



Coolwave Communication

CWBT09-LDXXX Series

Ultra Low Power System-on-Chip

Bluetooth 5.2 Module

General Description

CWBT09 is a high performance, ultra-low-power radio transmit and receive system module using Realtek BLE 5.2 RTL8762ESF as the controller chips. It has small size in the industry, with the minimum size of 9.5*9.5mm, which is suitable for most applications where the size is important.

In addition, CWBT09 supports an analog MIC interface that integrates a sigma-delta ADC, programmable gain amplifier, and microphone bias circuit for voice command application.

CWBT09 also embeds an IR transceiver, hardware key-scan, and Quad-decoder.

CWBT09 can comply with BQB and FCC, MIC and... regulations. Meeting the regulatory requirements allows the development and certification of products to be mastered.

Features

General description

- Supports Bluetooth 5.2 core specification+2.4Ghz proprietary

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- Supports LE 2Mbps
- LE advertising Extensions
- LE Long Range
- High Duty Cycle Non-Connection Advertising
- Supports OTA (Over-the-Air)
- Support AoA/AoD

Platform

- ARM Cortex-M0+ max frequency 40MHz
- 104KB SRAM totally, 272KB ROM
- Serial Flash Controller (1-bit&4-bits mode) with 8KB 4-way cache
- Supports AES 128/192/256 encryption/decryption engine
- Flash 512KB/1024KB (depends on part number)

Bluetooth Transceiver

- 2402~2480 Frequency Range (MHz)
- Modulation: 1Mbps/2Mbps GFSK
- Tx Power: 0/4/7.5 dBm adjustable
- Rx Sensitivity: -97dBm@1M
- Fast AGC control to improve receiving dynamic range
- Supports Bluetooth Low Energy PHY

Peripheral Interfaces

- Option 1 & 2: GPIO x 9
- Option 3 & 4: GPIO x 11
- Hardware Key-scan and Quad-decoder
- Embedded IR transceiver
- Real-Time Counters (RTC)
- 4-Channel SPI master/slave x 2
- Timers x 8
- I2C x 2
- PWM x 8(max)
- UART x 2



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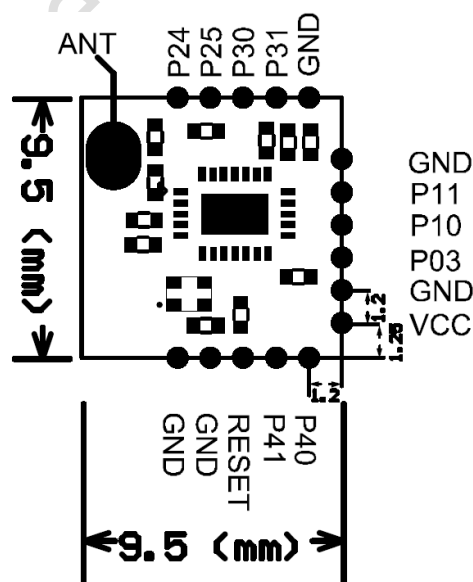
- 400ksps, 10bit, 2-Channel AUXADC
- I2S/PCM Interface for External Audio Codec
- Internal 32K RCOSC to keep BLE link (in limited condition)
- Embedded PGA and audio ADC

Applications

- Remote controller
- Smart home
- Beacon
- Low-cost wearable
- Smart health & medical
- Smart meters
- Smart lock
- Toy

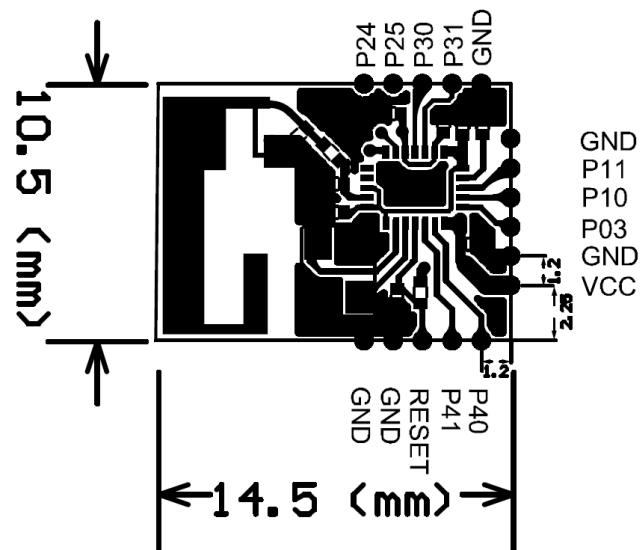
Option 1 & 2

- CWBT09-LD091
 - Without Antenna: Need to Weld a Monopole Antenna



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- CWBT09-LD092
 - With PCB Antenna

