Bluetooth Module
User Manual

Model: BTM835-B

Version: V1.1

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List of Contents

1 Introduction

Sky Jiarun Technologies introduces the pioneer of the Bluetooth 4.1 modules BTM835-B which is a high performance, cost effective, low power and compact solution. The Bluetooth module provides a complete 2.4GHz Bluetooth system based on the BlueCore CSR8635 chipset which is a single chip radio and baseband IC for Bluetooth 2.4GHz systems,. This module is fully compliant to Bluetooth v4.1 for audio communications.

2 Key Features

Bluetooth Profiles

- Bluetooth v4.1 specification support
- A2DP v1.2
- AVRCP v1.4
- HFP v1.6
- HSP v1.2
- DI v1.3

Music Enhancements

- Configurable 5-band EQ for music playback (rock,pop, classical, jazz, dance etc)
- SBC, MP3, AAC and Faststream decoder
- Volume Boost
- Stereo Widening (S3D)

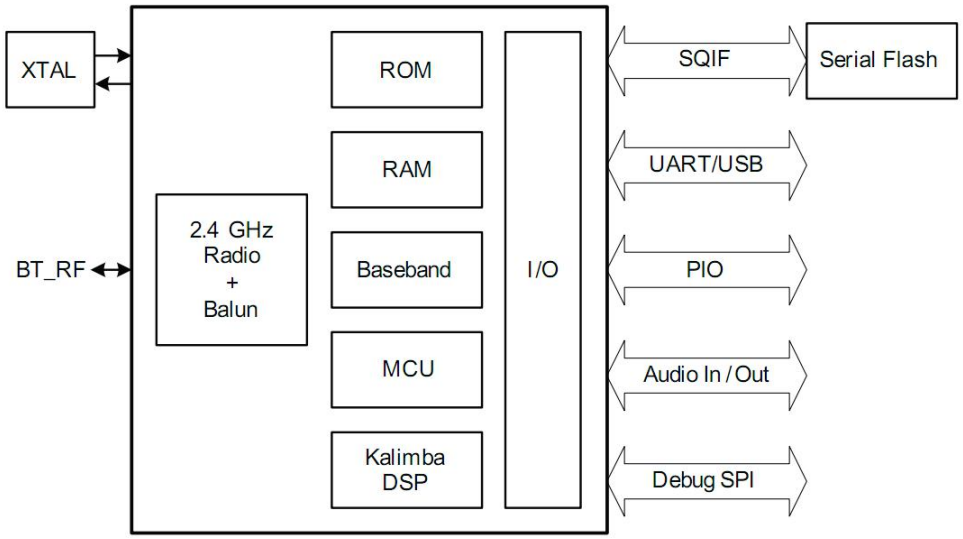
Additional Functionality

- Support for multi-language programmable audio prompts
- CSR's proximity pairing and CSR's proximity connection
- Multipoint support for A2DP connection to 2 A2DP sources for music playback
- Talk-time extension
- Slim module with 15mm x 18mm x 2.0mm

3 Applications

- Stereo Headsets
- Wired Stereo headsets and headphones
- Portable Bluetooth Stereo speakers

