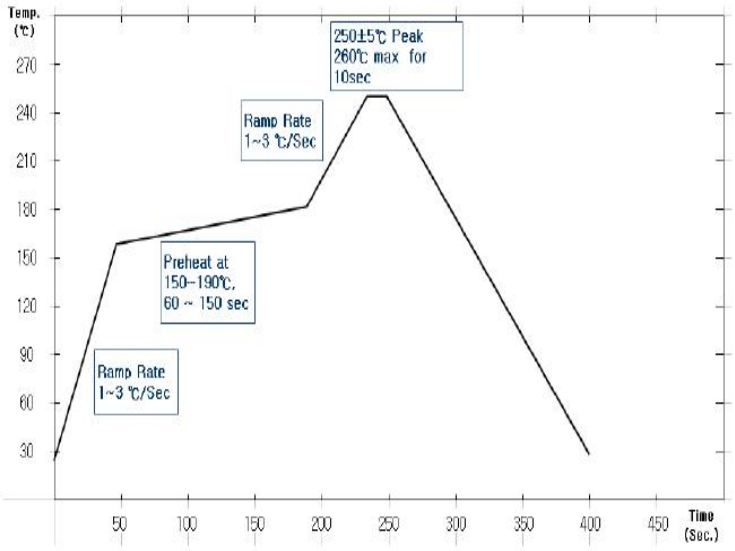
10. Ordering Information

Part Number	Description
IPBM82-18-O-H-IS000	TLSR82xx MESH Module L*W=24.8*16MM +105℃ PCB antenna PCB-Through-PCB mounted form（Shield cover）

11. Package

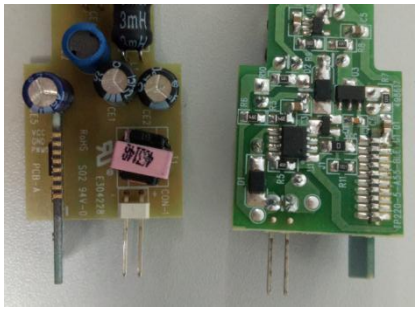
Tray plate: **To Be Defined**

12. Reflow Profile

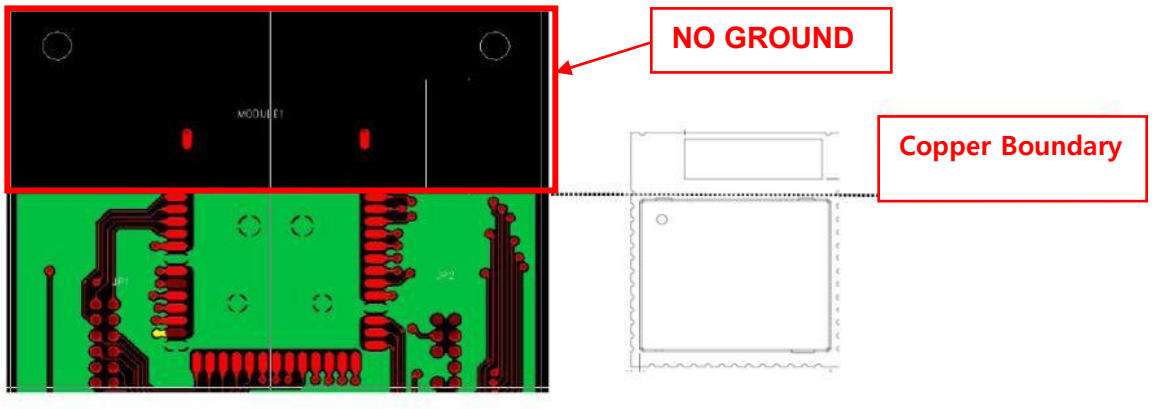


13. Application Design Note

PCB to PCB soldering example



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.