Bluetooth Module Datasheet

Model: SJR-BTM308

Version: V1.0

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1 Introduction

Sky Jiarun Technologies introduces the pioneer of the Bluetooth 5.0 modules SJR-BTM308-C 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 QCC3008 QFN 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
- SPP v1.2
- DID v1.3
- HOGP v1.0
- PXP v1.0.1
- FMP v1.0
- BAS v1.0
- 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 I^2S outputs with crossover

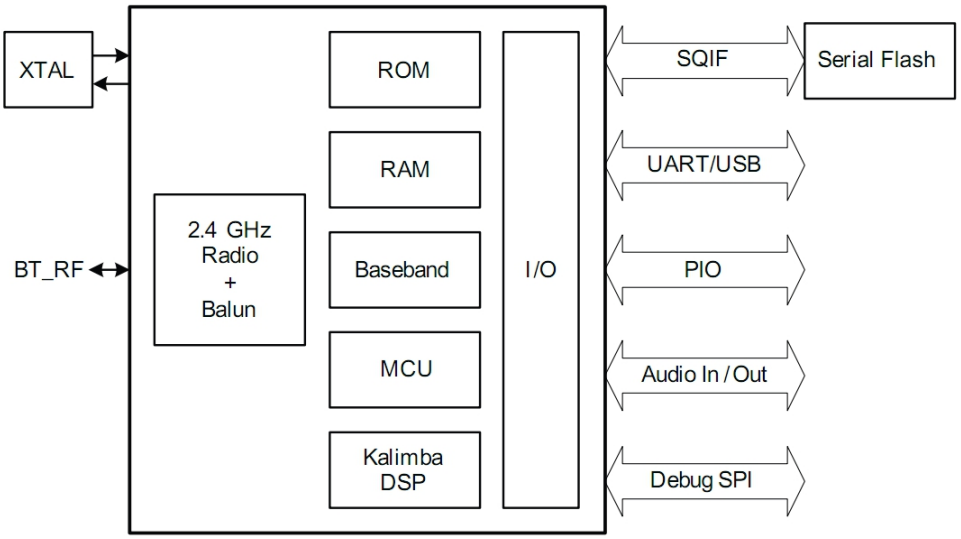
Additional Functionality

