

GOOWI

GWB8Q
Bluetooth Module
Data Sheet

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GOOWI

GWB8Q Module

CSRA64210

Rev1.0

Nov. 2015

Device Features

- A small and cost effective Bluetooth® System
- Bluetooth® specification v4.2 compliant
- Class 2, up to 10-meter range
- Security simple pairing
- NFC function, let the bluetooth application more simple
- Bluetooth® Profile Supported: A2DP v1.3 ,AVRCP v1.6 HFP v1.6 HSP v1.2 DI v1.3
- SBC,MP3 and AAC decoder support
- Multioint support for A2DP connection to 2 A2DP sources for music playback
- TrueWireless Stereo (TWS)
- User and manufacturer configurable EQs
- Wideband speech supported by hfp V1.6 and mSBC codec
- Wired audio support
- Serial interfaces: USB2.0,UART,I2C and SPI
- Audio interfaces:PCM/I2S,SPDIF input,analogue/stereo line and digital microphone
- Power management: low power 1.35V operation for Bluetooth® core
- Compact size: 19.00 mm x 10.00 mm
- Surface mount package for embedded applications
- 3 LED outputs
- Voice Promote(Optional)

General Description

The GWB8Q module from GooWi is a complete Bluetooth® solution.It is built on CSRA64210 Multimedia Core .It's a short range,compact and cost effective module. Be able to be embedded into your electronics devices which need Bluetooth® connection, such as, Home Audio, Car kit, Handsfree applications...

Applications

- Bluetooth stereo Speakers
- Sperkerphones
- TWS speakers

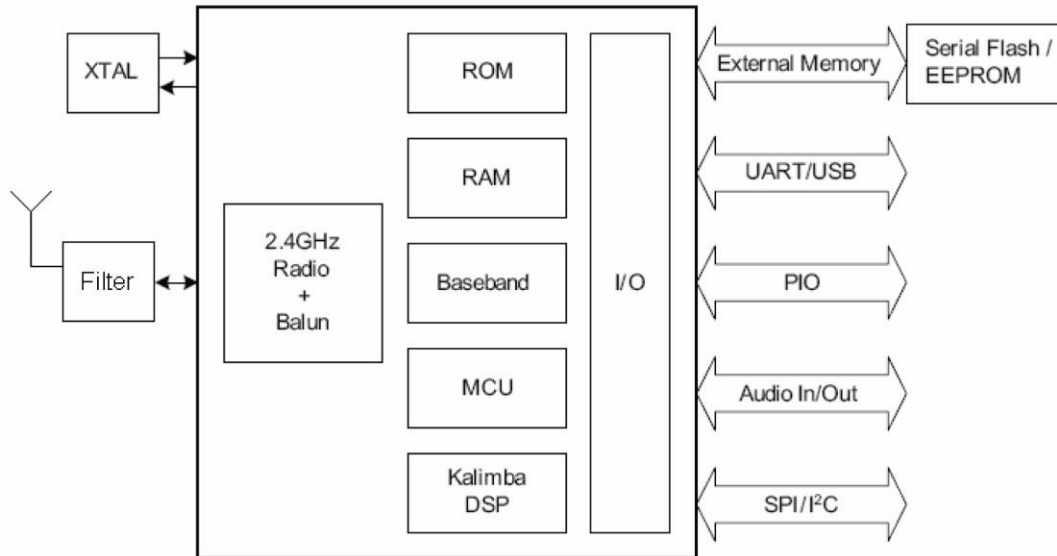
Version History

Version No	Author	Date	Remark
Rev1.0	Alvin-zhang	2015-11-15	Init Version

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System Architecture



Specifications

Operating Frequency Band	2.4GHz ~ 2.48GHz unlicensed ISM band
Bluetooth Specification	V4.2
Output Power Class	Class 2
Operating Voltage	3.0V -4.2V
Host Interface	USB 2.0/UART/ I2C/ SPI
Audio Interface	Analogue/PCM
Dimension	19.00mm (L) x 10 mm (W) x 2.1 mm (H)

