

Bluetooth Module Datasheet

蓝牙模组规格说明书

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版本变更说明 Document Revision History

Revision 版本	Date 日期	Author 作者	Description 描述
V1.0	2017-06-28	孙强耀	First release.

目录 Table of Contents

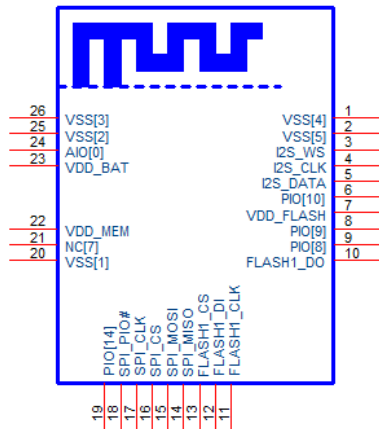
- **法律声明 Legal Notice,Disclaimer,Copyright**
- **文档变更说明 Document Revision History**
- **目录 Table of contents**
- **1.系统概览 System overview**
 - 1.1 通用说明 General Descriptions
 - 1.2 性能特点 Features
 - 1.3 系统方框图 Block Diagram
- **2.产品描述 Production Description**
 - 引脚与功能说明 Pin Layout & Pin Description
 - 外观与尺寸 Appearance& Dimension
- **3.应用说明 ApplicationExplanation**
- **4.电气特性 ElectricalCharacteristics**
 - 工作条件
 - 直流特性 DC characteristics
 - 电流消耗 Current consumption
- **5.射频性能 RF Performance**
- **6.认证与法规信息 Certificate& Regulation**
- **7.包装与订货说明 Package& Ordering information**
- **8.环保声明 Green Policy**
- **9.抗静电保护 ESD Protection**

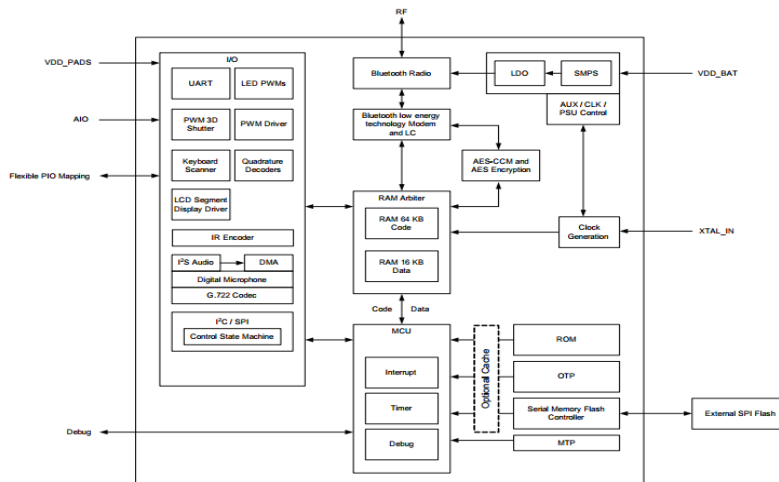
1.系统概览 System overview

- EXM1020 Bluetooth Low Energy Module provides a highly integrated solution for delivering low power Bluetooth v4.2 solutions. The advanced command interface offers rapid time to market .
- EXM1020 module complies with Bluetooth specification version v4.2. It integrates RF, a baseband controller, making it a complete Bluetooth Low Energy Solution.
- EXM1020 can be used with either low cost microcontroller for intelligent Bluetooth Low Energy applications. For simple sensor applications, the EXM1020 internal scripting capabilities enable basic functions to be implemented without the need for external host MCU or software development tools

2.产品说明 Production Description

- Fully qualified Bluetooth version 4.2 low Energy Module
- Command interface API over SPI
- Castellated SMT pads for easy and reliable PCB Mounting
- Environmentally friendly, RoHS compliant
- Device Firmware Upgrade (DFU) over SPI or Over the Air (OTA)
- Remote commands over the air
- Antenna ready
- **Figure as below.**





