BlueX Microelectronics Co., Ltd.

Bluetooth 5.0 LE | MESH SoC

Remote Controller Solution
of Device RF03 and RF04

Version 1.9

Aug. 16th, 2021 released

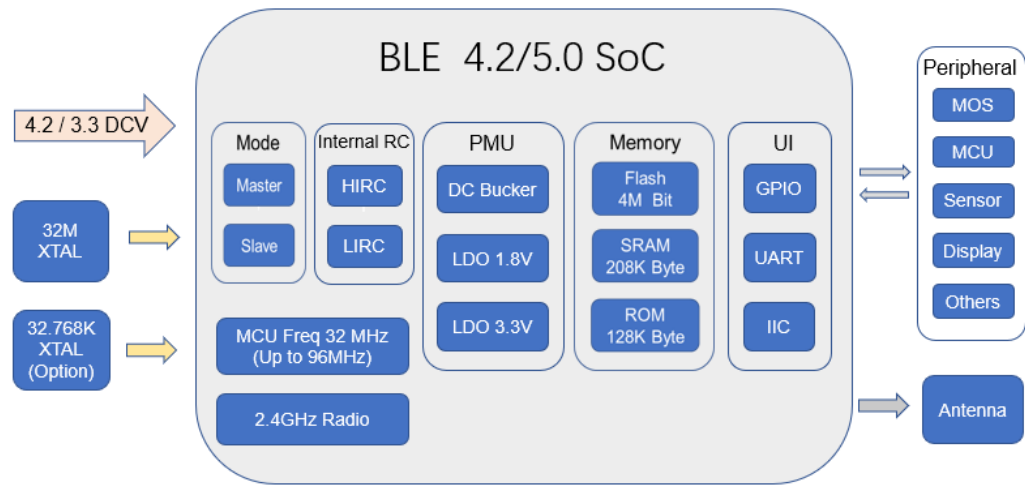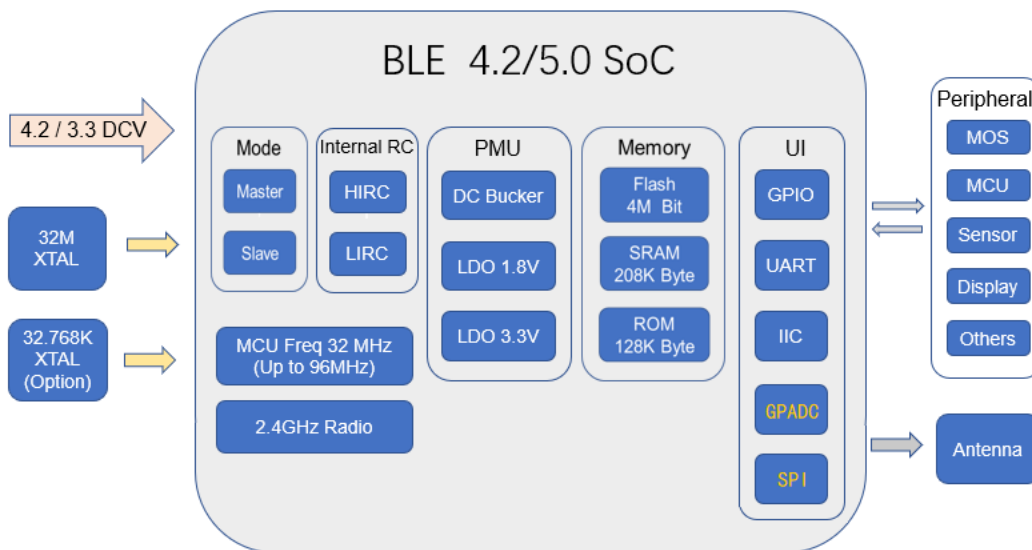# Contents