NOTES: Specifications are subject to change without prior notice

Electrical Characteristics

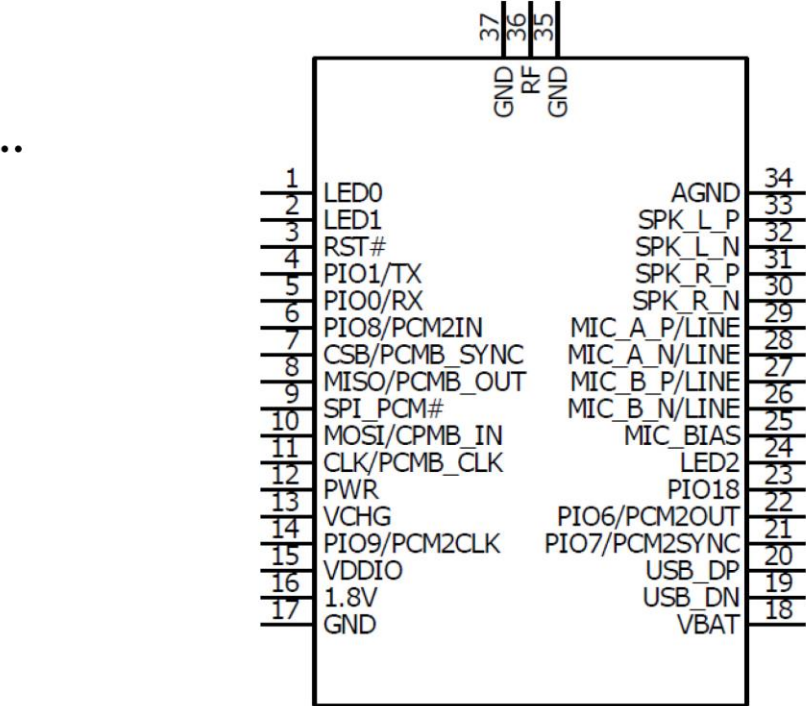
Absolute Maximum Ratings

Rating		Min	Max	Unit
Storage temperature		-40	105	°C
Supply Voltage				
Charger	VCHG	-0.4	6.5	V
USB	VDD_USB	-0.4	3.6	V
LEDs	LED[2:0]	-0.4	4.40	V
Battery	VBAT	-0.4	4.25	V
	PWR	-0.4	4.4	V
IO	VDDIO	-0.4	3.60	V
1.35V	VDD_AUDIO	-0.4	1.45	V
Other terminal voltages		VSS - 0.4	VDD + 0.4	V

Recommended Operation Conditions

Rating		Min	Typ	Max	Unit
Operating temperature range		-40	20	85	°C
Supply Voltage					
Charger	VCHG	4.75 / 3.10	5.00	6.5	V
USB	VDD_USB	3.10	3.30	3.60	V
LEDs	LED[2:0]	1.10	3.70	4.30	V
Battery	VBAT	0	3.70	4.25	V
	PWR	0	3.70	4.25	V
IO	VDDIO	1.70	1.80	3.60	V
1.35V	VDD_AUDIO	1.30	1.35	1.45	V

