

BP1064L2 Bluetooth Module operating instruction

Works in the 2.4GHz (2402MHz~2480MHz) ISM band

79 channels for Bluetooth V5.0(BR/EDR) without BLE mode

Modulation type: GFSK, $\pi/4$ -DQPSK, 8DPSK for Bluetooth V5.0 (BR/EDR)

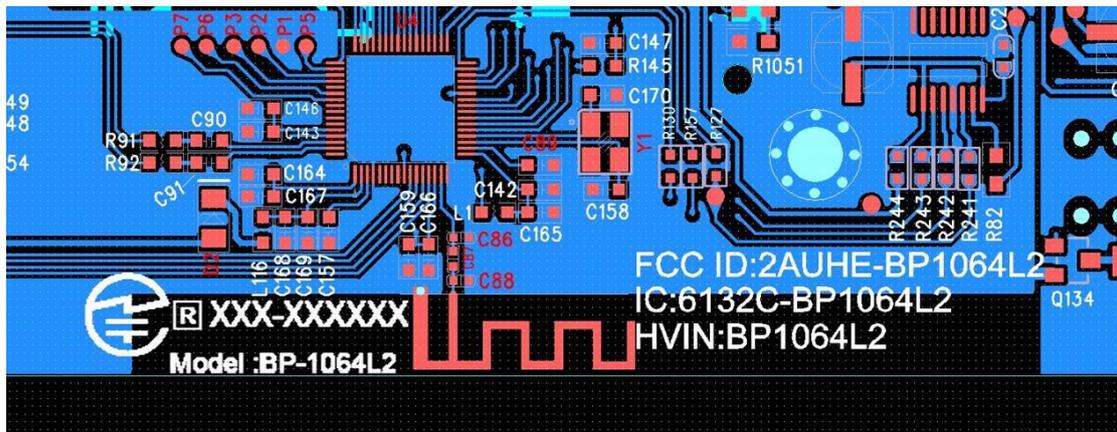
Data Rate: 1/2/3Mbps for Bluetooth V5.0 (BR/EDR)

端口定义

J13		J28	
Pin1	+5V	Pin1	+5VM
Pin2	+3.3VA	Pin2	DGND
Pin3	-4V		
Pin4	DGND		
Pin5	DGND		
Pin6	CHGND		
Pin7	CHGND	J27	
Pin8	+3.3V	Pin1	+5VM
Pin9	+V_LED	Pin2	DGND
Pin10	+15V	Pin3	+V_LCD
Pin11	-15V		
Pin12	AGND	J1 AUDIO IN	
Pin13	CH1_HIZ	Pin1	AGND
Pin14	DIP1_4	Pin2	MUSIC 1 INPUT
Pin15	CHGND	Pin3	CH4 INPUT
Pin16	CH1_CLIP	Pin4	CH3 INPUT
Pin17	SIG_LED1	Pin5	CH2 INPUT
Pin18	CH1_PRIORITY		
Pin19	MAIN_POWER	J2	
Pin20	MAIN_MUTE	Pin1	DIP1_4
Pin21	M74HC165_S/_L	Pin2	CHGND
Pin22	M74HC165_CK	Pin3	+15V INPUT
Pin23	M74HC165_QH	Pin4	CHGND
Pin24	AGND	Pin5	-15V INPUT
Pin25	CH1_AMP	Pin6	AGND
Pin26	AGND	Pin7	CH1 INPUT
Pin27	CHGND	Pin8	CHGND
Pin28	CHGND		

PCB function

- 1、 PCBA include INPUT1/INPUT2/INPUT3/INPUT4/MUSIC1 Analog signal input preamplification
- 2、 Bluetooth audio signal decoding and amplification circuit
- 3、 Mixed audio signal amplifier circuit
- 4、 Sine wave/clipping signal LED indicating control circuit
- 5、 TONE/HPF/MASTER VOLUME CONTROL
- 6、 USB MP3 Audio decoder control circuit



1. Overview

Core and Memory

- High performance 32-bit RISC core, @ max. 288MHz, supports DSP instruction, with floating-point unit(FPU) integrated
- FFT/IFFT accelerator supports operations of up to 1024 complex numbers or 2048 real numbers
- 320KB on-chip SRAM, 32KB I-Cache and 32KB D-Cache
- Internal 16M bits FLASH code and data storage
- EFUSE configuration register
- 2-wire SDP(Serial Debug Port), break-point and code tracking debug
- 40 interrupt vectors
- 4-level interrupt priority