1. Features

RF03

RF04

(1) Overall

A. Wide supply voltage ranges from 2.3V to 5.0V

B. Compatible with Bluetooth LE 4.2/ 5.0

C. Available for secondary development

D. Supports Bluetooth SIG Mesh networking

E. Supports Over-The-Air (OTA) technology

F. Supports infrared transmission

G. RF04 supports IIS

H. Operating temperature: -25°C to 85°C

I. Package type: QFN32(4mm*4mm) for RF03, QFN40(5mm*5mm) for RF04

(2) MCU

A. Integrated 32-bit MCU

B. Memory: 512KB(4Mb) Flash, 208KB SRAM, 128KB ROM

C. Clock frequency: 32MHz, up to 96MHz

D. Flexible and configurable GPIO 10 pins for RF03, 14 pins for RF04

E. Cryptographic engine: AES128, ECC

(3) RF

A. Supports 1Mbps and 2Mbps Bluetooth LE modes

B. Programmable output power 0dBm to +8dBm

C. Sensitivity of -93dbm

2. General Description

Bluetooth is a short-range wireless technology standard used for exchanging data between fixed and mobile devices over short distances. As a standard of Bluetooth, Bluetooth Low Energy (BLE) is for those who expect wireless communication solution with higher performance in competitive cost and power consumption. With the advance of smart device, BLE has already been implemented widely in the areas of networking, consumer electronics, and smart remote control is one of the popular applications.

3. Applications

(1) Remote control for Smart TVs and Set-Top Boxes (STB)

(2) Various controllers of electrical appliances, including fans, lights, window-shades and other furniture

(3) Supports One-Click of pages turning and shooting in video clips, selfie, reading flipping, and video speed control

4. Function Introduction
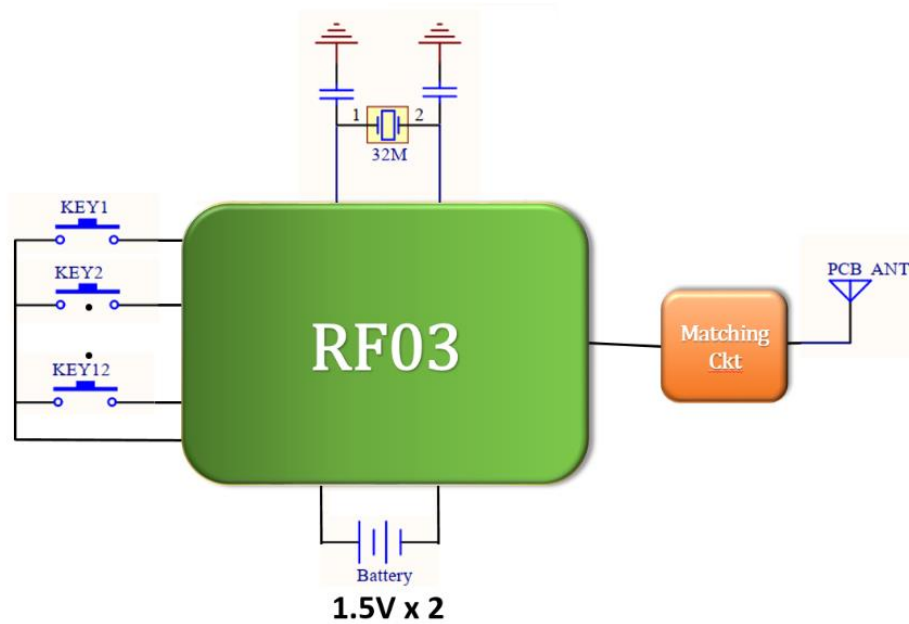
(1) Supports wake-up button

(2) Key-scan function embedded

(3) Battery capacity monitoring

(4) LED status indication

(5) Supports infrared remote control

(6) RF04 supports voice input

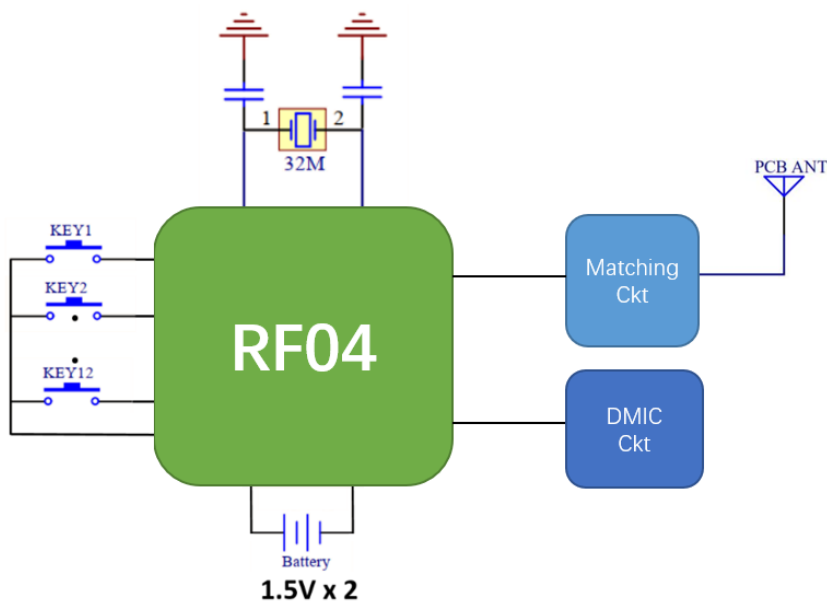(7) Instant connection

(8) Available for Android

5. Core Features

(1) Support LXT-Free technology

(2) Supports OTA for easily and quickly devices upgrade

(3) BLE technology with lower energy consumption and higher performance in stability and reliability

