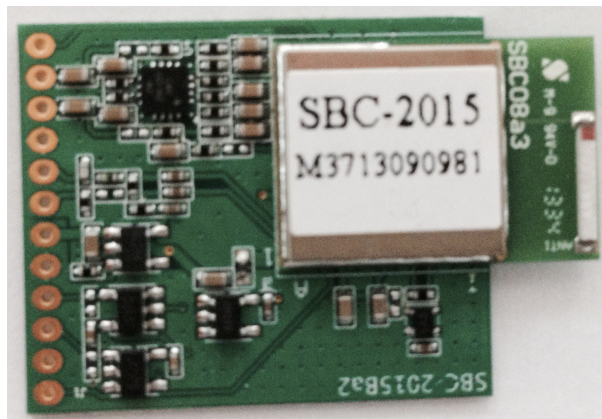


CSR8670 Bluetooth Modules

SBC2015-B

Preliminary Specification



Version 1.0

04-JAN.-2014

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Documentation History

Revision	Description	Date	Remark
V1.0	SBC2015-B preliminary specification released	JAN 2014	

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1. Description

SBC2015-B audio transmitter/Receiver is power by CSR BC8670 technology. That provides a complete 2.4GHz Bluetooth technology for stereo music transmission. The SBC2015-B module is compliant with Bluetooth specification v3.0 EDR ,4.0 LE and support A2DP, AVRCP, HSP, HFP, and MAP, SPP, PBAP under request. It is the 10dBm module with build in antenna. Reduce the effort on the RF section when the engineer designs it into the system. Smart Design also customize the software to meet the requirement from customer.

2. Features

CSR BlueCore8670 Chip.

Bluetooth v3.0 EDR, Bluetooth 4.0 BLE Compliant.

Bluetooth 10dBm RF output power. 10~50 meters transmission distance.

Updated 80 MHz DSP performance.

Single end audio output

UART interface

Supported A2DP1.2, HSP1.2, HFP1.6(HD voice ready) , AVRCP 1.4 ,PBAP1.0 and SPP1.0

Profile MAP1.0(SMS notification) under request.

Fully configurable with simple AT style commands over UART and Bluetooth connections.

Build in high performance chip antenna.

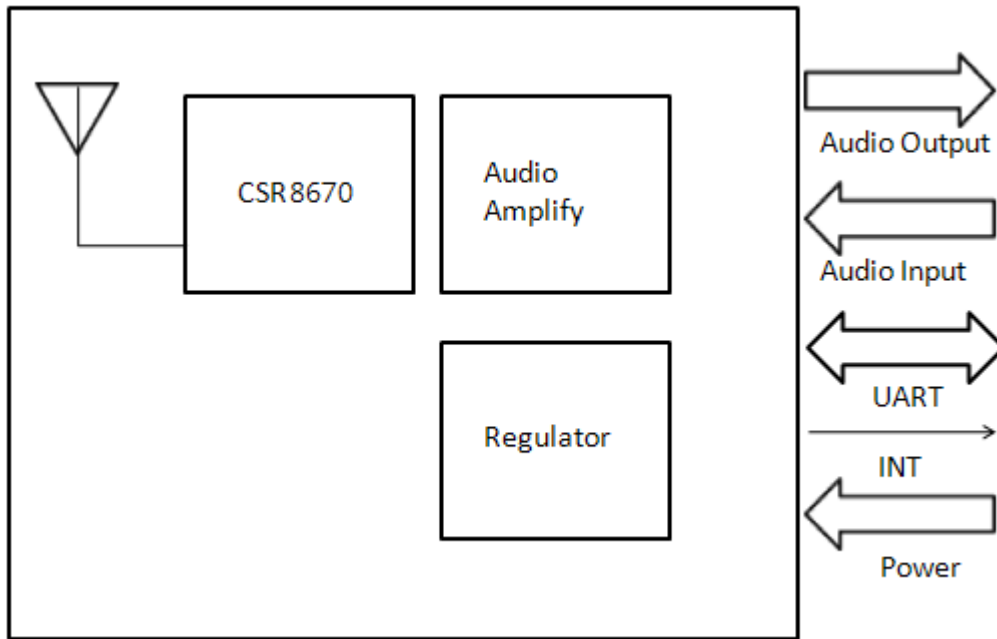
PA Integrated and output single end audio interface.

Dimension: 35 X 25 X 3mm.

Castellated SMT pads or 12 PIN pitch 2.0mm connector easy and reliable PCB mounting.

