IPBM-01
(MESH8269-01)
Datasheet

MESH Bluetooth Low Energy (BLE) 4.2 Module

Module No.: IPBM-01/MESH8269-01

Version: V1.0

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Content

1. Introduction

The IPBM-01 with optional internal PCB printing antenna is MESH Bluetooth Low Energy (BLE) solution which is fully Bluetooth 4.2 standard compliant and allows easy connectivity with Bluetooth Smart Ready devices. IPBM-01 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 32KB SDRAM are programmable for more applications, 14bits ADC with PGA, 6 channels PWM, three quadrature decoders, GPIOs.

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

2. Features

- TLSR8269F512 system on chip
- Built-in Flash 512KBytes
- Built-in 32KB SDRAM
- Compact size 24.8 x 16 x 2.5mm
- 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 7dBm maximum TX power
- Operation Temperature: ET Version:-40 to 85 ℃, AT version: -40℃~+125℃
- Bluetooth 4.2 1Mbps, Boost Mode: 2Mbps
- TX RF Power: +7dBm
- RX :-90dBm BT4.2 Sensitivity
- RSSI Monitoring

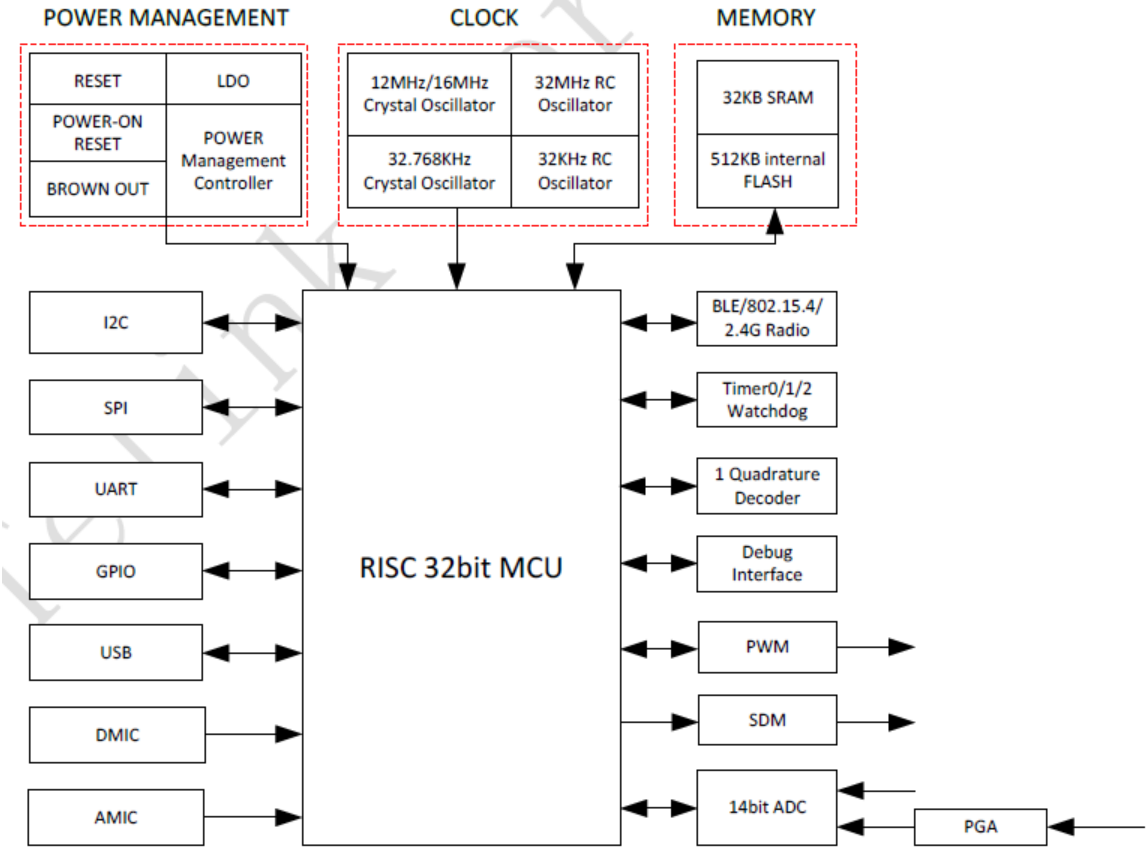
- Embedded LDO
- Battery monitoring
- Low power consumption
- 100k program/erase, 20 years data retention