Pin feature descriptions

PIN NO.	Symbol	Description	Function
1	VSS[4]	GND.	GND
2	VSS[5]	GND.	GND
3	I2S_WS	Word select	PIO[13]
4	I2S_CLK	Continuous serial clock	PIO[12]
5	I2S_SDA	Serial data	PIO[11]
6	PIO10	Programmable I/O.	PIO[10]
7	VDD_Flash	Power supply for Flash	Type 3.3V
8	PIO9	Programmable I/O.	PIO[9]
9	PIO8	Programmable I/O	PIO[8]
10	Flash1_D0	External flash data in	PIO[5]
11	Flash1_CLK	External flash CLK	PIO[6]
12	Flash1_DI	External flash data out	PIO[4]
13	Flash1_CS	External flash CS	PIO[6]
14	SPI_MIOS	Programmable I/O line or debug SPI MISO selected by SPI_PIO#.	•SPI_MISO •PIO[3]
15	SPI_MOSI	Programmable I/O line or debug SPI MOSI selected by SPI_PIO#.	•SPI_MOSI •PIO[2]
16	SPI_CS#	Programmable I/O line or debug SPIchip select (CS#) selected bySPI_PIO#	•SPI_CS# •PIO[1]
17	SPI_CLK	Programmable I/O line or debug SPI	•SPI_CLOCK

		CLK selected by SPI_PIO#.	•PIO[0]
18	SPI_PIO#	SPI/PIOactive-high.	Input with internal pull down; selects SPI Active-high.
19	PIO[14]	Programmable I/O.	PIO[14]
22	VDD_MEM	VBAT for internal flash	
23	VDD_BAT	Power supply for module	
24	AIO[0]	Bi-directional with programmable analog I/O.	Analogue Programmable I/O

3.应用说明 Application Explanations

- Smart Audio
- Smart light
- IOT

4. 电气特性 Electrical Characteristics

ELECTRICAL CHARACTERISTICS	
Supply Voltage	0.9 – 3.6V DC (Absolute Maximum Ratings 0-3.6V)
Working current	Depends on profiles, 3 mA (typical)
Standby current(disconnected)	3 mA
CURRENT CONSUMPTION	
Dormant	2.0uA
Deep Sleep	13 uA
Idle	1.5 mA
Tx/Rx active	5.5 mA at 4 dBm/5.5 at -90 dBm
WEIGHT AND DIMENSIONS	
(unit : mm)	
Size	18 X14 X 2.3 (L x W x H)
Weight	*?G

5. 射频性能 RF Performance

Specification	Description
RF performance	
Standard	Bluetooth 4.2
Frequency Band	2.4 ~ 2.4835 GHz
Modulation Method	GFSK
Maximum Data Rate	1 Mbps
Antenna	PCB Antenna
Interface	UART, PIO, AIO, SPI, PCM,
Operation Range	30 meters
Sensitivity	-85 dBm at 0.1% BER
RF TX Power	+0 dBm (avg), +4 dBm(peak)

6. 认证与法规信息 Certification & Regulation

The BQB Certification : still on-going.

FCC ID : ZVAOH000010

IC : 9976A-OH000010

7.环保声明 Green Policy

This module can meet ROHS&REACH compliance.XXXX

8.抗静电保护 ESD Protection

For IC:

This device complies with RSS247 of Industry Canada. Cet appareil se conforme à RSS247 de Canada d'Industrie. This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

The device should be installed and operated with a minimum distance of 20cm between the radiator and your body.

L'appareil doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

For FCC:

Warning: 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.

NOTE: 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.
- ☐

"The device must not be co-located or operating in conjunction with any other antenna or transmitter."

FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.
- 3) For all products market in United States, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. And OEM shall not supply any tool or info to the end-user regarding to change the domain selection. As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example: Access point, Wireless Router, Notebook, etc.). The final end product must be labeled in a visible area with the following: "Contains FCC ID: ZVAOH000010".

Module Antenna Type: PCB ANT, 1.1dBi gain