BQE、FCC certified.

3. Block Diagram



SBC2015-B Module Block Diagram

4. Radio Characteristics

	Frequency (GHz)	MIN	TYP	MAX	BT Spec	Unit
Sensitivity at 0.1%BER	2.402	≤-93	-85	-	≤ -70	dBm
	2.441	≤-93	-85	-		dBm
	2.480	≤-93	-85	-		dBm
RF Transmit Power	2.402	0	3	10	≤ 4	dBm
	2.441	0	3	10		dBm
	2.480	0	3	10		dBm
Initial Carrier Frequency Tolerance	2.402	-	5	75	75	kHz
	2.441	-	5	75		kHz
	2.480	-	5	75		kHz
20dB bandwidth for modulated carrier		-	900	1000	≤1000	kHz
Drift (Five slots packet)		-	15	-	40	kHz
Drift Rate		-	13	-	20	kHz
Δf1 avg "Maximum Modulation"	2.402	140	165	175	140 < Δf1 avg	kHz
	2.441	140	165	175		kHz
	2.480	140	165	175		kHz
Δf2 max "Minimum Modulation"	2.402	115	190	-	115	kHz
	2.441	115	190	-		kHz
	2.480	115	190	-		kHz

5. Electrical Characteristics

Voltage Input

	MIN	Typ.	MAX	Unit
Supply Voltage	3.5	5	5.3	V

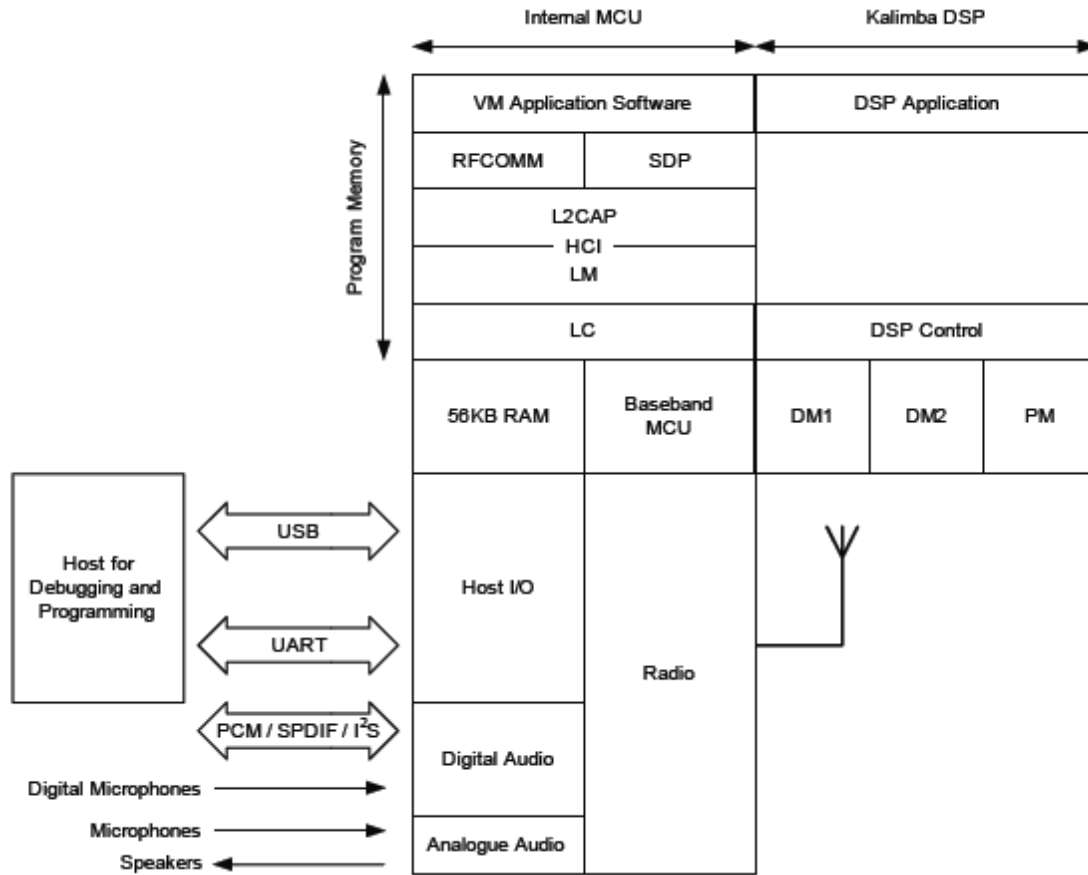
Power Consumption

DUT Role	Connection		Packet Type	Average Current	Unit
N/A	Deep sleep	With UART host connection	-	55	μA
N/A	Page scan	Page = 1280ms interval Window = 11.25ms	-	219	μA
N/A	Inquiry and page scan	Inquiry = 1280ms interval Page = 1280ms interval Window = 11.25ms	-	378	μA
Master	ACL	Sniff = 500ms, 1 attempt, 0 timeout	DH1	119	μA
Master	ACL	Sniff = 1280ms, 8 attempts, 1 timeout	DH1	109	μA
Master	SCO	Sniff = 100ms, 1 attempt, PCM	HV3	7.6	mA
Master	SCO	Sniff = 100ms, 1 attempt, mono audio codec	HV3	9.8	mA
Master	eSCO	Setting S3, sniff = 100ms, PCM	2EV3	5.8	mA
Master	eSCO	Setting S3, sniff = 100ms, PCM	3EV3	5.4	mA
Master	eSCO	Setting S3, sniff = 100ms, mono audio codec	2EV3	7.9	mA
Master	eSCO	Setting S3, sniff = 100ms, mono audio codec	3EV3	7.5	mA
Slave	ACL	Sniff = 500ms, 1 attempt, 0 timeout	DH1	127	μA