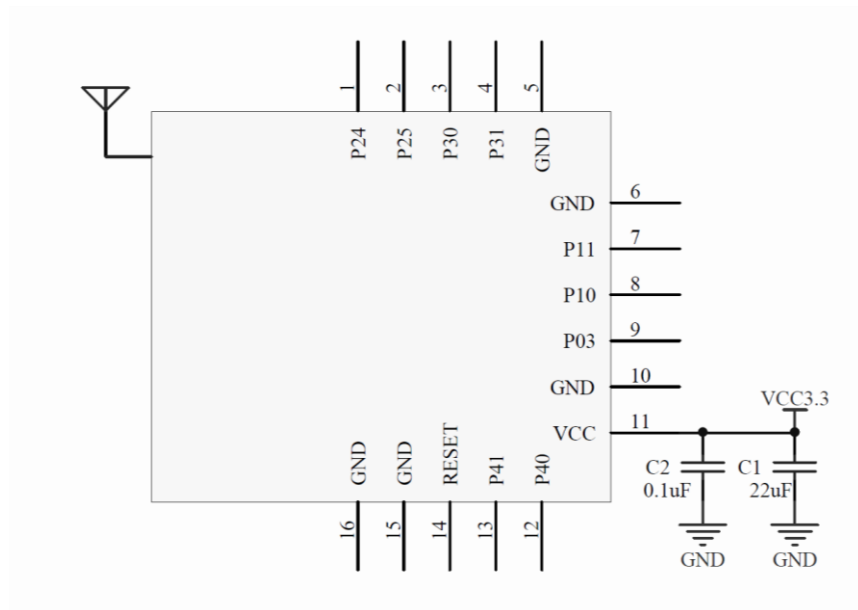


- Pin definition

Pin Number	Pin Name	
1	P24	GPIO
2	P25	GPIO
3	P30	GPIO
4	P31	GPIO
5	GND	GND
6	GND	GND
7	P11	GPIO
8	P10	GPIO
9	P03	GPIO
10	GND	GND
11	VCC	3.3V
12	P40	GPIO
13	P41	GPIO
14	RESET	RESET
15	GND	GND
16	GND	GND

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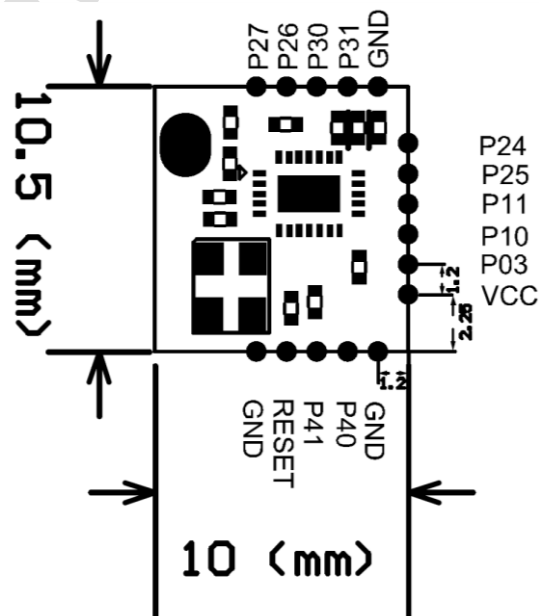
- Reference Design



Note: There should be no circuitry directly above or below the module antenna.

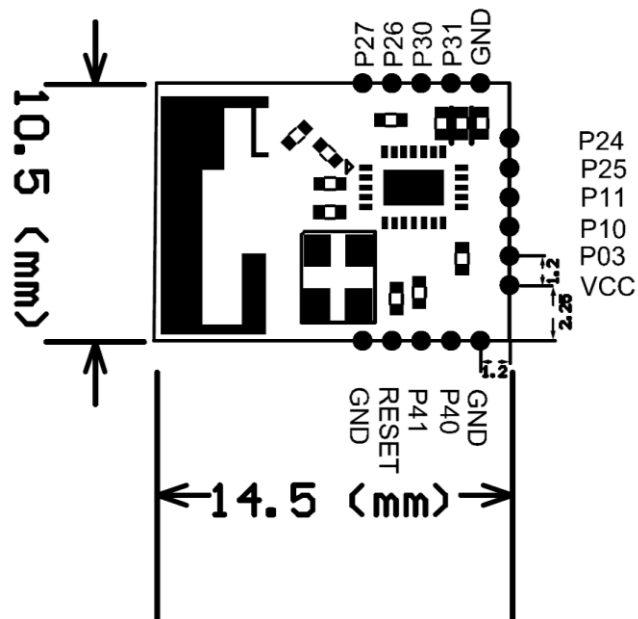
Option 3 & 4

- CWBT09-LD111
 - Without Antenna: Need to Weld a Monopole Antenna



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- CWBT09-LD112
 - With PCB Antenna