3. Applications

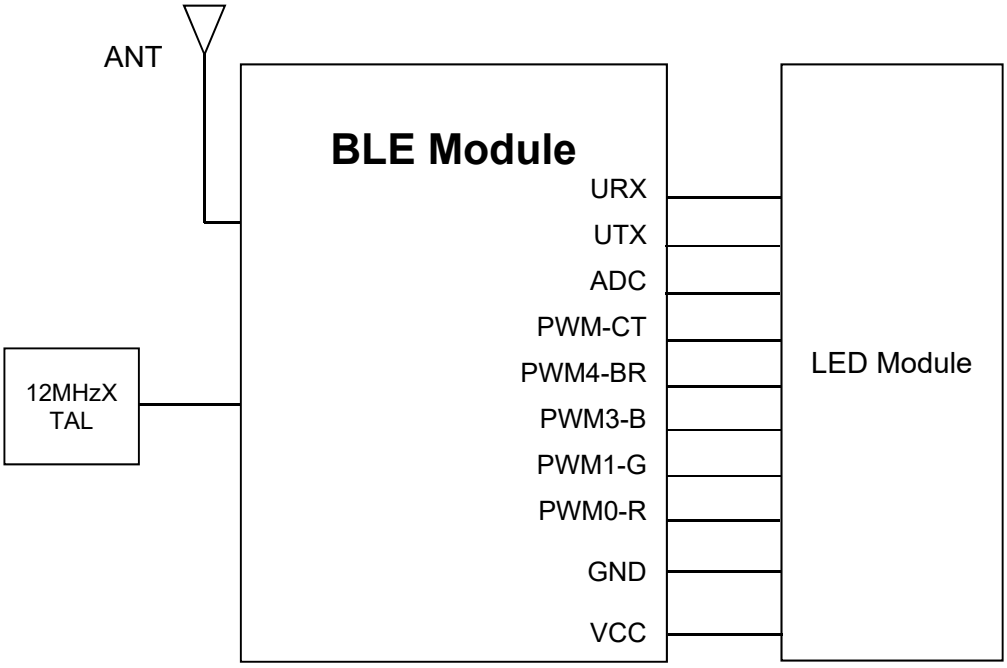
- Smart Devices Switch, Remote Control and 3D glasses
- LED Lighting control
- Smartphone accessories
- Wireless Microphone
- Health monitoring
- Sports and fitness tracking
- Wearable devices
- PC and tablet peripherals, including Mouse / Keyboard