Audio

- Four audio ADC, SNR \geq 94dB, 9 sampling rate: 8KHz / 11.025KHz / 12KHz / 16KHz / 22.05KHz / 24KHz / 32KHz / 44.1KHz / 48KHz
- Support up to 4 digital microphones or 2 analog microphone with AGC
- ADC line-in supports single-end or differential input
- Three audio DAC, SNR \geq 105dB, 9 sampling rate: 8KHz / 11.025KHz / 12KHz / 16KHz / 22.05KHz / 24KHz / 32KHz / 44.1KHz / 48KHz
- Directly drive earphone of 16 Ω or 32 Ω with power of 40mW
- Two duplex I2S(or IIS), sampling rate 8K~192KHz, max. 32bits
- One half-duplex S/PDIF supporting HDMI audio and ARC

Bluetooth

- Dual mode Bluetooth V5.0, compatible with Bluetooth V4.2 and V2.1+EDR
- Support Piconet and Scatternet networking protocols
- Maximum transmit power is 10dBm, support class1, class2 and class3
- Receiving sensitivity (Typical)
 - DH1: -88dBm
 - 2DH5: -88dBm
 - 3DH5: -82dBm
- Support A2DP/AVRCP/HFP/HSP/OPP/HID/SPP/PBAP/GATT/SM profiles
- Support PLC(Package Loss Concealment)

Power, Clock and Reset

- DC 3.3~5V power supply @ LDOIN
- Internal LDOs: 5V to 3.3V and 3.3V to 1.2V
- RC 12MHz and two PLL clocks
- Support 24MHz crystal
- Internal POR(Power on Reset), LVD(Low-Voltage-Detection) and Watchdog
- Multiple low-power options: CPU clock frequency reduction, system clock frequency reduction, sleep, deep sleep
- Low power RTC mode, supporting IO wake up and alarm signal output

Timer, PWM and PWC

- 2 basic timers (TIM1, TIM2)
- 4 general timers (TIM3, TIM4, TIM5, TIM6), with PWM and PWC function

Peripherals

- Max. 38 GPIOs

- All GPIOs support external interrupt and wakeup
- GPIOs configurable: pull-up, pull-down, Hi-impedance, pull-down current source, etc
- USB 2.0 Full-speed OTG controller and PHY, 6 endpoints
- One SPI master(SPIM) @ max.60M
- One SPI slave(SPIS) @ max.60M
- One SDIO @ max.30M
- Two duplex UART @ max.3Mbps, the UART0 with flow control
- One I2C master/slave controller @ max.400K
- 12-bit SAR-ADC @ max. 450K sampling rate, sampling from 15 external IOs or 2 internal voltages
- One IR interface, supports NEC or SONY mode
- True random number generator

DMA

- 8-channel DMA, all memory direct addressing, addresses can be assigned to any peripherals except OTG, IR and I2C
- Unique automatic transmit-and-capture mechanism for memory and IO matching, or DMA-GPIO, can simulate various communication and controlling timing

SDK Firmware Stack and IDE

- Audio algorithm list:
Decode: MP2, MP3, WMA, APE, FLAC, AAC, MP4, M4A, WAV(IMA-ADPCM & PCM), AIF, AIFC

Encode: MP2/MP3, IMA-ADPCM

- Sound effects:
Echo, Reverb, 3D, Virtual bass, Auto-tune/pitch shifter/Voice changer, EQ, DRC, AEC, Noise suppression, Frequency-shifting, Screaming detection and suppression
- SDK includes abound of examples and middleware
- Free Eclipse-based IDE and GCC compiler
- Support FreeRTOS
- All C programming, easy for porting

Firmware Programming and Protection

- Multiple flash programming supported: debugger, specific burner/programmer, or Flash Burner Lite
- Firmware upgradable with Dual-bank
- 32-bit customized key for firmware encryption
- On-chip 64-bit unique ID

ESD

- HBM 2KV ESD capability

Package and Operational Temperature

- LQFP64-7x7mm
- Working temperature: -40°C ~ 85°C

Application Fields

- Bluetooth audio speaker
- Bluetooth Karaoke equipment
- Bluetooth Headphone
- Bluetooth Car audio
- Multiple microphone system for intelligent voice application with Bluetooth

