

Hardware Engineering Department Working Group

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Open

BLEKit-1061 Development Kit Hardware Manual

Abstract

BLEKit-1061 from MXCHIP is the development board of EMB1061. It could be used for the development of smart devices and the demos. This development kit provides one easy solution for developing smart devices. And it's convenient in achieving the applications of users.

More Help

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Version Record

Date	Version	Update content
7-29-2017	V1.0	Initial version.

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2. BLEKit-1061 Hardware Introduction

BLEKit-1061 includes below main parts:

- EMB1061 BLE module from MXCHIP;
- Power supply: Micro-USB 5V with one 5V-3.3V DC-DC onboard.
- USB to UART serial port for debugging;
- 3 LEDs (two system indicator LED, one RGB LED)
- JTAG/SWD debug connector;
- Arduino interface

The functions of the pins on BLEKit-1061 could be distinguished by color. Yellow is for digital signal pins, blue is for analogue signal pins and red is for power supply.

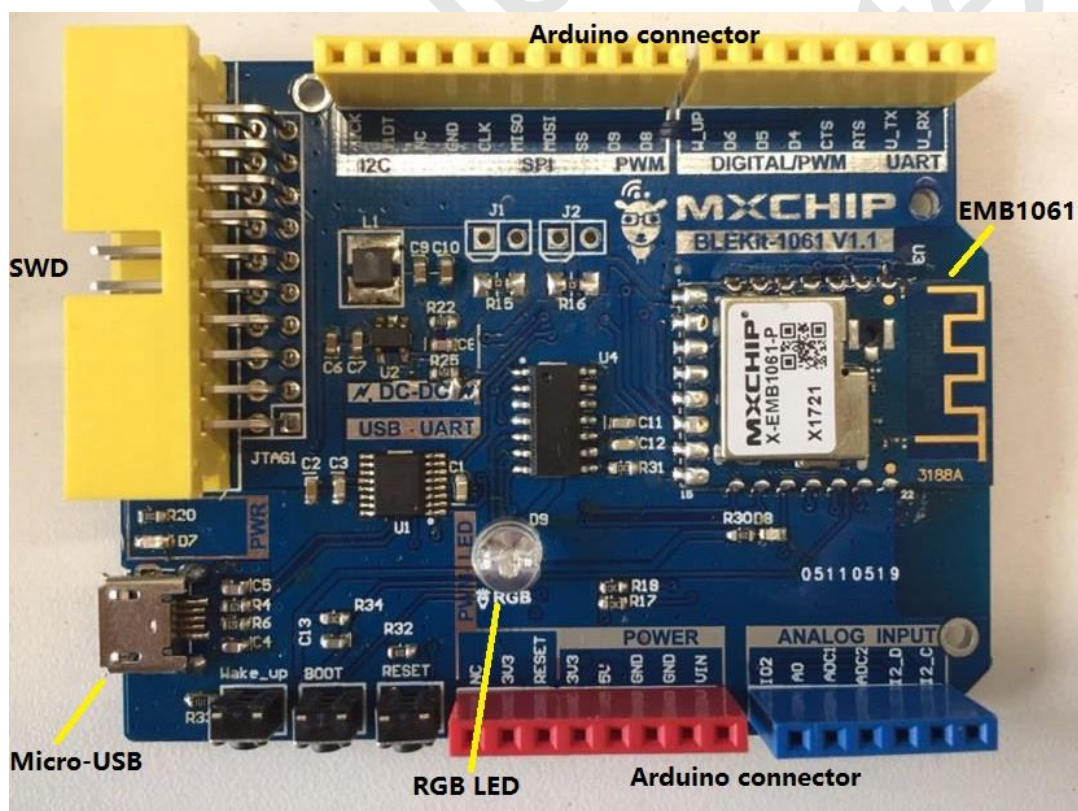


Figure 2 BLEKit-1061 hardware introduction

2.1 Power

BLEKit-1061 uses USB as the power supply and serial communication port. There is a high efficient 5V-3.3V DC-DC (TLV62565) in it. TLV62565 is one monolithic synchronous buck regulator with high efficiency (95%) and constant frequency (1.5MHz). The maximum output current is 2A, while the static loss is just 20uA. The output voltage 2.5V-5.5V is suitable for the power supply of single lithium battery. The switch frequency is set as inner 1.5MHz which is convenient for small SMT inductor and capacitor. It has the function of over-temperature protection.

The circuit shows like figure 3. The power light D7 lights when power supply works. R15(0.22 Ω), R16(27 Ω), J1 and J2 are designed for power consumption testing.

