BLE Series

Data Sheet

USE8762_BLE

-BT5.2 BLE TX Module

Unisem Electronics

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VERSION	REVISION DATE	REVISOR	REVIEWER	REVISED CONTENTS
2.0	16/10/2023	NK	SP	
2.1	16/11/2023	NK	SP	

Table of Contents

Features:

General

- Based on the RTL8762_CMF chipset
- Automotive Grade
- Supports 2Mbps LE
- LE advertising Extensions
- LE Long Range
- Additional Adv channel
- Channel Selection #2
- High Duty Cycle Non-Connectable Adv
- Integrated MCU to execute Bluetooth protocol stack
- Supports multiple-level Low Energy states
- Supports LE L2CAP Connection Oriented Channel Support
- Supports LE low-duty directed advertising
- Supports LE data length extension feature
- Supports OTA (Over-the-Air) programming mechanism for firmware upgrade
- Supports GAP, ATT/GATT, SMP, L2CAP
- Generic Applications for GAP Central, Peripheral, Observer and Broadcaster Roles
- Supports True Random Number Generator (TRNG)
- Supports AES128 and AES256 feature
- Ultra-low power consumption with
- intelligent PMU
- Supports Bluetooth 5.2 core specification and2.4GHz proprietary feature multi-protocol independently

Bluetooth Transceiver

- RX sensitivity: -97dBm BLE1M (minimum)
- TX power: +7.5dBm (maximum)
- Fast AGC control to improve receiving dynamic range
- Supports Bluetooth Low Energy PHY

Peripheral Interfaces

- Real-time counters (RTC)
- Supports generic 4-wire SPI master/slave
- Supports external 4-channel low power
- comparator (USE8762_BLE only supports 2-channel inputs)
- Supports external 2-channel capacitive sensor
- inputs (USE8762_BLE can't support this feature)
- 400ksps, 10-bit, 4-channel AUXADC
- (USE8762_BLE only supports 2-channel
- Timers x 8
- I2C x 2
- PWM x 8
- UART x 2 I2S/PCM interface for external audio codec
- Supports one AMIC and one DMIC (PDM mono) (USE8762_BLE can't support   AMIC input function)
- Supports external 40MHz XTAL without
- capacitor (in limited condition)
- Support embedded internal 32kHz RCOSC to
- keep BLE link (in limited condition)

Platform

- ARM Cortex-M0+ CPU (Maximum 40MHz)
- Serial flash controller with 8kB 4-way cache
- Total 104kB SRAM, 272kB ROM
- 64B EFuse for manufacturer use
- Embedded MCM flash (maximum 8M-bit)

General Description:

The USE_8762C BLE series is an ultra-low-power system-on-chip solution for Bluetooth 5.2 low energy and 2.4GHz proprietary multi-application that combine the excellent performance of a leading transceiver with a low-power ARM Cortex-M0+, power management unit, ADC, and smart I/O distribution controller. In addition, USE8762C BLE supports an analog MIC interface that integrates a sigma-delta ADC, programmable gain amplifier, and microphone bias circuit for voice command application. The USE8762C BLE also embeds an IR transceiver, hardware key scan, and Quad decoder on a single IC within a QFN package.
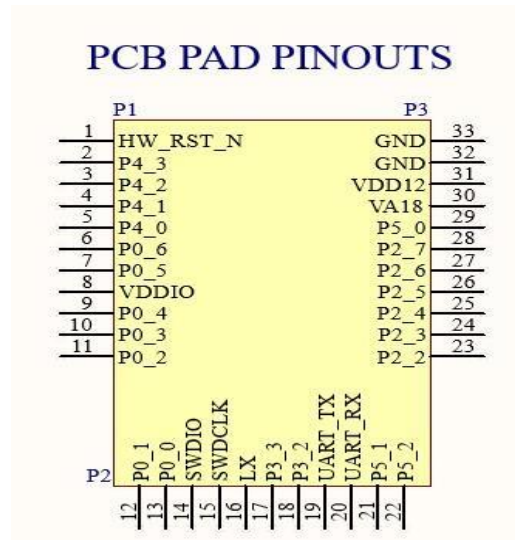
Pin Definition:

Fig 1(a)

Pin Descriptions:

Pin No	Pin Name	Type	Function Description
1	HW_RST_N	P	Hardware Reset
2	P4_3(SPI_CS_N)	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. (Serial Peripheral Interface-bus)
3	P4_2(SPI_MOSI)	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. (Serial Peripheral Interface-bus clock input/output)
4	P4_1(SPI_MISO)	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. (Serial Peripheral Interface-bus master data input)
5	P4_0(SPI_CLK)	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. (Serial Peripheral Interface-bus clock input/output)

6	P0_6	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
7	P0_5	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
8	VDDI0	P	Supply 1.8V~3.3V power for digital IO PADs.
9	P0_4	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown
10	P0_3	I/O	LOG_UART TX. Power on trap: Pull-up for normal operation Pull-down to bypass executing program code in flash (PAD internal pull-up by default).
11	P0_2	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
12	P0_1	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-and pull-down.
13	P0_0	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown
14	SWDIO	I/O	Serial Wire Debug Input/ Output
15	SWDCLK	I/O	Serial Wire Debug Clock
16	LX	P	Switching regulator output.
17	P3_3	I/O	General purpose IO,8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.