Slave	ACL	Sniff = 1280ms, 8 attempts, 1 timeout	DH1	129	μA
Slave	SCO	Sniff = 100ms, 1 attempt, PCM	HV3	7.8	mA

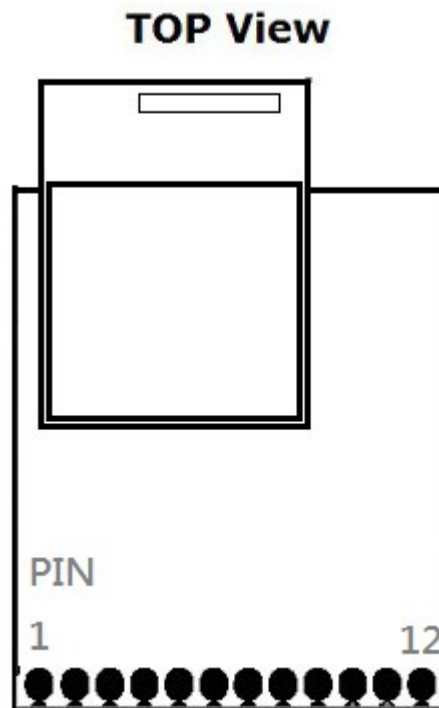
Operating Conditions

Voltage Range	3.5V ~ 5.3V
Operating Temperature Range	-30°C ~ 80°C
Storage Temperature Range	-30°C ~ 85°C
Relative Humidity (Operating)	<=90%
Relative Humidity (Storage)	<=90%

6. Software Diagram



7. Pin Definition



PIN	Name	Type	Note
1	GPIO4	I/O	Reserved. Keep it floating
2	R_SPK	O	Right side audio out put
3	L_SPK	O	Left side side audio output
4	SPK_GND	O	Ground for speaker
5	MIC+	I	Microphone +
6	MIC-	I	Microphone -
7	VCC	PWR	Power input
8	GND	PWR	Ground
9	TX	O	UART TX
10	RX	I	UART RX
11	INT	O	Interrupt
12	GPIO7	I/O	Reserved. Keep it floating

VCC

Supply voltage at this pin with 5 V.

GND

Connect GND pins to the ground plane of the PCB.

RX

RX is used to implement UART data transfer from another device to SBC3525. The UART interface requires an external RS232 transceiver chip. TTL level.

TX

TX is used to implement UART data transfer from SBC3525 to another device. TTL level.

L_SPK

Left channel audio output. The audio output line is the single-ended. Use low impedance ground plane dedicated for the audio signals.

R_SPK

Right channel audio output. The audio output line is the single-ended. Use low impedance ground plane dedicated for the audio signals

SPK_GND

Audio ground. Connect to right and left Audio line.

MIC+ and MIC-

Audio inputs. This audio input can be configured to microphone or line input. Route differential pairs close to each other and use a solid dedicated audio ground plane for the audio signals.

INT

Interrupt output. Normally keep in "Low". Change to "High" when Audio output.