Pin Configurations

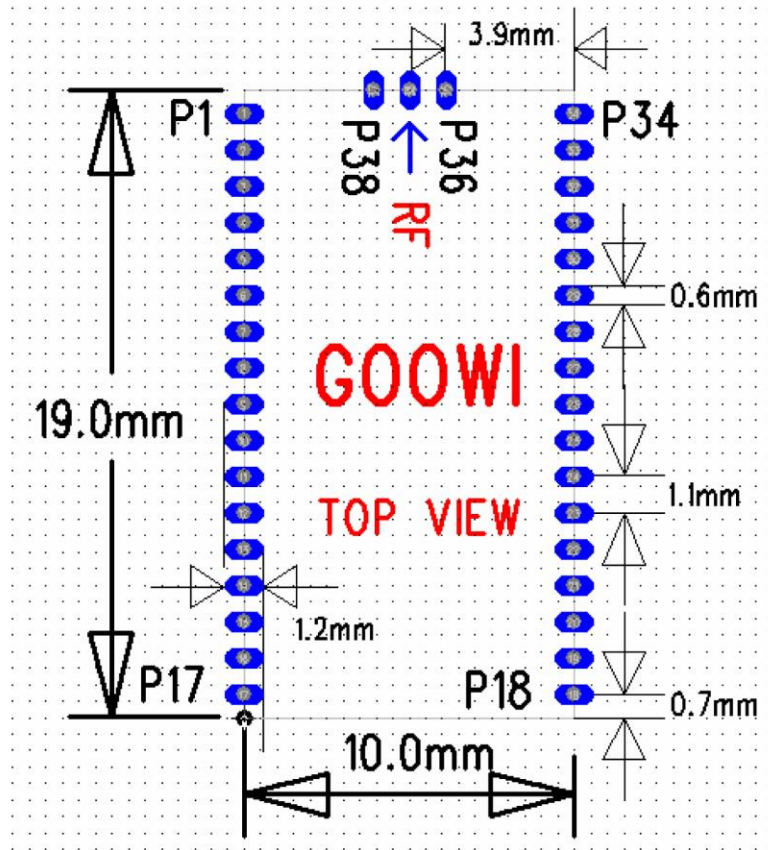


Pin No.	Name	Type	Function	Remark
1	LED0	Open drain output	LED Driver	
2	LED1	Open drain output	LED Driver	
3	RST#	Input with strong pull-up	Reset if low. Pull low for minimum 5ms to cause a reset.	
4	PIO1/TX	Bi-directional	Programmable Input/Output Line 1 UART_TX: UART data output AMP_I2C_SDA:I2C serial data line for external amplifier control	
5	PIO0/RX	Bi-directional	Programmable Input/Output Line 0 UART_RX: UART data input AMP_I2C_SCL:I2C serial data line for external amplifier control	
6	PIO8/PCM2 IN	Bi-directional	Programmable Input/Output Line 8 UART_RTS: UART request to send,active low PCM2_IN:PCM2 synchronous data input I2S2_SD_IN:I2S2 synchronous data input	

7	CSB/PCMB_SYNC	Bi-directional	SPI CSB	
			Programmable Input/Output Line 4	
			PCM1_SYNC:PCM1 synchronous data sync	
			I2S1_WS:I2S1 word select	
8	MISO/PCMB_OUT	Bi-directional	SPI MISO	
			Programmable Input/Output Line 3	
			PCM1_OUT:PCM1 synchronous data output	
			I2S1_SD_OUT:I2S1 synchronous data output	
9	SPI_PCM#	Bi-Input with weak pulldown	SPI/PCM# select input: ■ 0 = PCM/PIO interface ■ 1 = SPI	
10	MOSI/CPMB_IN	Bi-directional	SPI MOSI	
			Programmable Input/Output Line 2	
			PCM1_IN:PCM1 synchronous data input	
			I2S1_SD_IN:I2S1 synchronous data input	
			SPDIF_IN:SPDIF input	
11	CLK/PCMB_CLK	Bi-directional	SPI CLK	
			Programmable Input/Output Line 5	
			PCM1_CLK:PCM1 synchronous data clock	
			I2S1_CLK:I2S1 synchronous data clock	
12	PWR	Analogue	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.	
13	VCHG	Charger input	Lithium ion/polymer battery charger input	
14	PIO9/PCM2_CLK	Bi-directional	Programmable Input/Output Line 9	
			UART_CTS:UART clear to send,active low	
			PCM2_CLK: PCM2 synchronous data clock	
			I2S2_CLK:I2S2 synchronous data clock	
15	VDDIO	Power	Positive supply input for input/output ports	
16	1V8	Power	1.8V bypass linear regulator output.	
17	GND	GND	Ground	

18	VDD_BAT	Battery terminal +	Lithium ion/polymer battery positive terminal, Battery charger output and input to switch-mode regulator	
19	USB_DN	Bi-directional	USB Data Minus	
20	USB_DP	Bi-directional	USB data plus with selectable internal 1.5k Ω pull-up resistor	
21	PIO7/PCM2 SYNC	Bi-directional	Programmable Input/Output Line 7	
			PCM2_SYNC: PCM2 synchronous data sync	
			I2S2_SD_IN:I2S2 synchronous data input	
22	PIO6/PCM2 OUT	Bi-directional	Programmable Input/Output Line 6	
			PCM2_OUT: PCM2 synchronous data output	
			I2S2_SD_OUT:I2S2 synchronous data output	
23	PIO18	Bi-directional	Programmable Input/Output Line 18	
24	LED2	Open drain output	LED Driver	
25	MIC_BIAS	Analogue	Microphone bias	
26	MIC_B_N/LINE	Analogue	Line input negative,channel B	
27	MIC_B_P/LINE	Analogue	Line input positive,channel B	
28	MIC_A_N/LINE	Analogue	Line or microphone input negative, channel A	
29	MIC_A_P/LINE	Analogue	Line or microphone input positive, channel A	
30	SPK_R_N	Analogue	Speaker output negative	
31	SPK_R_P	Analogue	Speaker output positive	
32	SPK_L_N	Analogue	Speaker output negative	
33	SPK_L_P	Analogue	Speaker output positive	
34	AGND	GND	Audio Ground	
35	GND	GND	Ground	
36	RF	RF	RF Interface	
37	GND	GND	Ground	

