

# Bluetooth Module

BM81SPK01

User Manual

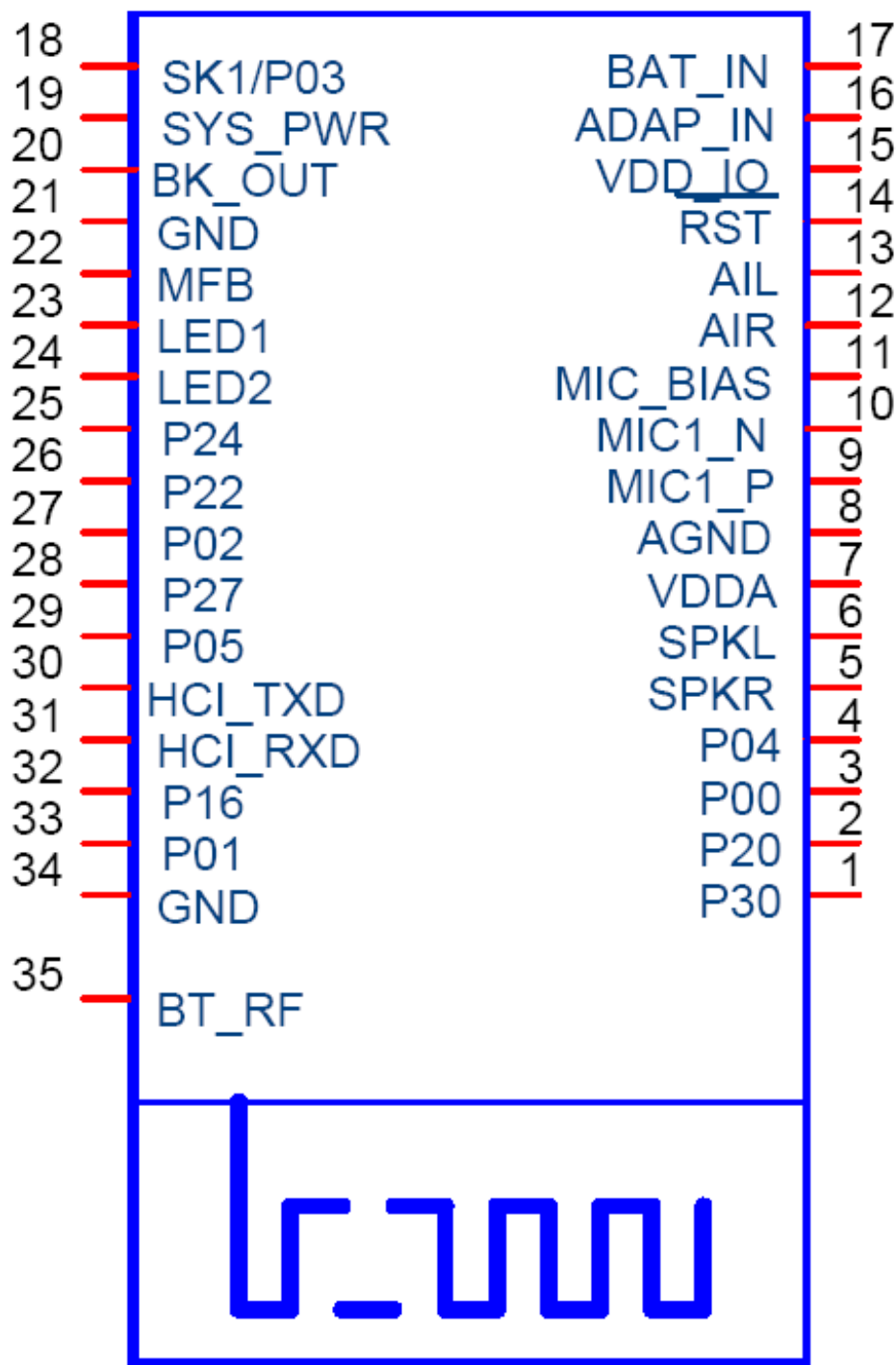
## Product Description

The BM81SPK01 is a highly integrated Bluetooth 3.0+EDR stereo module, designed for high data rate, short-range wireless communication in the 2.4 GHz ISM band. With Bluetooth stack and profile, the BM81SPK01 provides a low power and ultra-low cost Bluetooth 3.0+EDR solution for wireless voice/audio applications.