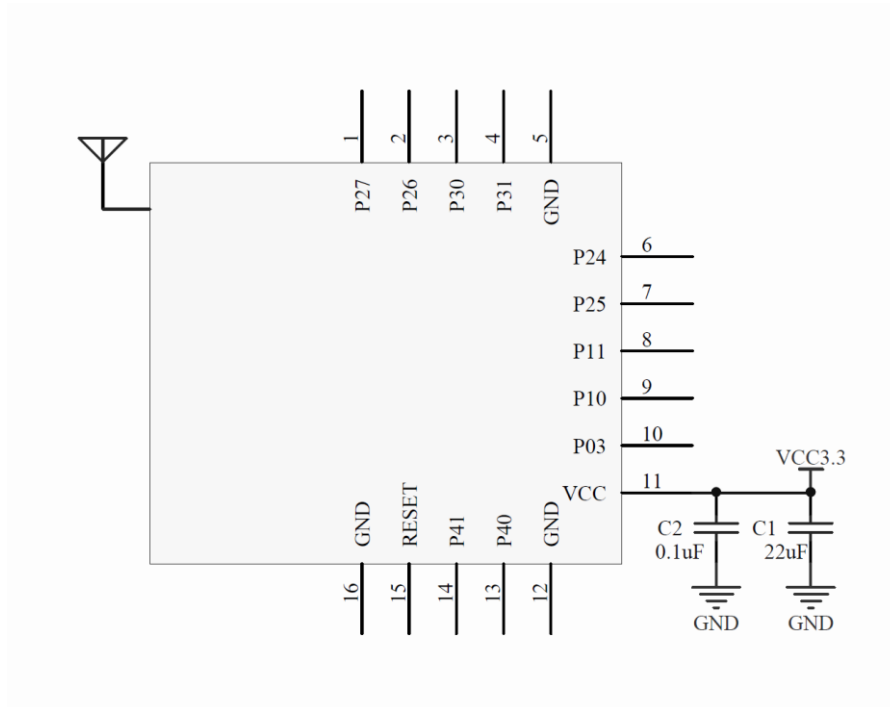


- Pin definition

Pin Number	Pin Name	
1	P27	GPIO
2	P26	GPIO
3	P30	GPIO
4	P31	GPIO
5	GND	GND
6	P24	GPIO
7	P25	GPIO
8	P11	GPIO
9	P10	GPIO
10	P03	GPIO
11	VCC	3.3V
12	GND	GND
13	P40	GPIO
14	P41	GPIO
15	RESET	RESET
16	GND	GND

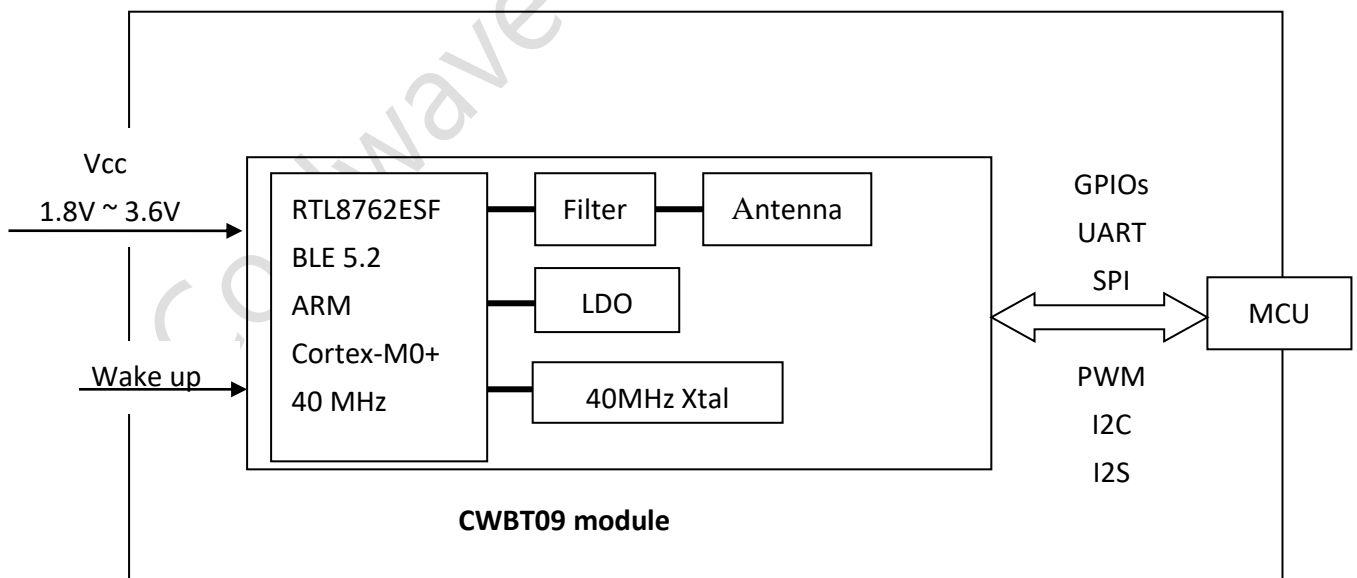
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- Reference Design