8. Mechanical Specification

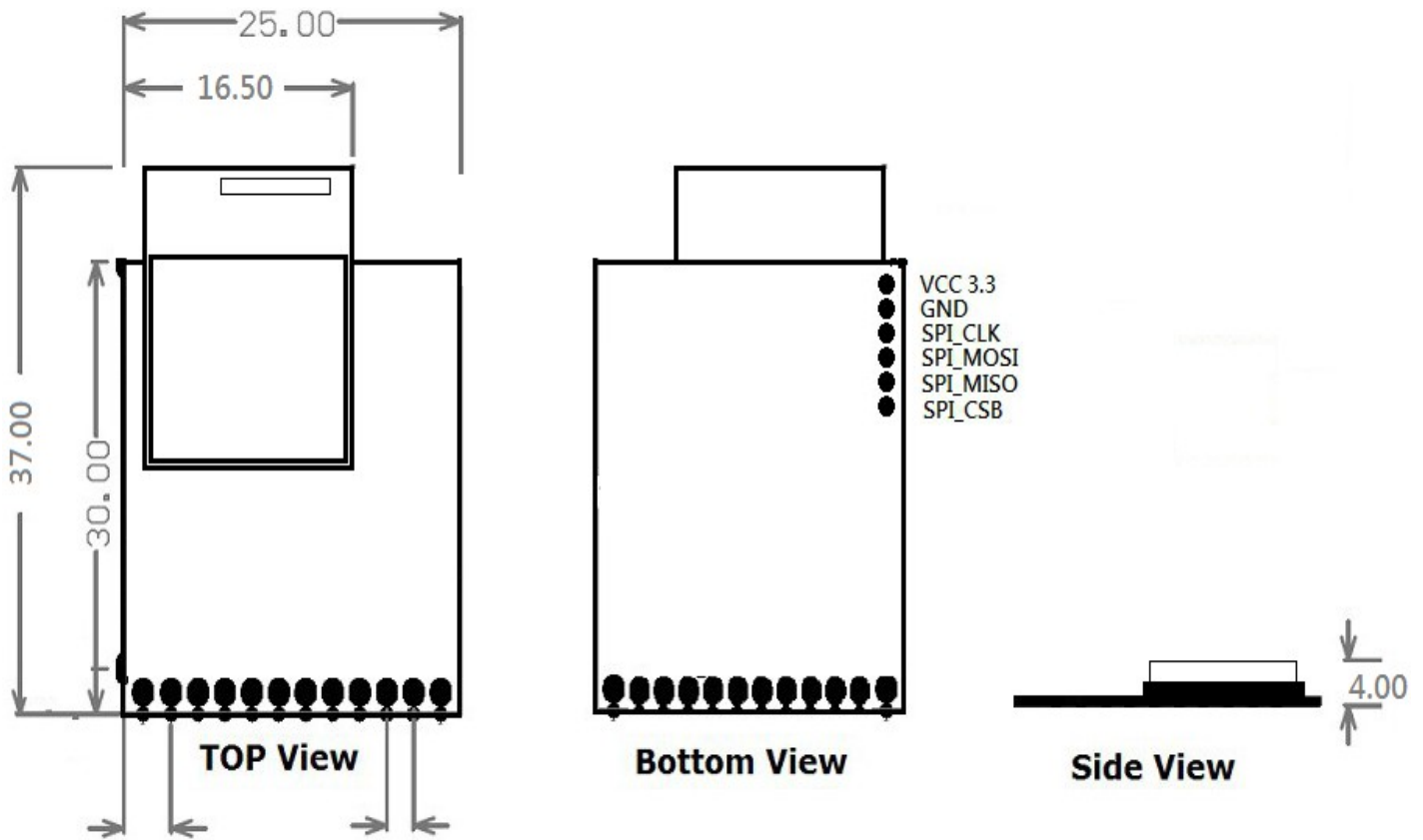
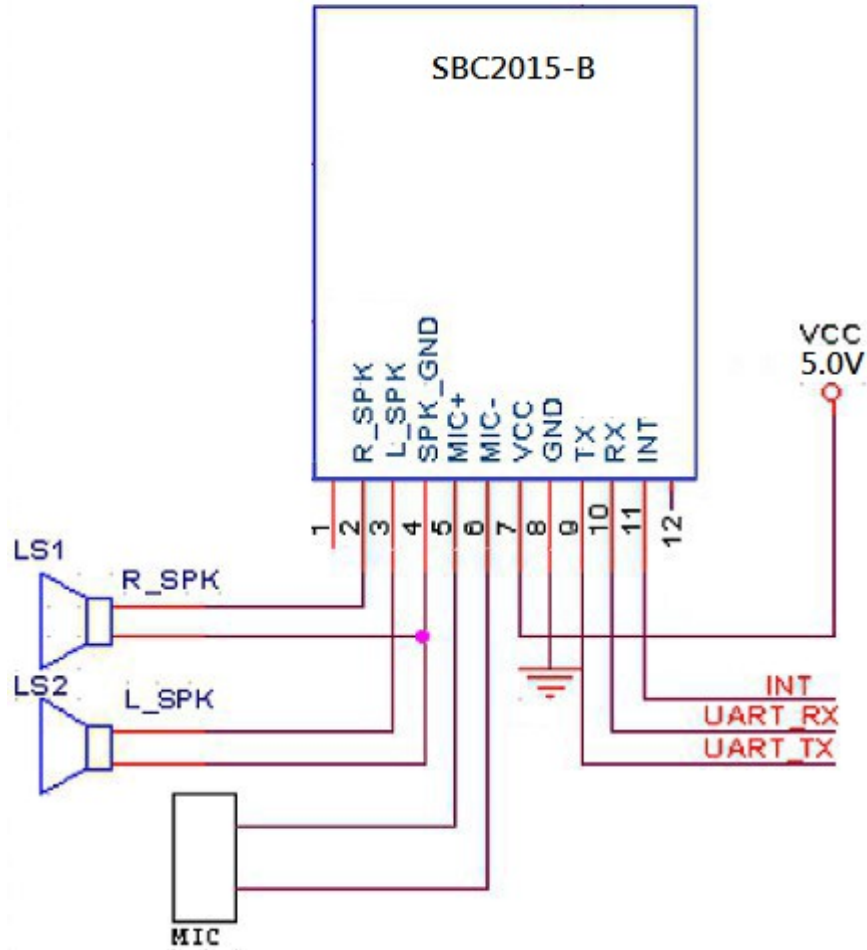