## Features & Specification

- \_ Main Chip: ISSC IS1681S
- \_ Bluetooth 3.0+EDR compliant
- \_ Typical +2dBm Class 2 output power
- \_ Receiver Sensitivity: GFSK typical -91dBm
- \_ Piconet and Scatter net support
- \_ HCI UART interface
- \_ CVSD, A-law,  $\mu$ -law CODEC algorithms for voice applications
- \_ SBC decode for Bluetooth audio streaming
- \_ Build-in High performance stereo audio codec
- \_ Cap-less/single end headphone driver
- \_ Audio DAC: 94dB SNR
- \_ Build in Max. 350mAH Li-ion battery charger
- \_ HSP, HFP, A2DP, AVRCP profile support
- \_ 3V operating voltage
- \_ ROM version: 32Kb EEPROM
- \_ 34 pins for DIP module, 35pins for SMT module (with additional 35th pin antenna port for external antenna option)
- \_ Build-in PCB Antenna
- \_ Frequency Range : 2402-2480MHz
- \_ Max. Output Power : 0dBm
- \_ Number of Channel : 79

# Device Pinout Diagram



## Pin Definition

PinNo.	I/O	Name	Description
1	P	P30	GPIO, default pull-high input Line-in detection, 1:no line-indetected; 0:line-in detected
2	I/O	P20	GPIO, default pull-high input System Configuration,H: Application L: Baseband (IBDKMode)
3	I/O	P00	GPIO, default pull-low input.Slide Switch Detector
4	I/O	P04	GPIO, default pull-high input Audio AMP Enable
5	AO	SPKR	ended R-channel analog headphone output, single-application only
6	AO	SPKL	L-channel analog headphone output, single-ended application only
7	AP	VDDA	Reserve for external cap to finetune audio frequency response
8	AP	AGND	Audio ground
9	AI	MIC1_P	Mic1 mono differential analog positive input
10	AI	MIC1_N	Mic1 mono differential analog negative input
11	AP	MIC_BIAS	Microphone biasing voltage
12	AI	AIR	Stereo analog line in, R-channel
13	AI	AIL	Stereo analog line in, L-channel
14	I/O	RST_N	System Reset Pin
15	P	VDDIO	VDDIO pin,for calibration only Do not add external power to this pin
16	P	ADAP_IN	Power adaptor input
17	P	BAT_IN	Battery input
18	I/O	SK1/P03	Default SAR input for battery detection This pin can be re-definedas GPIOP03
19	P	SYS_PW	System Power Output
20	P	BK_OUT	Buck feedback sense pin
21	P	GND	Digital ground

22	P	MFB	Multi-Function Push Button key Combined Play/Pause key when A2DP enabled.
23	P	LED1	LED Driver1
24	P	LED2	LED Driver2
25	I/O	P24	GPIO, default pull-high input System Configuration, H:Boot Mode
26	I/O	P22	GPIO, default pull-low input. External LDO enable
27	I/O	P02	GPIO, default pull-high input PLAY/PAUSE button
28	I/O	P27	GPIO, default pull-high input Foward button
29	I/O	P05	GPIO, default pull-high input REW button
30	O	HCI_TXD	HCI TX data
31	I	HCI_RXD	HCI RX data
32	I/O	P16	GPIO, default pull-high input Volumn down button
33	I/O	P01	GPIO, default pull-high input Volumn up button
34	P	GND	Digital ground
35	AIO	BT_RF	NC for on board PCB antenna Antenna matching if an external antenna is used



### **FCC Statement**

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.

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

### **Radiation Exposure Statement:**

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

End Product Labeling    □□

This transmitter module is authorized only for use in device where the antenna may be installed such that 21 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following:

Contains FCC ID: TQYBMBM81SPK01M & IC: 6233A-BM8101MA.

**IC Statement:** (English & Francian)

IC Regulations: 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

"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.

This Category II radiocommunication device complies with Industry Canada Standard RSS-310.

Ce dispositif de radiocommunication de catégorie II respecte la norme CNR-310 d'Industrie Canada.

**IMPORTANT NOTE:**

**IC Radiation Exposure Statement**

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

L'appareil et son antenne ne doivent pas être co-localisées ou opérant en conjonction avec une autre antenne ou transmetteur.

**NCC警語：**

經型式認證合格之低功率射頻電機，非經許可，公司、商號使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。