2. Functional Block Diagram

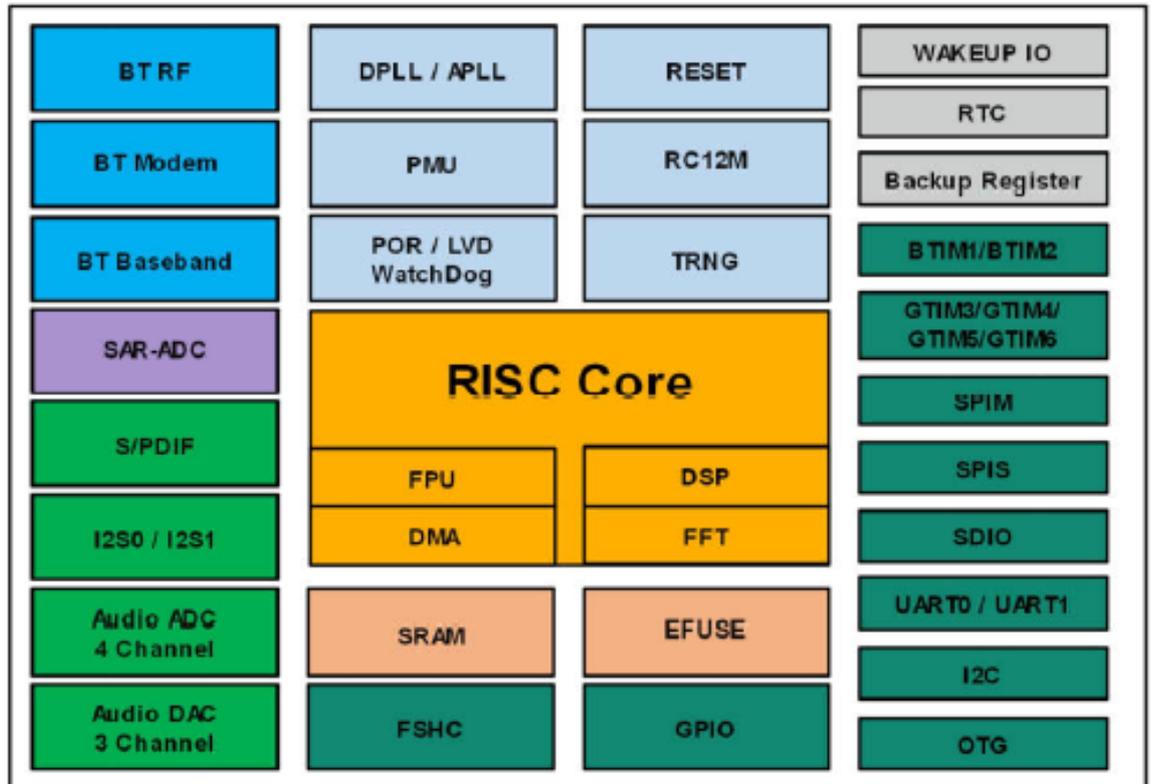
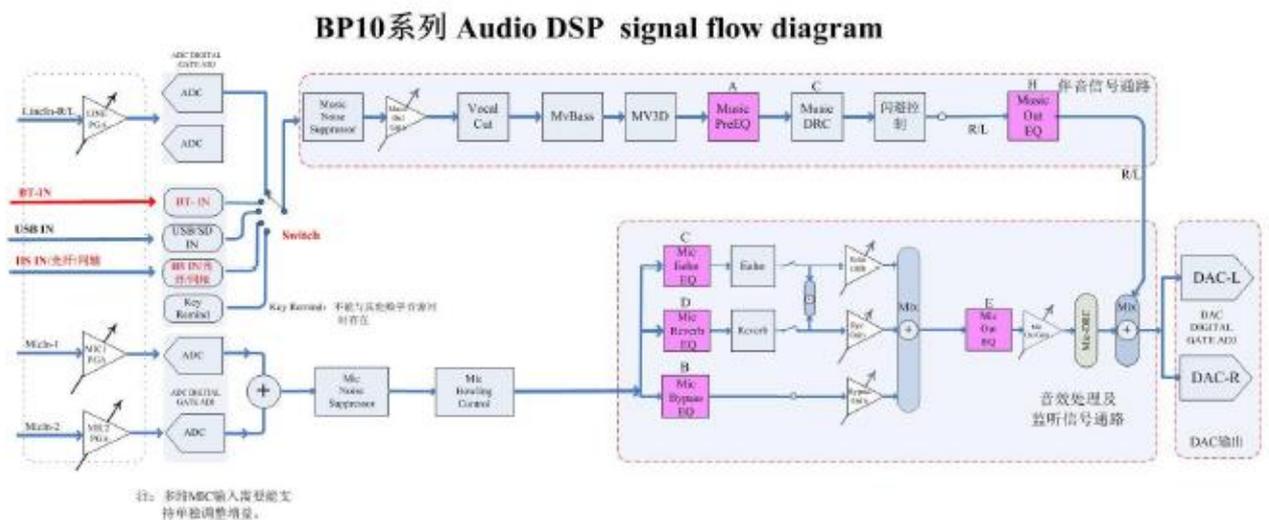