4 Block Diagram

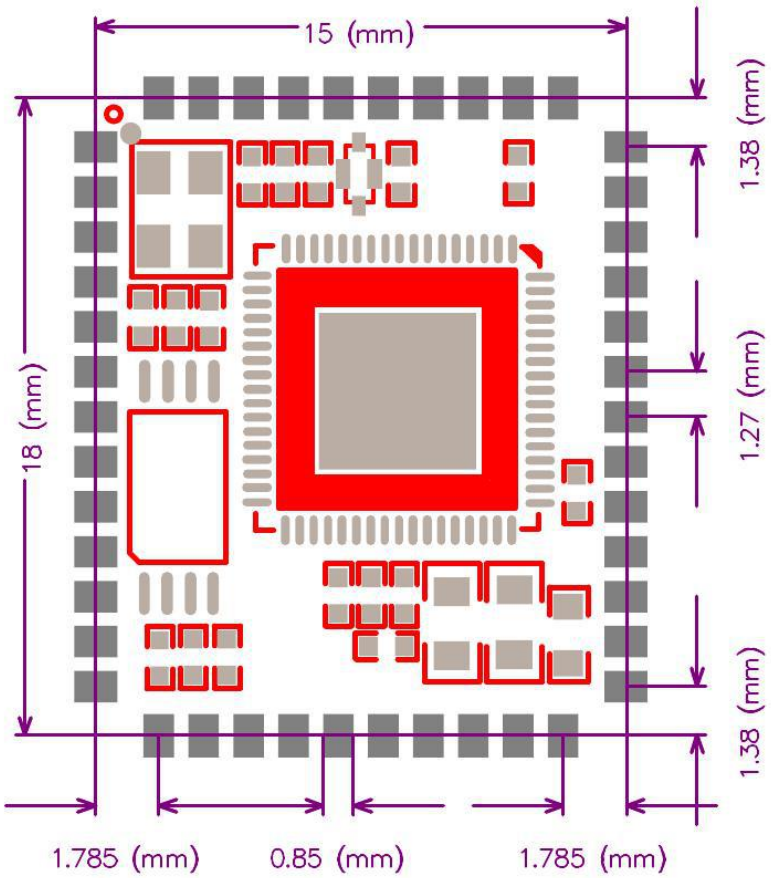


5 General specifications

Model Name	**BTM835-B**
Product Description	**Bluetooth 4.1 Class2 Module**
Bluetooth Standard	Bluetooth 4.1
Chipset	CSR8635
Dimension	15mm x 18mm x 2.0mm
Operating Conditions	
Voltage	2.8~4.2V
Temperature	-10～+70℃
Storage Temperature	-40～+85℃
Electrical Specifications	
Frequency Range	2402～2480MHz
GFSK Receive Sensitivity	-93dBm
π/4 DQPSK Receive Sensitivity	-91dBm
8DPSK Receive Sensitivity	-81dBm

6 Module Package Information

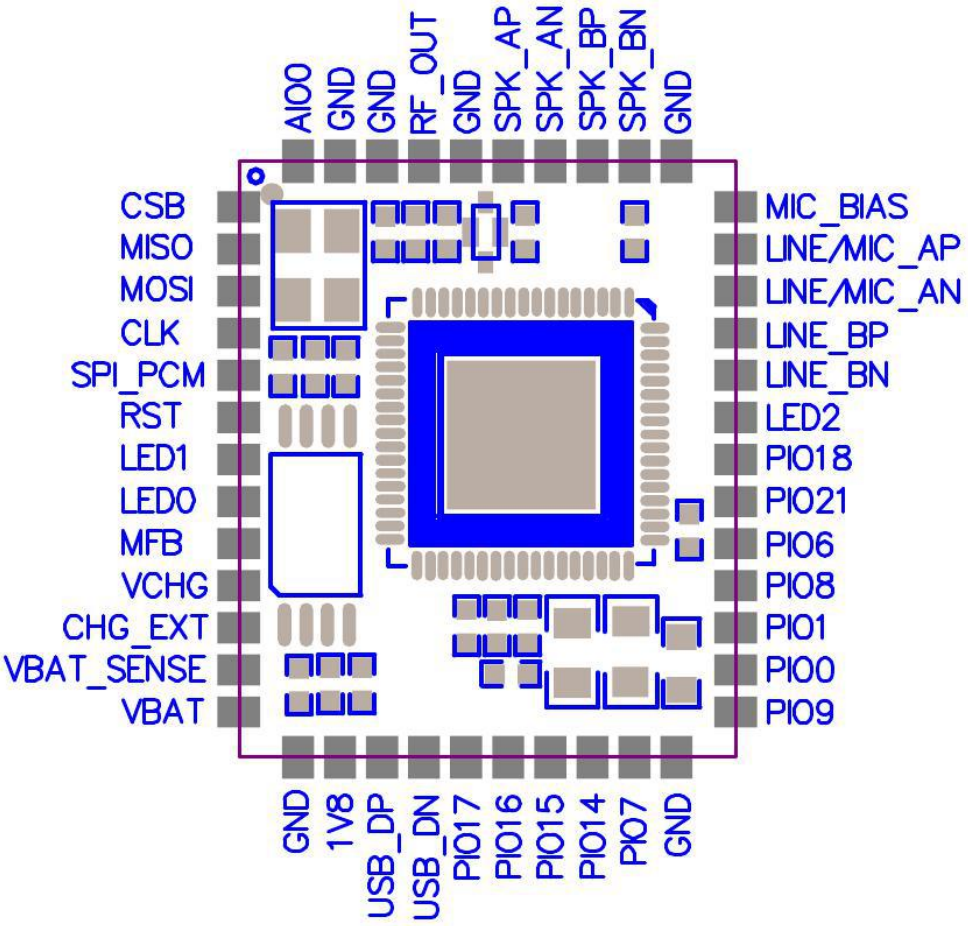
6.1 Pinout Diagram and package dimensions



