Bluetooth Module Datasheet

Model: SJR-BTM875-E

Version: V1.0

2021-03-03

Sky Jiarun Technologies Co., Ltd.

Tel: (0755)85279490

E-mail: sales@tianjiarun.com

Web: www.tianjiarun.com

Baoan, Shenzhen

List of Contents

1 Introduction

Sky Jiarun Technologies introduces the pioneer of the Bluetooth 5.0 modules SJR-BTM875-E 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 CSR8675 BGA chipset which is a single chip radio and baseband IC for Bluetooth 2.4GHz systems,. This module is fully qualified single-chip dual mode Bluetooth@v5.0 system.

2 Key Features

Bluetooth Profiles

- Bluetooth v5.0 specification support
- Qualcomm® Bluetooth® Low Energy secure connection
- A2DP v1.3.1
- AVRCP v1.6
- HFP v1.7
- HSP v1.2
- MAP v1.1
- PBAP v1.1.1
- DID v1.1
- QTIL's proximity pairing and QTIL's proximity connection

Music Enhancements

- aptX, aptX Low Latency, SBC, and AAC audio codecs
- Qualcomm TrueWireless™ Stereo (TWS), which allows two devices to be configured as a stereo pair
- Configurable Signal Detection to trigger events
- 1 bank of up to 10-stage Speaker Parametric EQ
- 6 banks of up to 5-stage User Parametric EQ for music enhancement
- Qualcomm® meloD™ Expansion audio processing: 3D stereo widening
- Compander to compress or expand the dynamic range of the audio
- Post Mastering to improve DAC fidelity
- Dual I²S outputs with crossover

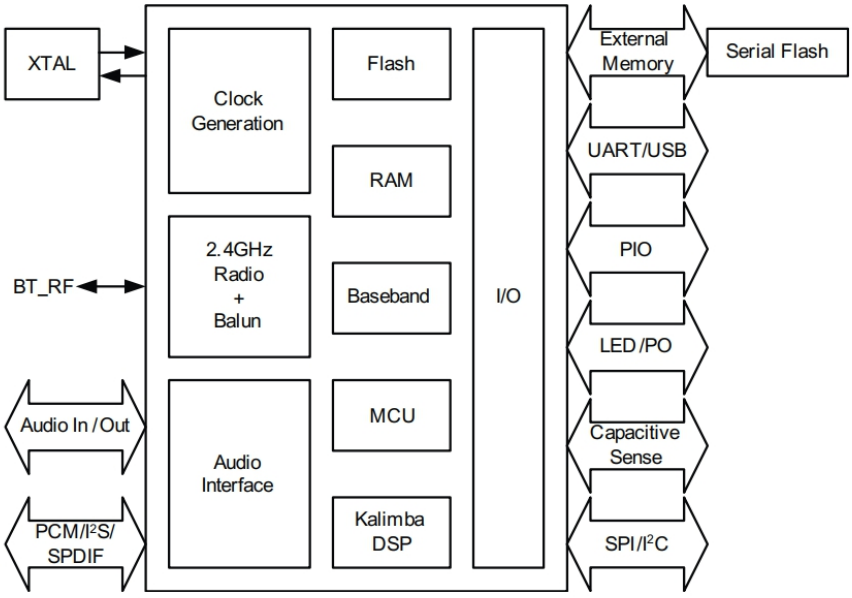
Additional Functionality

- Support for multi-language programmable audio prompts
- Multipoint support for A2DP connection to 2 A2DP sources for music playback
- Talk-time extension, which automatically reduces processor functions to extend use when a low battery condition is detected
- Slim module with 11.5mm x11.5mm x 2.5mm