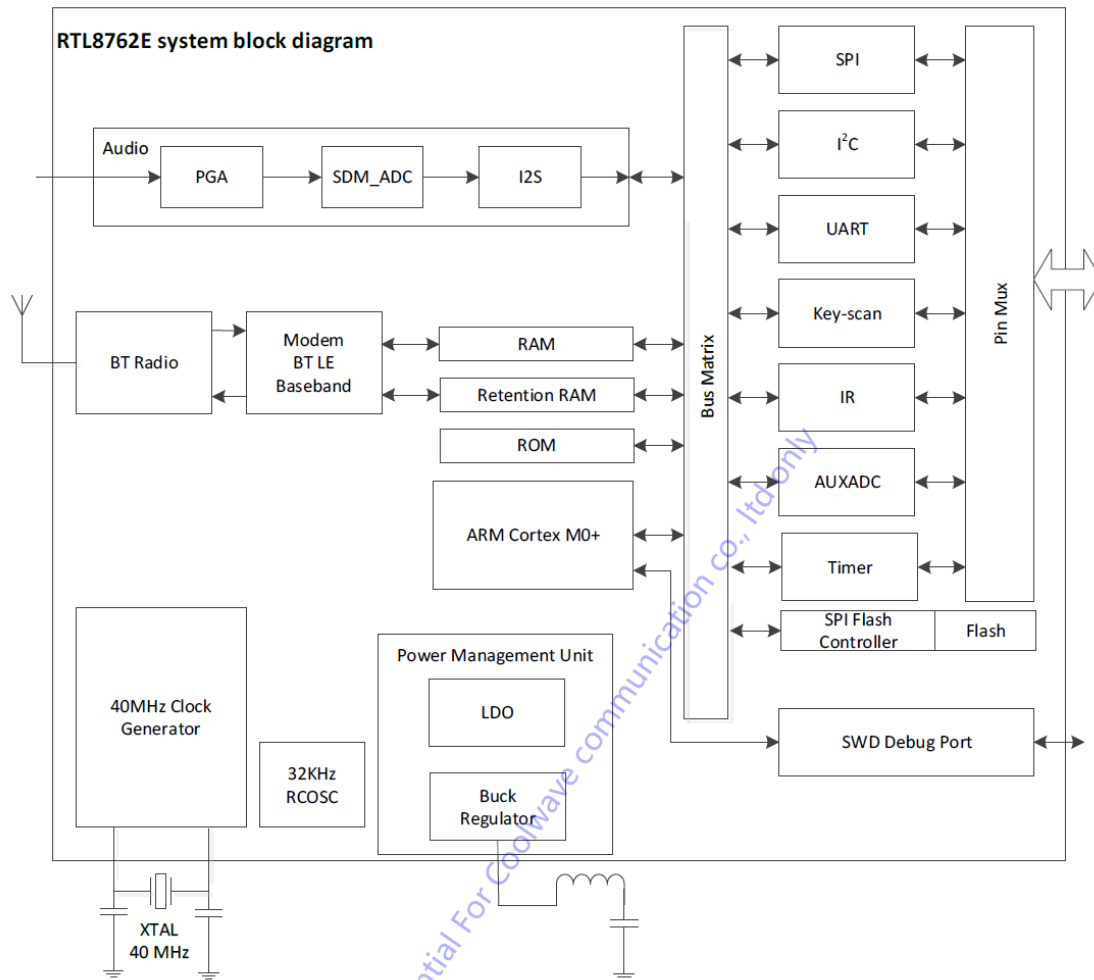


Note: There should be no circuitry directly above or below the module antenna.

Block Diagram



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