Unit: MM

Recommended PCB layout footprint

6.2 Module Pin descriptions



Pin No.	Pin Name	Pin Type	Description
1	SPI_CSB	Bidirectional with weak pull-down	Programmable input / output line 4 Alternative function: SPI_CS#: chip select for Debug
2	SPI_MISO	Bidirectional with weak pull-down	Programmable input / output line 3 Alternative function: SPI_MISO: Debug SPI data output
3	SPI_MOSI	Bidirectional with weak pull-down	Programmable input / output line 2 Alternative function: SPI_MOSI: Debug SPI data input

4	SPI_CLK	Bidirectional with weak pull-down	Programmable input / output line 5 Alternative function: SPI_CLK: Debug SPI clock
5	SPI_PCM#	Input with weak pull-down	SPI/PCM select input: 0 = PCM/PIO interface 1 = SPI
6	RSTn	Input with strong pull-up	Reset if low. Pull low for minimum 5ms to cause a reset.
7	LED1	Bidirectional	LED driver
8	LED0	Bidirectional	LED driver
9	VREG_EN	Power on/off key input	Power on/off input key indication
10	VCHG	Charger voltage input	Internal charger input for charging
11	CHG_EXT	Charger external pin	External battery charger control. External battery charger transistor base control when using external charger boost. Otherwise leave unconnected.
12	VBAT_SENSE	Battery Sense	Battery charger sense input
13	VBAT	Battery positive terminal	Power supply input for 2.7~4.2V
14	GND	VSS	Ground
15	1V8	1.8V output	1.8V output for keys
16	USB_P	Bidirectional	USB data plus
17	USB_N	Bidirectional	USB data minus
18	PIO17	Bidirectional with strong pull-down	Programmable input/output line 17
19	PIO16	Bidirectional with strong pull-up	Programmable input/output line 16
20	PIO15	Bidirectional with strong pull-up	Programmable input/output line 15
21	PIO14	Bidirectional with strong pull-up	Programmable input/output line 14
22	PIO7	Bidirectional with strong pull-down	Programmable input/output line 7
23	GND	VSS	Ground
24	PIO9	Bidirectional with strong pull-down	Programmable input/output line 9
25	PIO0	Bidirectional with strong pull-up	Programmable input/output line 0
26	PIO1	Bidirectional with strong pull-up	Programmable input/output line 1
27	PIO8	Bidirectional with strong pull-up	Programmable input/output line 8
28	PIO6	Bidirectional with strong pull-down	Programmable input/output line 6
29	PIO21	Bidirectional with weak pull-down	Programmable input/output line 21
30	PIO18	Bidirectional with weak pull-down	Programmable input/output line 18
31	LED2	Bidirectional	LED driver
32	LINE_BN	Analog input	Line input negative, channel B
33	LINE_BP	Analog input	Line input positive, channel B
34	LINE/MIC_AN	Analog input	Line or microphone input positive, channel
35	LINE/MIC_AP	Analog input	Line or microphone input negative, channe
36	MIC BIAS	Analog	Microphone bias output