3 Applications

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

4 Block Diagram

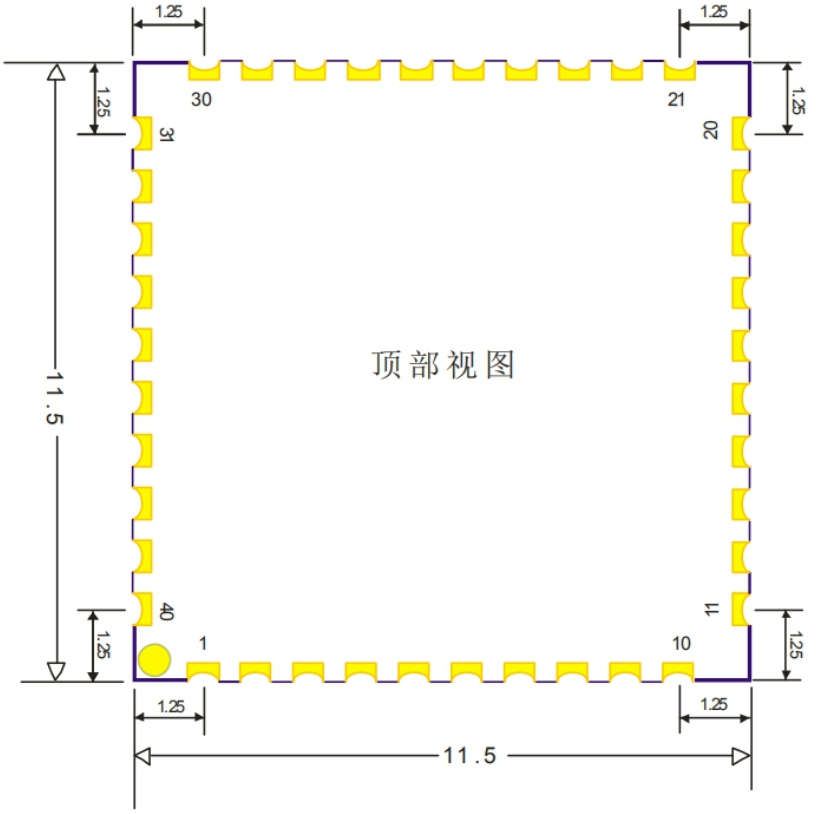


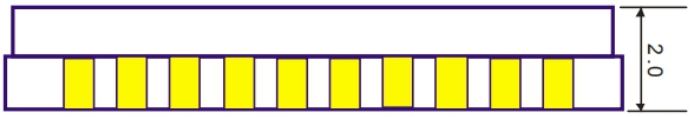
5 General specifications

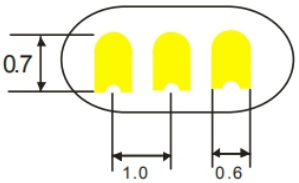
Model Name	**SJR-BTM875-E**
Product Description	**Bluetooth 5.0 Class2 Module**
Bluetooth Standard	Bluetooth 5.0
Chipset	CSR8675 BGA
Dimension	11.5mm x 11.5mm x 2.5mm
Operating Conditions	
Voltage	2.8~4.2V
Temperature	-10～+70℃
Storage Temperature	-40～+85℃
Electrical Specifications	
Frequency Range	2402～2480MHz
Maximum RF Transmit Power	9dBm
π/4 DQPSK Receive Sensitivity	-91dBm
8DPSK Receive Sensitivity	-81dBm