4. Module Diagram

TLS8269 SoC diagram



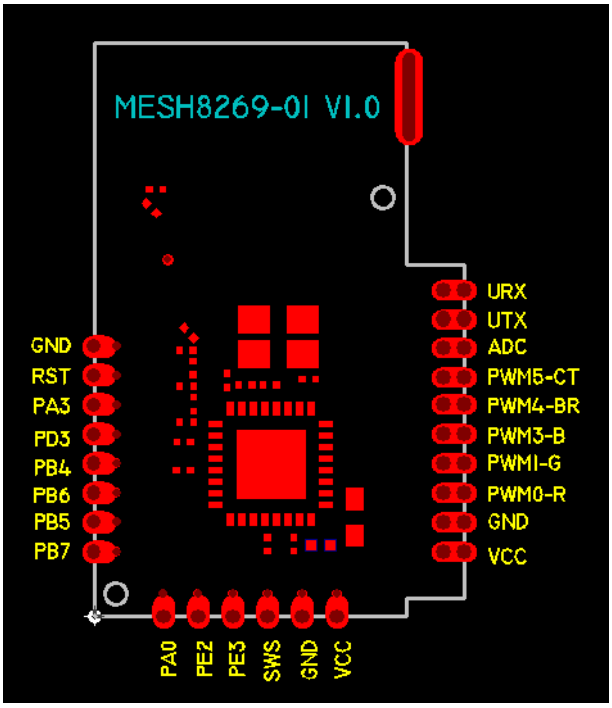
BLE Module diagram



PCBA top view diagram

Pin Assignments

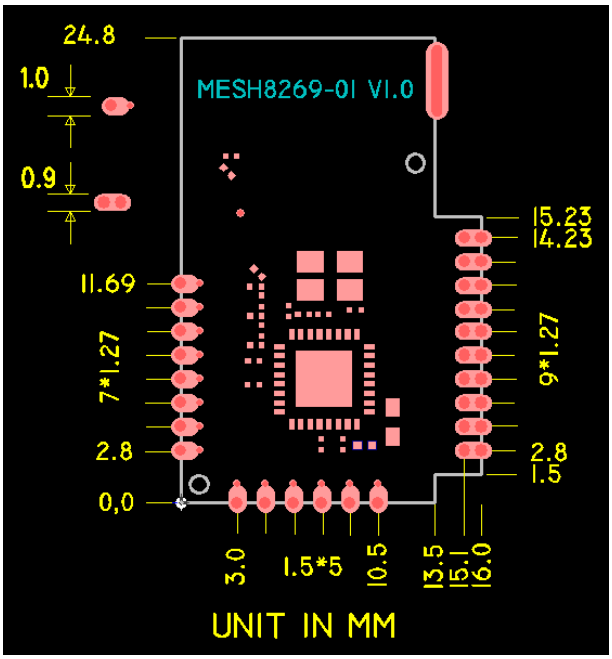
Top View



Dimension Diagram

Dimension unit: mm

Top View



PCB Thickness: 1.2+/-0.1mm

5. Module Schematic

Please further contact if needed.

6. Pins Description

Pin	NAME	I/O	Description	TLSR829
1	GND	P	Ground	TLSR8269 PIN6
2	RST	I	Reset，low active	TLSR8269 PIN28
3	PA3	I/O	GPIO	TLSR8269 PIN3
4	PD3	I/O	GPIO	TLSR8269 PIN27
5	PB4	I/O	GPIO	TLSR8269 PIN12
6	PB6	I/O	GPIO	TLSR8269 PIN14
7	PB5	I/O	GPIO	TLSR8269 PIN13
8	PB7	I/O	GPIO	TLSR8269 PIN15
9	PA0	I/O	GPIO	TLSR8269 PIN1
10	PE2	I/O	GPIO	TLSR8269 PIN31
11	PE3	I/O	GPIO	TLSR8269 PIN32
12	SWS	/	Software upload	TLSR8269 PIN10
13	GND	P	Ground	TLSR8269 PIN6
14	VCC	P	Power supply，3.3V/30mA	TLSR8269 PIN7,20,24,26
15	VCC	P	Power supply，3.3V/30mA	TLSR8269 PIN7,20,24,26
16	GND	P	Ground	TLSR8269 PIN6
17	PWM0-R	I/O	PWM，red lighting control	TLSR8269 PIN29
18	PWM1-G	I/O	PWM，green lighting control	TLSR8269 PIN30
19	PWM3-B	I/O	PWM，blue lighting control	TLSR8269 PIN17
20	PWM4-BR	I/O	PWM，brightness control(CW)	TLSR8269 PIN18
21	PWM5-CT	I/O	PWM，color temperature control(WW)	TLSR8269 PIN19
22	ADC	I	A/D input	TLSR8269 PIN11
23	UTX	O	UART TX	TLSR8269 PIN16
24	URX	I	UART RX	TLSR8269 PIN9

7. Electronic Specification

Item	Specification
RF Transmitting Power Level	7 dBm Max
RF Receiver Sensitivity	-90 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 10 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	SRRC 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	---

Internal antenna by PCB printing antenna.