- 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 28.5mm x 13mm x 2.5mm

3 Applications

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

4 Block Diagram

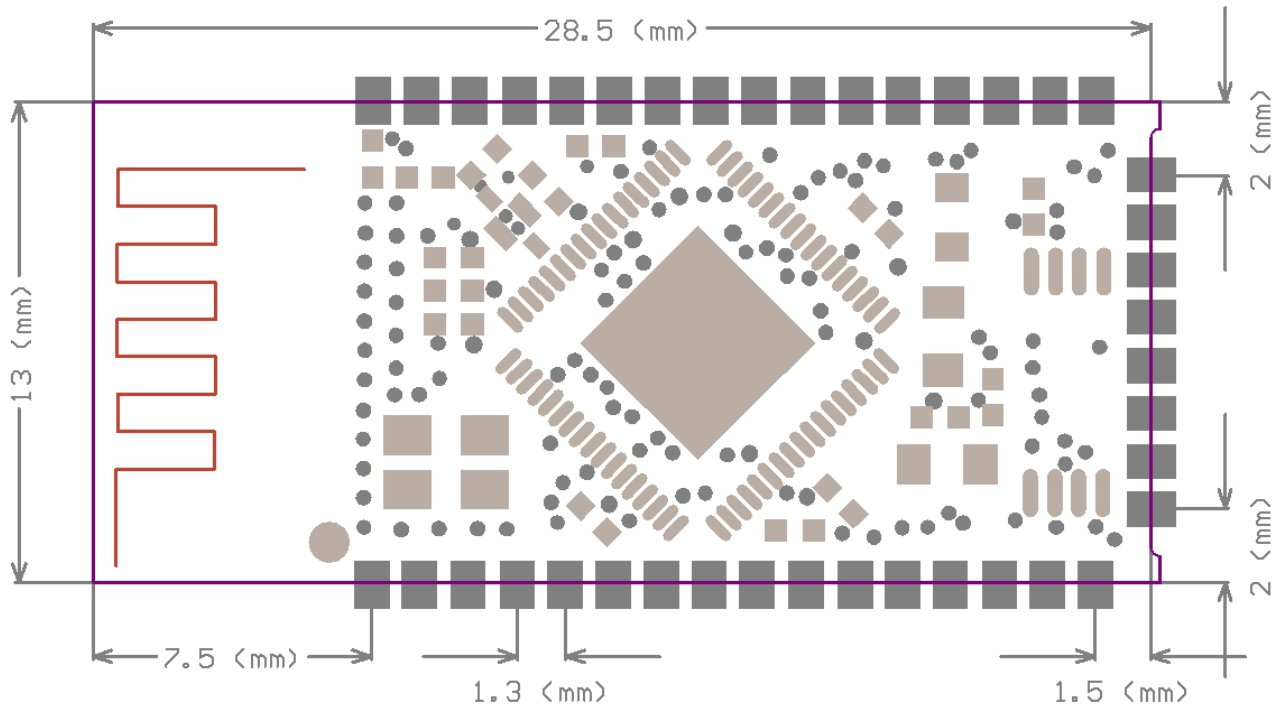


5 General specifications

Model Name	**SJR-BTM308**
Product Description	**Bluetooth 5.0 Class2 Module**
Bluetooth Standard	Bluetooth 5.0
Chipset	QCC3008 QFN
Dimension	28.5mm x 13mm 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	-92dBm
8DPSK Receive Sensitivity	-82dBm

6 Module Package Information

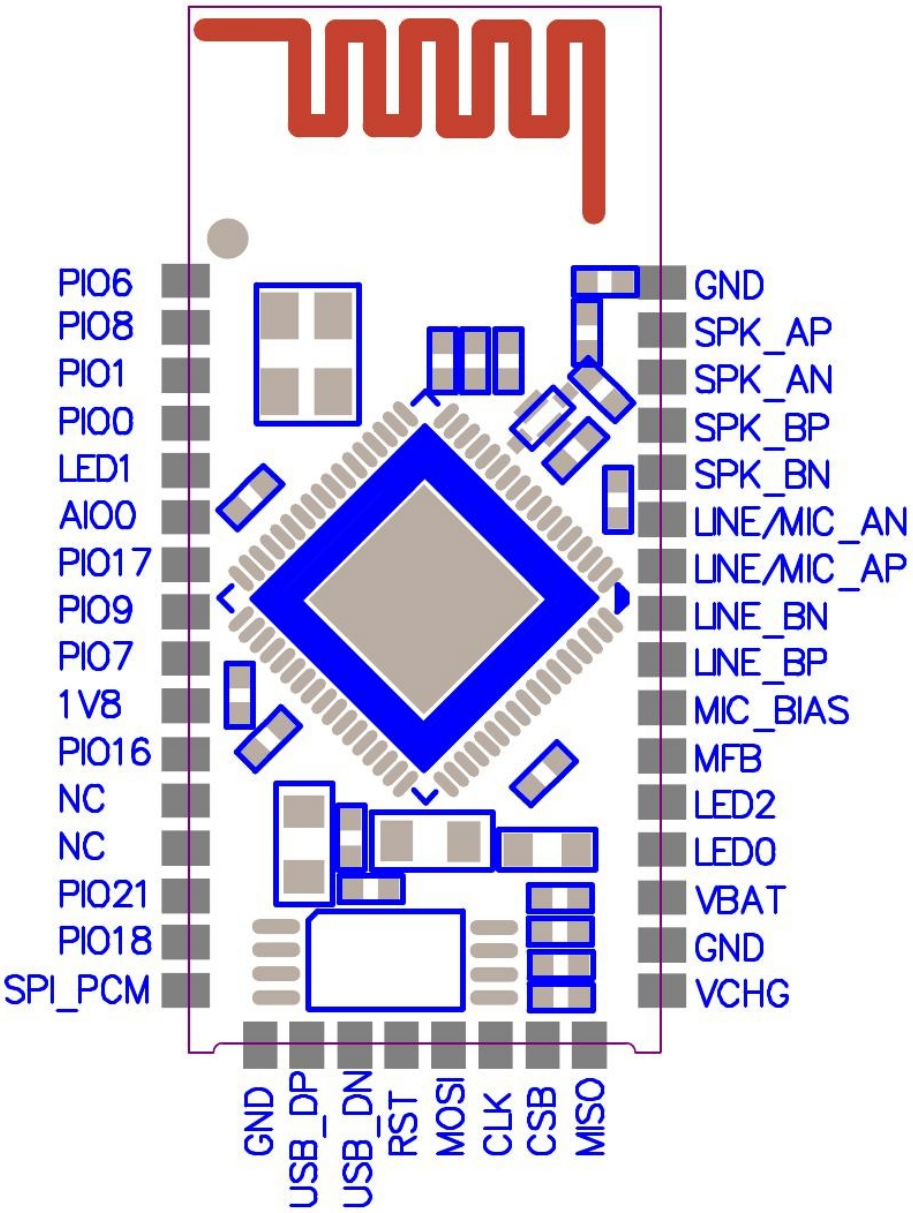
6.1 Pinout Diagram and package dimensions