6 Module Package Information

6.1 Pinout Diagram and package dimensions



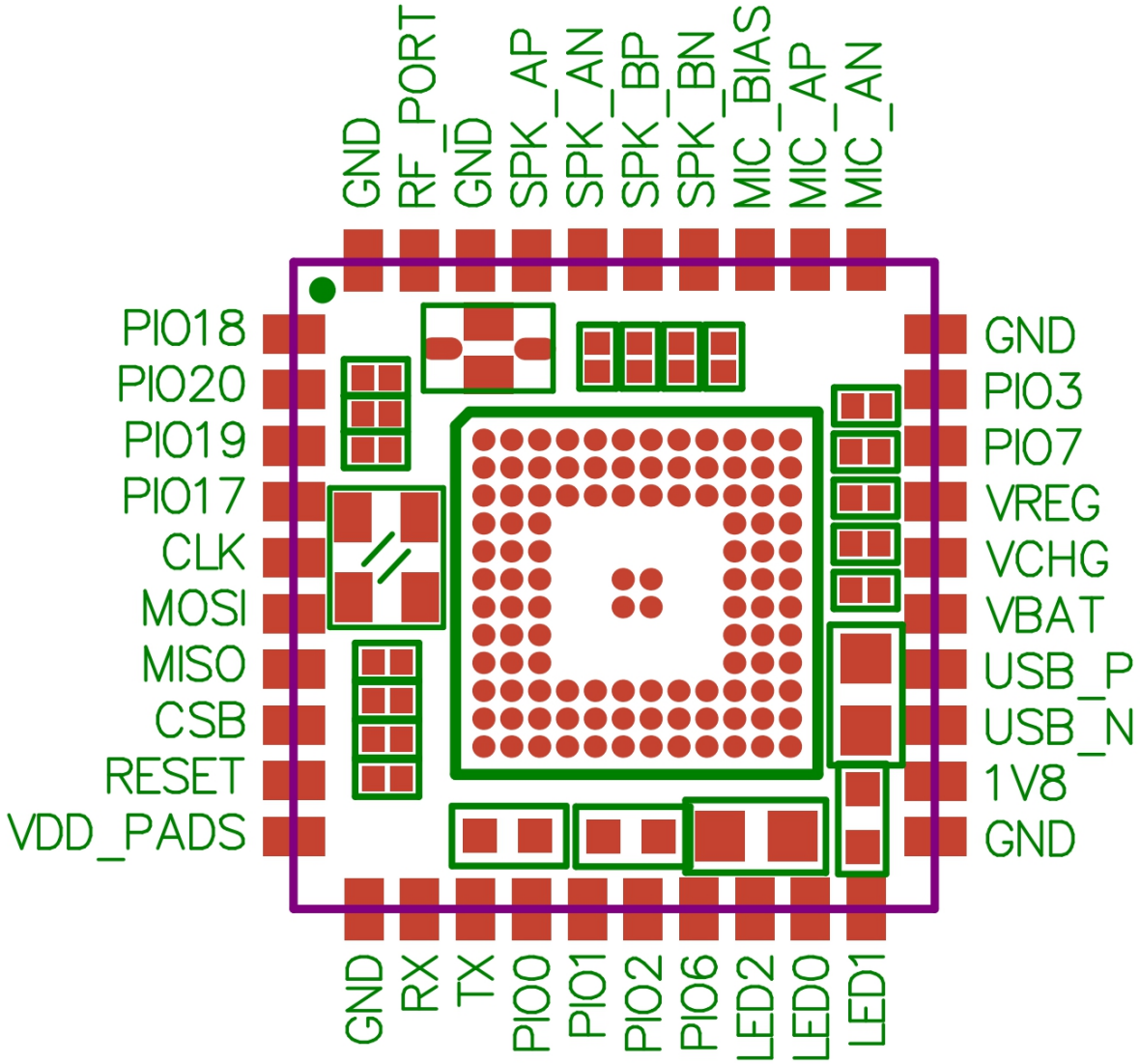




Unit：MM

Recommended PCB layout footprint

6.2 Module Pin descriptions



Pin#	Pin Name	Pin Type	Description
1	PCM_OUT/PIO_18	Bi-directional with weak pull_down	Synchronous data output.Alternative function PIO[18]
2	PCM_CLK/PIO_20	Bi-directional with weak pull_down	Synchronous data clock.Alternative function PIO[20]
3	PCM_SYNC/PIO_19	Bi-directional with weak pull_down	Synchronous data sync.Alternative function PIO[19]
4	PCM_IN/PIO_17	Bi-directional with weak pull_down	Synchronous data input.Alternative function PIO[17]
5	SPI_CLK	Input with weak pull-down	SPI Clock
6	SPI_MOSI	Input with weak pull-down	SPI data input
7	SPI_MISO	Output with weak pull-down	SPI data output
8	SPI_CSB	Input with strong pull-up	Chip select for SPI,active low
9	RESET	Input with strong pull-up	Reset if low.Input debouced so must be low for >5ms to cause a reset
10	VDD_PADS	Analogue in	positive supply input for digital input/output ports PIOx
11	GND	Ground	Digital Ground
12	RX	Bi-directional with strong pull_up	UART data input
13	TX	Bi-directional with weak pull_up	UART data output
14	PIO_0	Bi-directional with weak pull_down	Programmable input/output line
15	PIO_1	Bi-directional with weak pull_down	Programmable input/output line
16	PIO_2	Bi-directional with weak pull_down	Programmable input/output line
17	PIO_6	Bi-directional with weak pull_down	Programmable input/output line