Mechanical Drawing



PCB LAYOUT

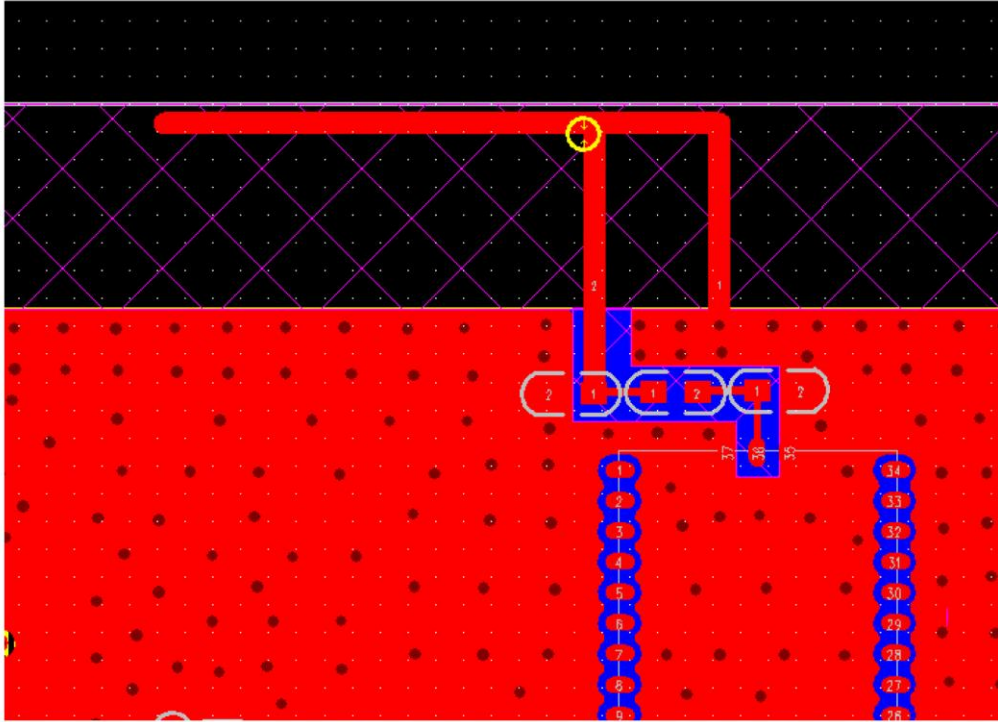
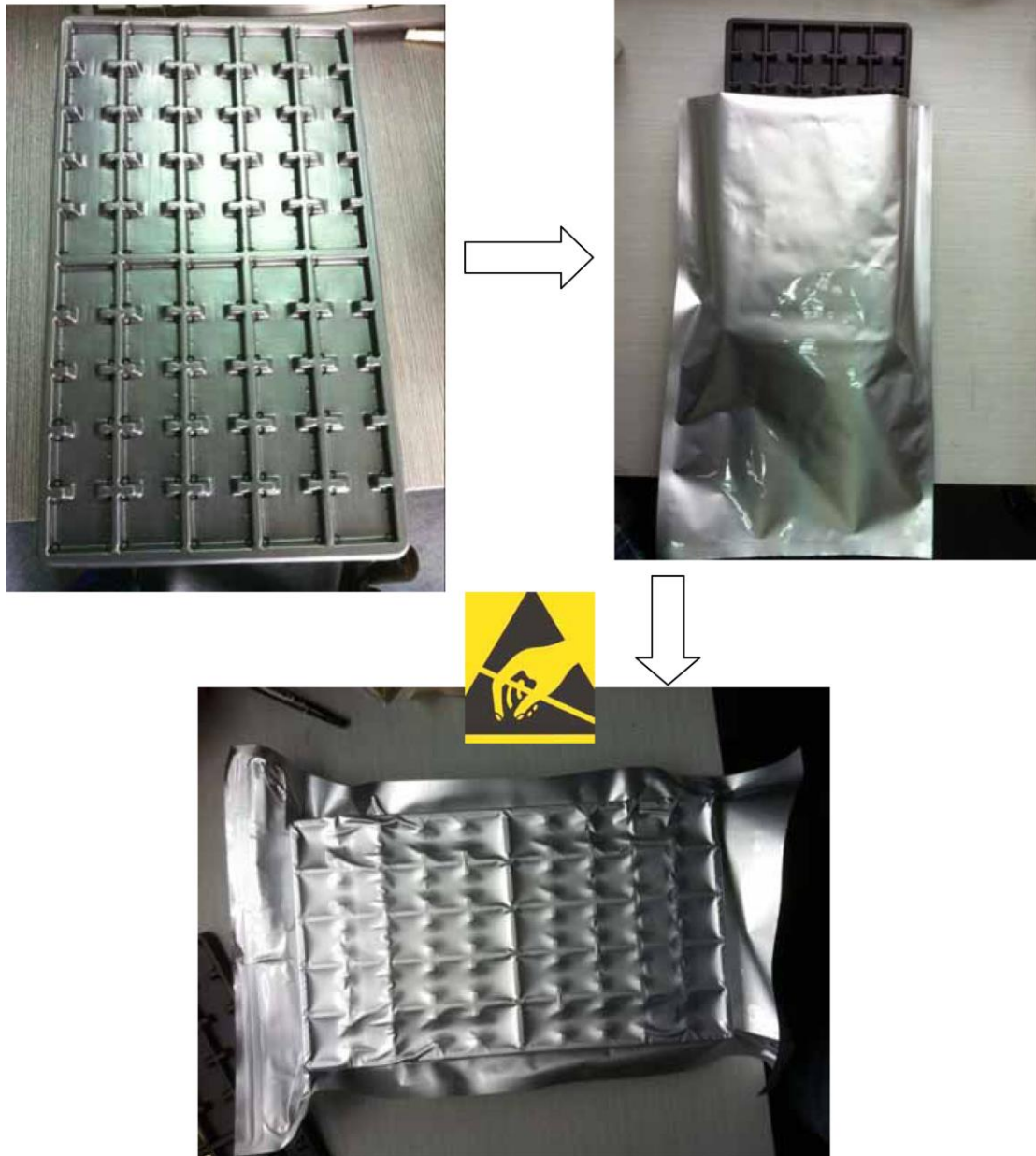