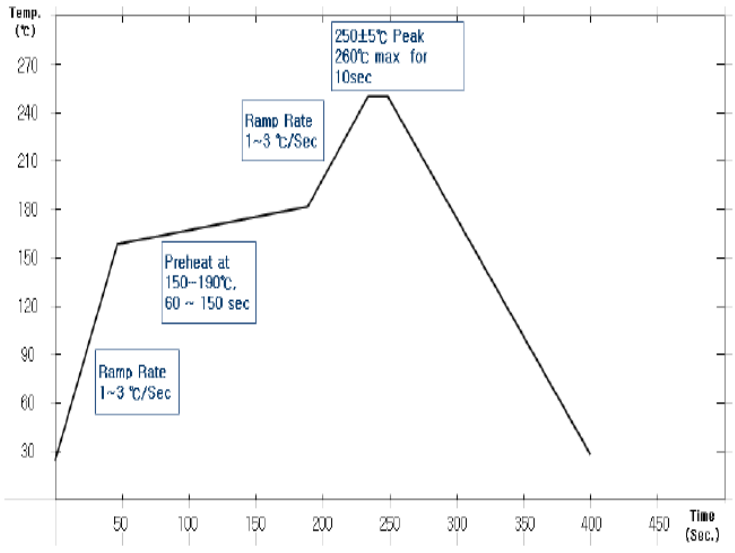
10. Ordering Information

Part Number	Description
IPBM-01-00	Internal Printing PCB Antenna, SMT /PCB to PCB mounted form,
IPBM-01-90	Internal Printing PCB Antenna, vertically mounted with pin header
IPBM-01-180	Internal Printing PCB Antenna, horizontally mounted with pin header

11. Package

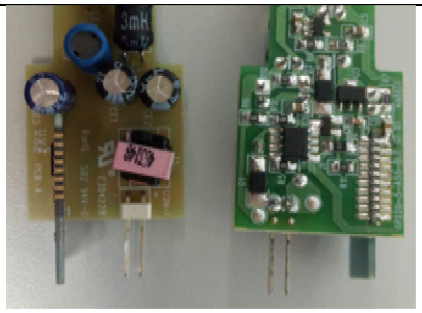
Tray plate: **To Be Defined**

12. Reflow Profile

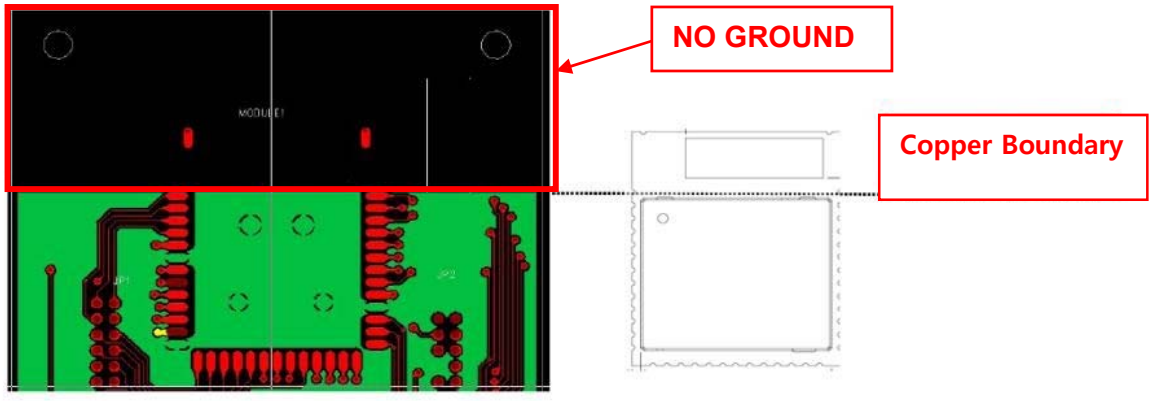


13. Application Design Note

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.