37	GND	VSS	Ground
38	SPK_BN	Analog output	Speaker output negative right
39	SPK_BP	Analog output	Speaker output positive right
40	SPK_AN	Analog output	Speaker output negative left
41	SPK_AP	Analog output	Speaker output positive left
42	GND	VSS	Ground
40	RF_PORT	Analog	Bluetooth signal input/output port
44	GND	VSS	Ground
45	GND	VSS	Ground
46	AIO0	Bidirectional	Analogue programmable input/output line

7 Electrical Characteristics

7.1 Absolute Maximum Ratings

Rating	Minimum	Maximum
Storage temperature	-40℃	+85℃

7.2 Recommended Operating Conditions

Operating Condition	Minimum	Maximum
Operating temperature range	-10℃	+70℃
Supply voltage: VBAT	+2.8V	+4.2V

8 Recommended reflow temperature profile

CAUTION

This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL 3

If Blank,see adjacent bar code label

1. Calculated sheif life in sealed bag:12 months at < 40 ℃ and < 90% relative humidity (RH)
2. Peak package body temperature: 260 ℃
   If Blank, see adjacent bar code label
3. After bag is opened.devices that will be subjected to reflow solder or other high temperature process must
   a) Mounted within: 168 hours of factory
   If Blank, see adjacent bar code label
   conditions ≤ 30 ℃ / 60 %
   b) stored at < 10%RH
4. Devices require bake, before mounting, if :
   a) Humidity Indicator Card is > 10 %when read at 23 ± 5 ℃
   b) 3a or 3b not met.
5. If baking is required, devices may be baked for 48 hours at 125 ± 5 ℃

Note: If device containers cannot be subjected to high temperature or shorter bake times are desired,
reference IPC /JEDEC J-STQ-033 for bake procedure

Bag Seal Date: _____ .
If Blank,see adjacent bar code label

Note:Level and body temperature defined by IPC /JEDEC J-STQ-020

The module Must go through 125℃ baking for at least 9 hours before SMT AND IR reflow process!

Record of Changes

Data	Revision	Description
2016-01-30	V1.0	Original publication of this document.
2016-07-25	V1.1	Fix the error description.

IMPORTANT NOTICE

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SJR warrants performance of its products to specifications applicable at the time of sale in accordance with SJR's standard warranty. Testing and other quality control techniques are utilized to the extent SJR deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

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FCC Statement

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.

Changes or modifications 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.

FCC Radiation Exposure Statement

This device has been evaluated and shown compliant with the FCC RF Exposure limits under fixed exposure conditions (antennas are greater than 20cm from a person's body) when installed in certain specific OEM configurations.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Due to missing shielding the module is strictly limited to integration by the Grantee himself or his dedicated OEM integrator under control of the Grantee. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

The outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2ALGQ-BTM835B Or Contains FCC ID: 2ALGQ-BTM835B”

When the module is installed inside another device, the user manual of this device must contain below warning statements;

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product

IMPORTANT NOTE:

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

(1) 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 BT module, this module is granted as a Limited Modular Approval.

(2) This module has been designed to operate with PCB antenna having a maximum gain of 1.2dBi.

(3) Integration is typically strictly restricted to Grantee himself or dedicated OEM integrators under control of the Grantee.

The module will be responsible to satisfy SAR/RF Exposure requirements, when the module integrated into any (portable, mobile, fixed) host device.

This module is intended for OEM integrator only and the OEM integrators and instructed to ensure that the end user has no manual instructions to remove or install the device.

The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

The module has no shielding and tested stand alone. This module is tested and approved as Limited modular approval with stand alone configuration, any OEM incorporated this radio module into any system are require additional testing and evaluation.

The module is only certified with the installed antenna. Any change of the antenna will void the certification.