18	LED_2	Open drain	LED driver Alternative function PIO[31]
19	LED_0	Open drain	LED driver Alternative function PIO[29]
20	LED_1	Open drain	LED driver Alternative function PIO[30]
21	GND	Ground	Digital Ground
22	+1V8	Open drain output	LED driver
23	USB_DN	Bi-directional	USB data minus
24	USB_DP	Bi-directional	USB data plus with selectable internal 1.5kohm pull-up resistor
25	VBAT	Power supply	Battery positive terminal
26	VCHG	Power supply	Alternative supply via bypass regulator for 1.8V and 1.35V switchmode power supply regulator inputs. Must be connected to the same potential as VOUT_3V3.
27	VREG	Input enable	Regulator enable input. Can also be sensed as an input. Regulator enable and multifunction button. A high input (tolerant to VBAT) enables the on-chip regulators, which can then be latched on internally and the button used as a multifunction input.
28	PIO_7	Bi-directional with weak pull_down	Programmable input/output line
29	PIO_3	Bi-directional with weak pull_down	Programmable input/output line
30	GND	Ground	Digital Ground
31	MIC_AN	Analogue in	Microphone input negative,left
32	MIC_AP	Analogue in	Microphone input positive,left
33	MIC_BIAS_A	Analogue out	Microphone bias A
34	SPKR_BN	Analogue out	Speaker output negative,right

35	SPKR_BP	Analogue out	Speaker output positive,right
36	SPKR_AN	Analogue out	Speaker output negative,left
37	SPKR_AP	Analogue out	Speaker output positive,left
38	GND	Ground	Digital Ground
39	RF_PORT	RF	Bluetooth 50ohm transmitter output/receiver input
40	GND	Ground	Digital Ground