(4) Supports infrared remote control, with much more flexibility

(5) Along with DMIC, RF04 can support voice remote control

(6) Supports dry batteries and lithium batteries. Verified 2 AAA dry batteries sustain up to 6 months

(7) Transmission distance > 10 meters

(8) Supports 1Mbps/ 2Mbps data rate

(9) Instant connection, reconnection without pairing

(10) Available for 25 buttons at the most

6. Circuit Block Diagram

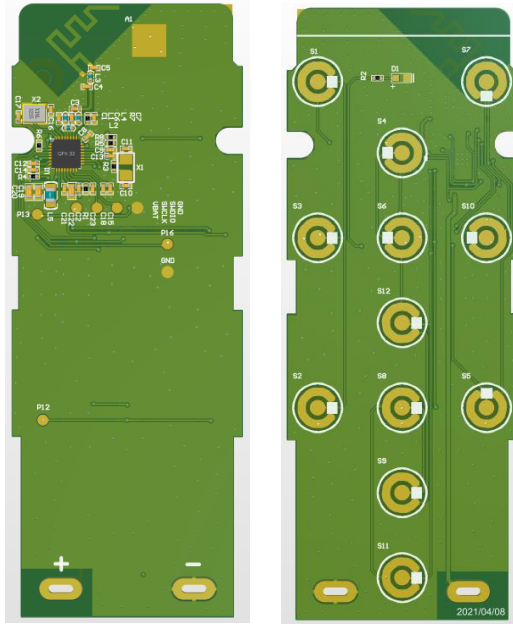(1) RF03 for remote control

(2) RF04 for voice remote control
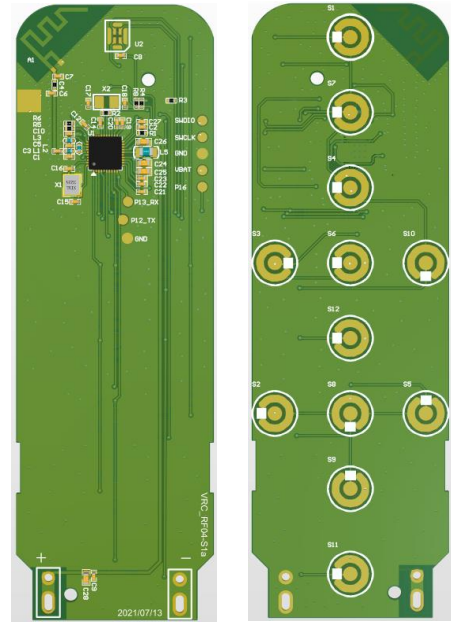

7. Low-Frequency Crystal Oscillator (LXT)

(1) LXT On: BLE always connected

(2) LXT Free: BLE auto disconnect

8. Products Reference

(1) PCB

RF03 remote control

RF04 voice remote control

(2) Product

(3) Application

    A. The remote control for Smart TVs and Set-Top Boxes (STB).

    B. The remote control for Panels and Smartphones of Android system.

9. Remote Control Instructions for Smart TVs

(1) Buttons

A. Power: On/Off

B. Mode: Switch Remotes/Mouse mode

C. Enter/OK

D. Navigation Arrow: Use the arrows to navigate around the screen

E. Home

F. Back: Return to the previous page or Menu

G. Menu

H. Volume: Up/Down

(2) Pairing

A. Press any button, and light of remotes flashing slowly represents unpairing.

B. Press and hold Home and Menu at the same time, release until the light flashing rapidly for around 10 seconds, and it's ready for pairing, showing "BlueX_Remote1" for LXT On or "BlueX_Remote0" for LXT Free.

C. Turn to Smart TVs' Setting> Bluetooth connect> adding device> select Smart Remotes, and it will connect automatically.

(3) Unpairing and Repairing

A. To unpairing, turn to Smart TVs' Setting> Bluetooth connect> select Smart Remotes> select Unpairing.

B. To repairing, please refer to items C in (2) above.