Unit: MM

Recommended PCB layout footprint

6.2 Module Pin descriptions



Pin No.	Pin Name	Pin Type	Description
1	PIO6	Bidirectional with strong pull-down	Programmable input/output line 6
2	PIO8	Bidirectional with strong pull-up	Programmable input/output line 8
3	PIO1	Bidirectional with strong pull-up	Programmable input/output line 1
4	PIO0	Bidirectional with strong pull-up	Programmable input/output line 0
5	LED1	Bidirectional	LED driver
6	AIO0	Bidirectional	Analogue programmable input/output line
7	PIO17	Bidirectional with strong pull-down	Programmable input/output line 17
8	PIO9	Bidirectional with strong pull-down	Programmable input/output line 9

9	PIO7	Bidirectional with strong pull-down	Programmable input/output line 7
10	1V8	1.8V output	1.8V output for keys
11	PIO16	Bidirectional with strong pull-up	Programmable input/output line 16
12	NC	NC	NC
13	NC	NC	NC
14	PIO21	Bidirectional with weak pull-down	Programmable input/output line 21
15	PIO18	Bidirectional with weak pull-down	Programmable input/output line 18
16	SPI_PCM#	Input with weak pull-down	SPI/PCM select input: 0 = PCM/PIO interface 1 = SPI
17	GND	VSS	Ground
18	USB_P	Bidirectional	USB data plus
19	USB_N	Bidirectional	USB data minus
20	RSTn	Input with strong pull-up	Reset if low. Pull low for minimum 5ms to cause a reset.
21	SPI_MOSI	Bidirectional with weak pull-down	Programmable input / output line 2 Alternative function: SPI_MOSI: Debug SPI data input PCM1_IN: PCM1 synchronous data input I2S1_SD_IN: I²S1 synchronous data input SPDIF_IN: SPDIF input
22	SPI_CLK	Bidirectional with weak pull-down	Programmable input / output line 5 Alternative function: SPI_CLK: Debug SPI clock PCM1_CLK: PCM1 synchronous data clock I2S1_SCK: I²S1 synchronous data clock
23	SPI_CSB	Bidirectional with weak pull-down	Programmable input / output line 4 Alternative function: SPI_CS#: chip select for Debug SPI, active low PCM1_SYNC: PCM1 synchronous data sync I2S1_WS: I²S1 word select
24	SPI_MISO	Bidirectional with weak pull-down	Programmable input / output line 3 Alternative function: SPI_MISO: Debug SPI data output PCM1_OUT: PCM1 synchronous data output I2S1_SD_OUT: I²S1 synchronous data output
25	VCHG	Charger voltage input	Internal charger input for charging
26	GND	VSS	Ground
27	VBAT	Battery positive terminal	Power supply input for 2.7~4.2V
28	LED0	Bidirectional	LED driver
29	LED2	Bidirectional	LED driver
30	VREG_EN	Power on/off key input	Power on/off input key indication