18	P3_2	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
19	UART_TX	I/O	Universal Asynchronous Receiver/Transmitter, transmit data output
20	UART_RX	I/O	Universal Asynchronous Receiver/Transmitter , transmit data input
21	P5_1	P	General purpose IO,8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
22	P5_2	V	General purpose IO,8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
23	P2_2	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. AUXADC input 0. Capacitive sensor input 0.
24	P2_3	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. AUXADC input 1. Capacitive sensor input 1.
25	P2_4	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
26	P2_5	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
27	P2_6	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. AUXADC input 2. Analog MIC input_ N. (USE8762_BLE QFN24 can't support)

28	P2_7	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown. AUXADC input 3. Analog MIC input_ P. (USE8762_BLE QFN24 can't support)
29	P5_0	I/O	General purpose IO, 8mA driving capability. With wakeup function. With internal strong/weak pull-up and pulldown.
30	VA18	p	ADC reference voltage (decouple).
31	VDD12	p	Supply 1.2V power
32	GND	p	Power supply
33	GND	p	Power supply

Applications:

- TV Remote Controller
- LE HID
- Beacon
- Home Automation
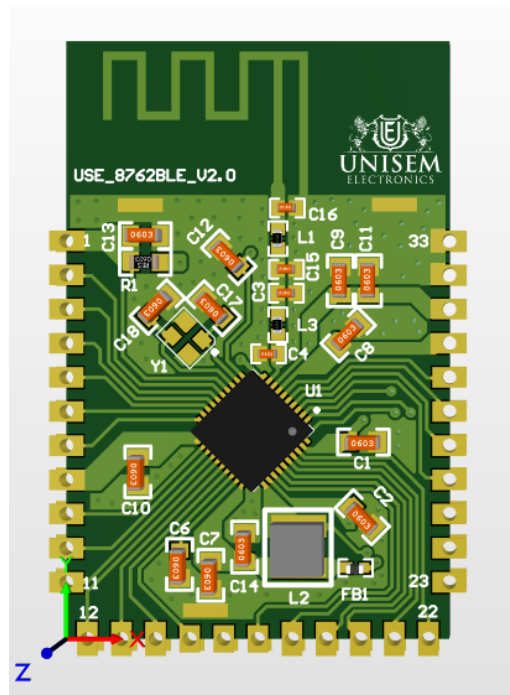- Key Fob
- Toy

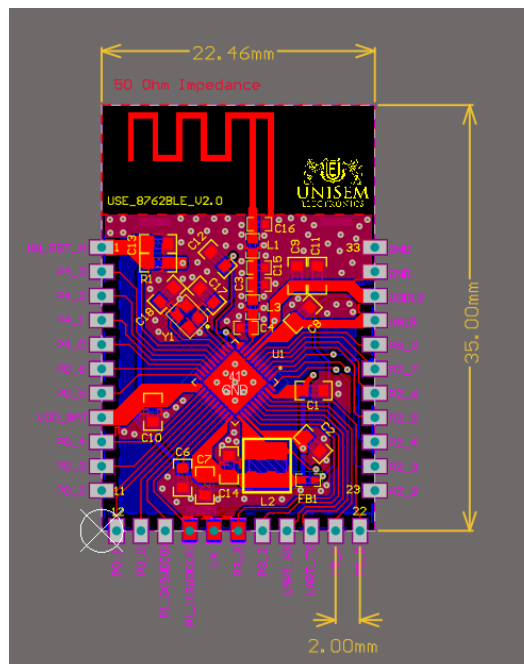## Module Diagram:

Fig 1(b)

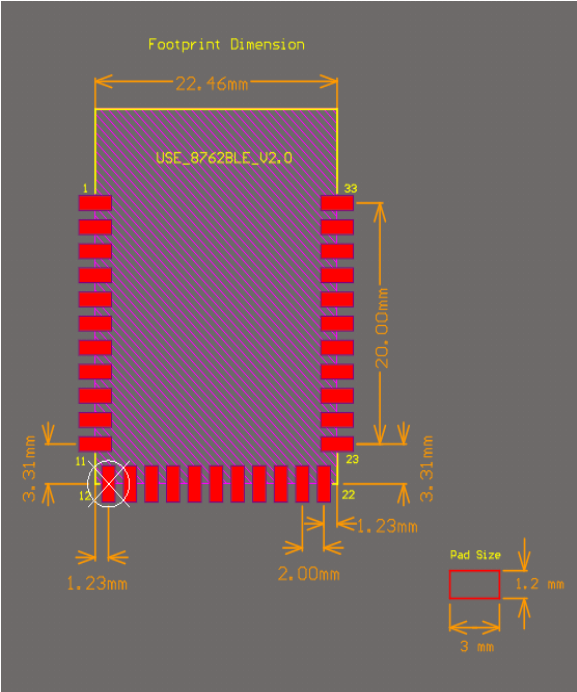## Module Dimension Drawing:

Fig 1(c)

Footprint Dimension:

Fig 1(d)