7 Electrical Characteristics

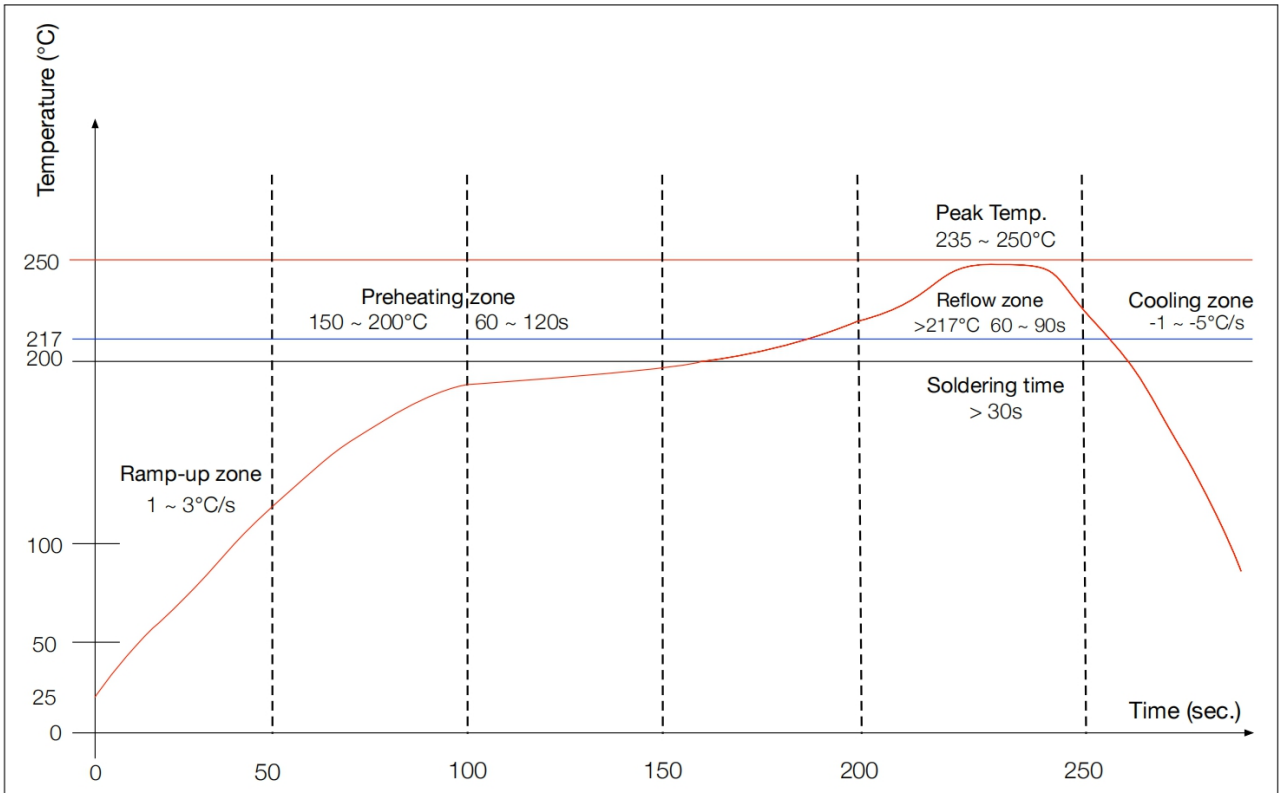
7.1 Absolute Maximum Ratings

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



Ramp-up zone — Temp.: <150°C Time: 60 ~ 90s Ramp-up rate: 1 ~ 3°C/s
Preheating zone — Temp.: 150 ~ 200°C Time: 60 ~ 120s Ramp-up rate: 0.3 ~ 0.8°C/s
Reflow zone — Temp.: >217°C Time: 60 ~ 90s; Peak Temp.: 235 ~ 250°C (<245°C recommended) Time: 30 ~ 70s
Cooling zone — Peak Temp. ~ 180°C Ramp-down rate: -1 ~ -5°C/s
Solder — Sn&Ag&Cu Lead-free solder (SAC305)

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

若拆封后未立即上线，天嘉润科技建议让下次上线前务必以 **125**℃烘烤 **9** 小时以上！

Record of Changes

Data	Revision	Description
2021-03-03	V1.0	Original publication of this document.

IMPORTANT NOTICE

Sky Jiarun Technologies Co.,Ltd (SJR) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current. All products are sold subject to the SJR terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

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.

In order to minimize risks associated with customer applications, adequate design and operating safeguards must be used by the customer to minimize inherent or procedural hazards. SJR products are not authorized for use as critical components in life support devices or systems without the express written approval of an officer of the company. Life support devices or systems are devices or systems that are intended for surgical implant into the body, or support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided, can be reasonably expected to result in a significant injury to the user. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

SJR assumes no liability for applications assistance or customer product design. SJR does not warrant or represent that any license, either express or implied, is granted under any patent right, mask work right, or other intellectual property right of SJR covering or relating or any combination, machine, or process in which such products or services might be or are used.

Tel: (0755) 85279490

Fax :(0755) 85279683

Web: www.tianjiarun.com

E-mail: sales@tianjiarun.com