31	MIC BIAS	Analog	Microphone bias output
32	LINE_BP	Analog input	Line input positive, channel B
33	LINE_BN	Analog input	Line input negative, channel B
34	LINE/MIC_AP	Analog input	Line or microphone input positive, channel
35	LINE/MIC_AN	Analog input	Line or microphone input negative, channe
36	SPK_BN	Analog output	Speaker output negative right
37	SPK_BP	Analog output	Speaker output positive right
38	SPK_AN	Analog output	Speaker output negative left
39	SPK_AP	Analog output	Speaker output positive left
40	GND	VSS	Ground

7 Electrical Characteristics

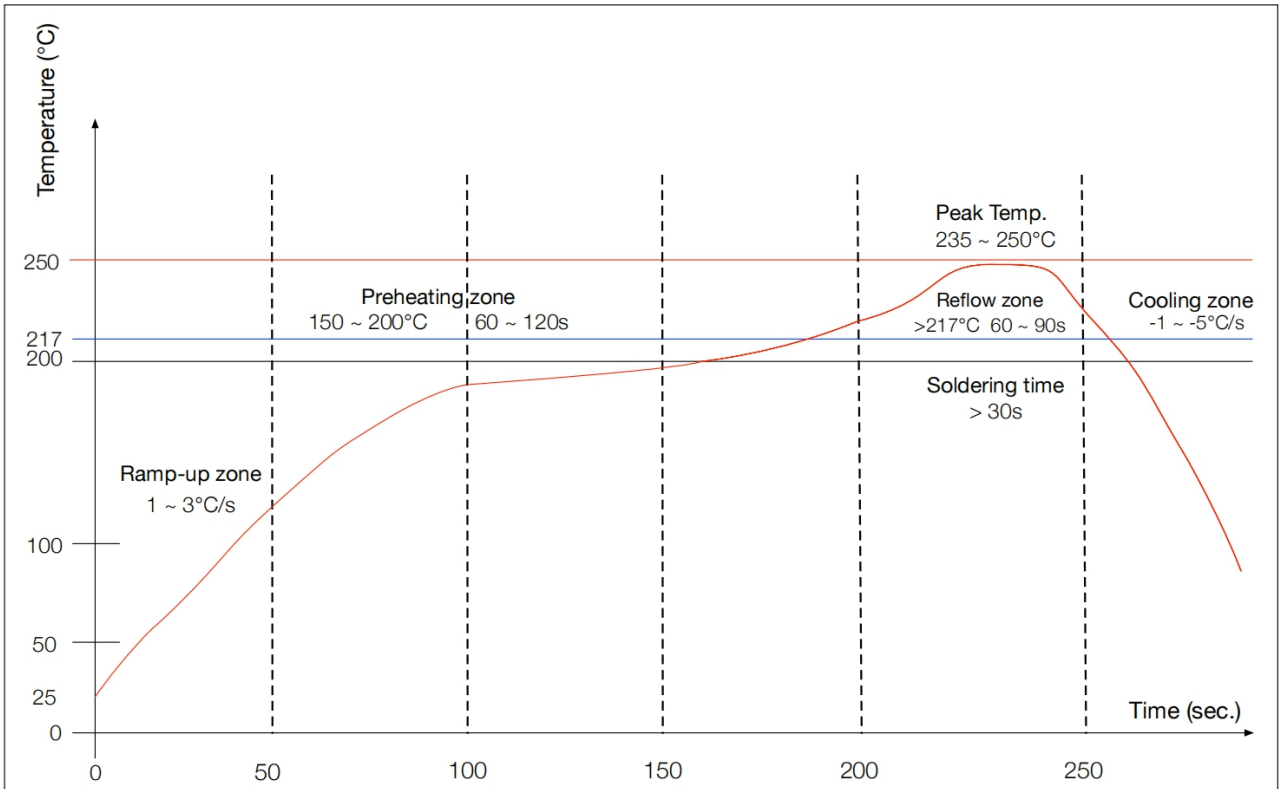
7.1 Absolute Maximum Ratings

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
2019-06-04	V1.0	Original publication of this document.

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