Figure 1: Example layout

The following list is aimed to avoid EMC problems caused by RF part of the module.

- Do not remove copper from the PCB more than needed. Use ground filling as much as possible. However remove small floating islands after copper pour.
- Do not place a ground plane underneath the antenna. The grounding areas under the module should be designed as shown in Figure 1.
- When using overlapping ground areas use conductive vias separated max. 3 mm apart at the edge of the ground areas. This prevents RF to penetrate inside the PCB. Use ground vias extensively all over the PCB. All the traces in (and on) the PCB are potential antennas.
- Avoid loops.
- Ensure that signal lines have return paths as short as possible. With sensitive analog signals, such as analog audio, use solid ground plane and make sure that the return path for the signal lines is low impedance and follows the signal lines all the way.

Package



Pumping air into vacuum state, anti-static packaging

Ordering Information

No.	P/N	Description
1	GWB8Q	Basic features

Document Reference

Document	Reference,Date
BlueCore Audio API Specification	CS-209064-DD
BlueTest User Guide	CS-102736-UG
Bluetooth and USB Design Considerations	CS-1014
Core Specification of the Bluetooth System	Bluetooth Specification 4.0,17 December 2009
CSRA64210 BGA performance specification	CS-334611-DS-2
Lithium Polymer Battery Charger Calibration and Operation for CSR8670	CS-204572-AN
Selection of I2C EEPROMS for Use with BlueCore	bcore-an-008P