Fig. 1.2 SBC2015-B Mechanical Specification (Unit:mm)

9. Reference Schematics



10. Software specification

Software function

(a) SBC2015-B-SD

SBC2015-B-SD is the Smart Drive software. This software will perform SBC2015-B module itselfs. There is no software effort by user to control this module after ponwe on.

support Profile

Stack / Profile	SBC2015-B-SD BT4.0 module
A2DP	V
HSP	V
HFP	V
AVRCP	V

(b) SBC2015-B-AT

SBC2015-B-AT will act only when you send AT command. Detailed AT command, please check the document "A2DP_AT_Commands"

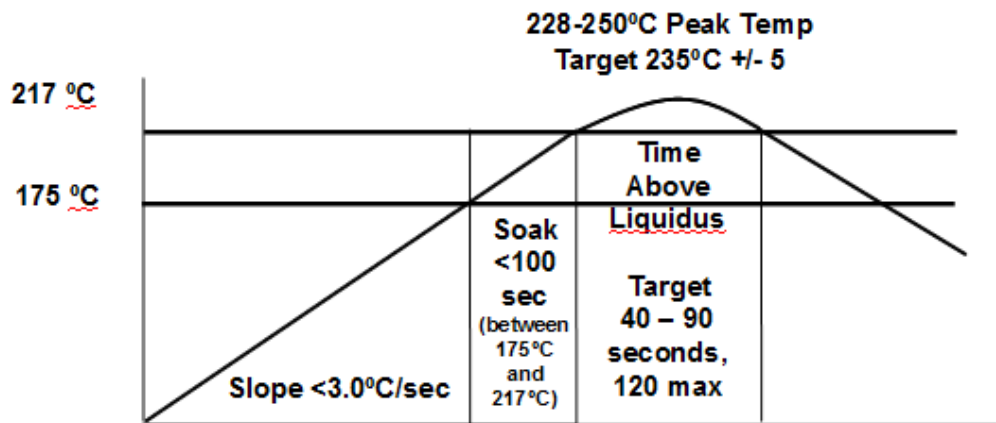
support Profile

Stack / Profile	SBC2015-B-AT BT4.0 module
A2DP	V
HSP	V
HFP	V
AVRCP	V
MAP	(under Request)
PBAP	V
SPP	(under Request)

11. Reflow information

Reflow Profile Graphic, assuming:

- Kester R905 Sn/4Ag/0.5Cu solder paste.
- All solder ball alloys melt at 217°C.
- Component joints do not exceed temperatures as per J-STD-02



Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

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.

This device complies with part 15 of the FCC Rules. 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.