

**BM81SPK01**

**Bluetooth 3.0+EDR Wireless Speaker Module**

## Features:

- ~Main Chip: ISSC IS1681S
- ~Bluetooth 3.0+EDR compliant
- ~Typical +2dBm Class 2 output power
- ~Receiver Sensitivity: GFSK typical -91dBm,  $\pi/4$  PSK typical -92dBm, 8DPSK typical -84dBm
- ~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

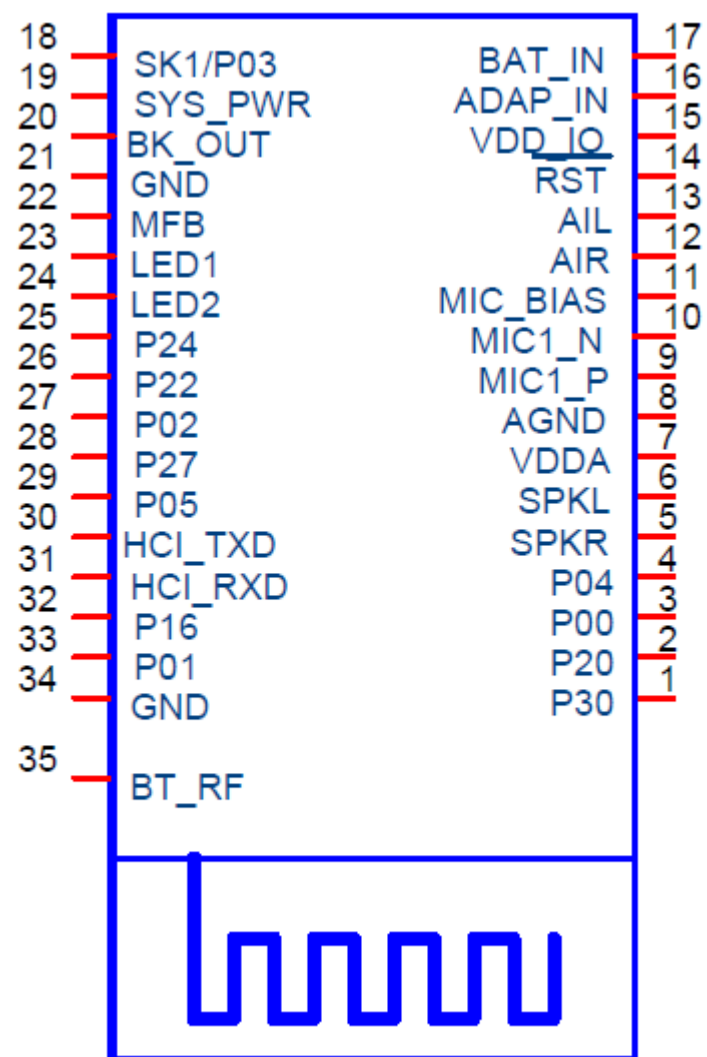
antenna port for external antenna option)

~Size: 15mm x29mm

~Build-in PCB Antenna

~RoHS compliant

### Device Pinout Diagram



## Pin Definition

| Pin No. | I/O | Name     | Description                                                                                       |
|---------|-----|----------|---------------------------------------------------------------------------------------------------|
| 1       | P   | P30      | GPIO, default pull-high input<br>Line-in detection, 1: no line-in detected;<br>0: line-indetected |
| 2       | I/O | P20      | GPIO, default pull-high input<br>System Configuration, H: Application L:<br>Baseband(IBDK Mode)   |
| 3       | I/O | P00      | GPIO, default pull-low input.<br>Slide Switch Detector                                            |
| 4       | I/O | P04      | GPIO, default pull-high input<br>Audio AMP Enable                                                 |
| 5       | AO  | SPKR     | R-channel analog headphone output,<br>single-endedapplication only                                |
| 6       | AO  | SPKL     | L-channel analog headphone output,<br>single-endedapplication only                                |
| 7       | AP  | VDDA     | Reserve for external cap to fine tune<br>audio<br>frequency response                              |
| 8       | AP  | AGND     | Audio ground                                                                                      |
| 9       | AI  | MIC1_P   | Mic 1 mono differential analog positive<br>input                                                  |
| 10      | AI  | MIC1_N   | Mic 1 mono differential analog negative<br>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<br>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<br>This pin can be re-defined as GPIO P03                 |
| 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<br>Combined Play/Pause key when A2DP enabled.   |
| 23 | P   | LED1    | LED Driver 1                                                                   |
| 24 | P   | LED2    | LED Driver 2                                                                   |
| 25 | I/O | P24     | GPIO, default pull-high input<br>System Configuration, H: Boot Mode            |
| 26 | I/O | P22     | GPIO, default pull-low input.<br>External LDO enable                           |
| 27 | I/O | P02     | GPIO, default pull-high input<br>PLAY/PAUSE button                             |
| 28 | I/O | P27     | GPIO, default pull-high input<br>Foward button                                 |
| 29 | I/O | P05     | GPIO, default pull-high input<br>REW button                                    |
| 30 | O   | HCI_TXD | HCI TX data                                                                    |
| 31 | I   | HXI_RXD | HCI RX data                                                                    |
| 32 | I/O | P16     | GPIO, default pull-high input<br>Volumn down button                            |
| 33 | I/O | P01     | GPIO, default pull-high input<br>Volumn up button                              |
| 34 | P   | GND     | Digital ground                                                                 |
| 35 | AIO | BT_RF   | NC for on board PCB antenna<br>Antenna matching if an external antenna is used |

### **Federal Communication Commission Interference 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 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.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

### **Declaration the Restriction of this Limited Module Approval:**

According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own shielding. However, due to there is no shielding for this Bluetooth Module, this module is granted as a Limited Modular Approval. When this Bluetooth Module is installed into the end product, a Class II Permissive Change or a New FCC ID submission is required to ensure the full compliance of FCC relevant requirements.

**The device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Modular could be only used in mobile or fix device, and could not be used in any portable device. The module must be installed in Home Theater Sound Bar.**

#### **End Product Labelling**

The final end product must be labelled in a visible area with the following" Contains FCC ID: SAH-GIN-BM81SPK01". The FCC part 15.19 statement below has to also be available on the label: This device complies with Part 15 of 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.

The module will be installed at bluetooth speaker.

#### **Manual Information to the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.