Figure 1. Functional Block Diagram of BP1064L2



3. DSP processing block diagram

Figure 2. Audio DSP signal processing block diagram

4. Pin Definition

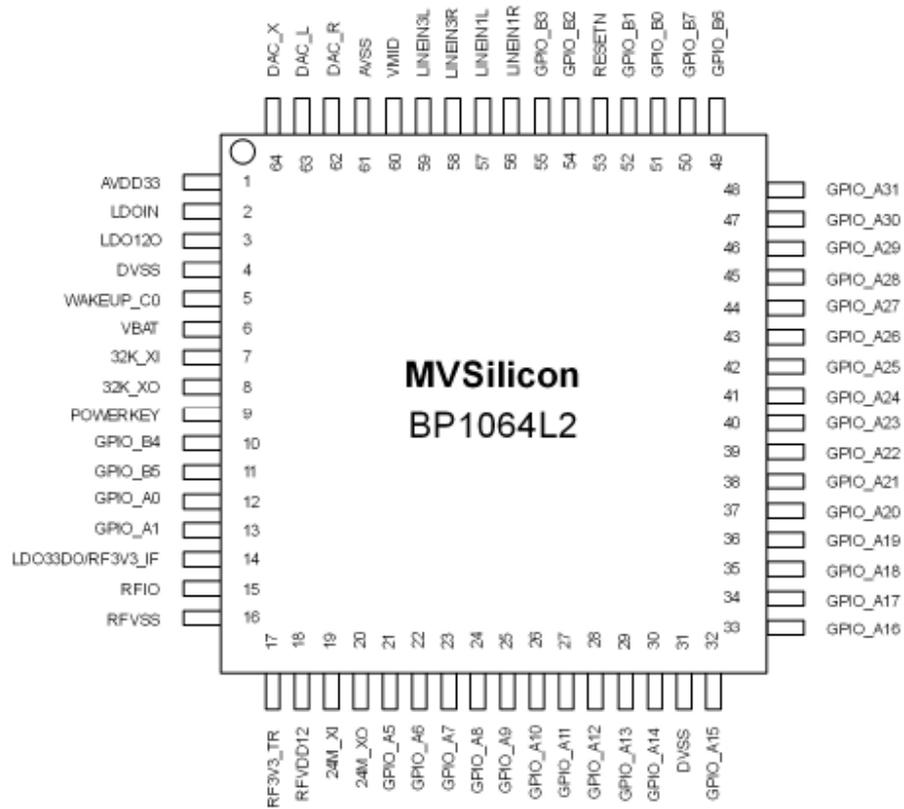


Figure 3. Pin Definition

For USA

FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

PCB antenna , Antenna gain 2.81dBi

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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.

We will retain control over the final installation of the modular such that compliance of the end product is assured. In such cases, an operating condition on the limit modular approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer,C2PC or new certificate should be apply to get approval,if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance ,then it is illegal.

FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices. This modular cannot be installed in any portable device if without any further certify include C2PC with SAR. This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label

referring to the enclosed module. This exterior label can use wording such as the following:
“Contains Transmitter Module FCC ID: 2AUHE-BP1064L2 Or Contains FCC ID: 2AUHE-BP1064L2 ”

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference;

(2) This device must accept any interference received, including interference that may cause undesired operation.

Note: 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.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, then the host can be sold legally.

For Canada

IC STATEMENT

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis

aux deux conditions suivantes :

- (1) Cet appareil ne doit pas causer d'interférences.
- (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

IC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device .

This modular complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body. Cette modulaire doit être installé et utilisé à une distance minimum de 20 cm entre le radiateur et le corps de l'utilisateur.

If the IC number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 6132C-BP1064L2"

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

2. Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes :

- (1) Cet appareil ne doit pas causer d'interférences.
- (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product

This device has been designed to operate with the antenna listed below, and having a peak gain of 2.81dBi @ 2.4GHz,, Antennas not of the same type and having a higher gain specified above are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.
Model: BP10xx_F