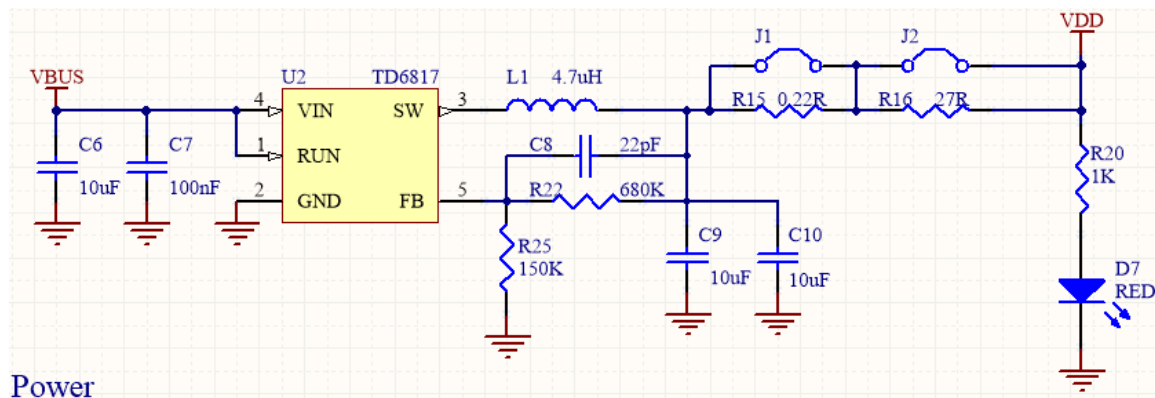


Figure 3 The Circuit of Power Supply

2.2 USB to UART

The part USB to UART is applied for debugging. There is a USB to UART/FIFO chip: FT230X.

The main function of FT230X:

- Handshake signal, modem connector signal, hardware and Xon/Xoff data flow control;
- UART: 7/8 Bit data bits, 1/2 stop bits, odd/even parity;
- Rate: 300=>3M(TTL), 512Byte buffer;
- I/O voltage: 3.3V-5V;
- Compatible with USB 2.0;
- Driver: Windows 8 32/64-bit, Windows 7 32/64-bit, Windows Vista/Vista 64-bit, Windows XP/XP 64-bit, Server 2003, XP and Server 2008, Windows XP Embedded, Windows CE 4.2, 5.0 and 6.0, Mac OS-X, Linux 3.2 and greater, Android and so on.
- Packaged as SSOP16 and QFN16 with lead free.

The circuit for this part:

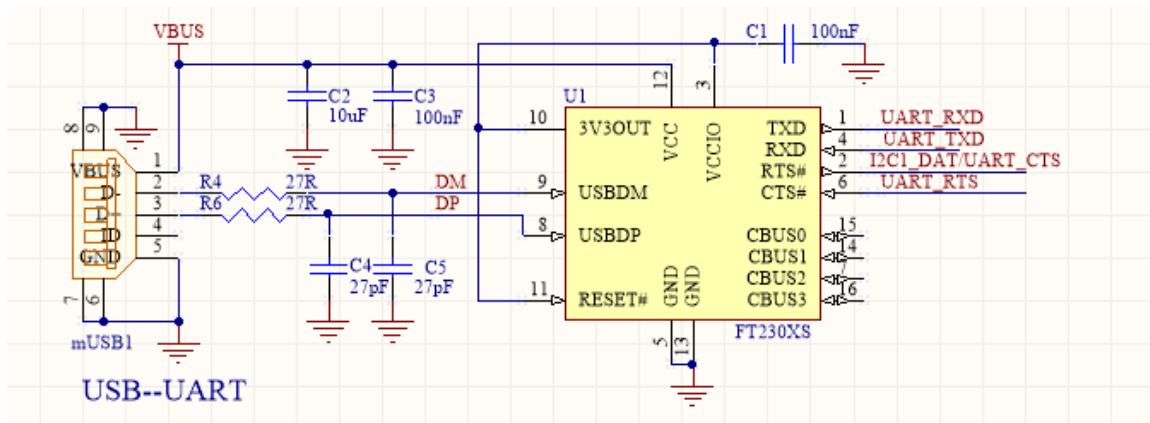


Figure 4 USB to UART Circuit

Connecting the USB to PC, it shows a new serial port after installing the driver:

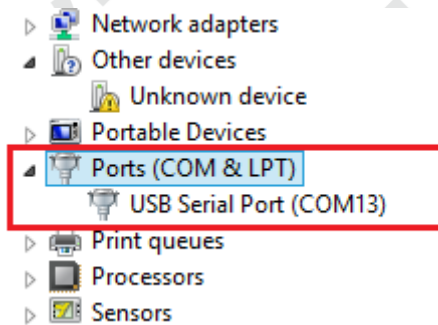


Figure 5 Serial Installing

2.3 BLE module

BLEKit-1061 uses EMB1061 as the BLE module. Please refer more information on http://www.mxchip.com/product/ble_product/50.

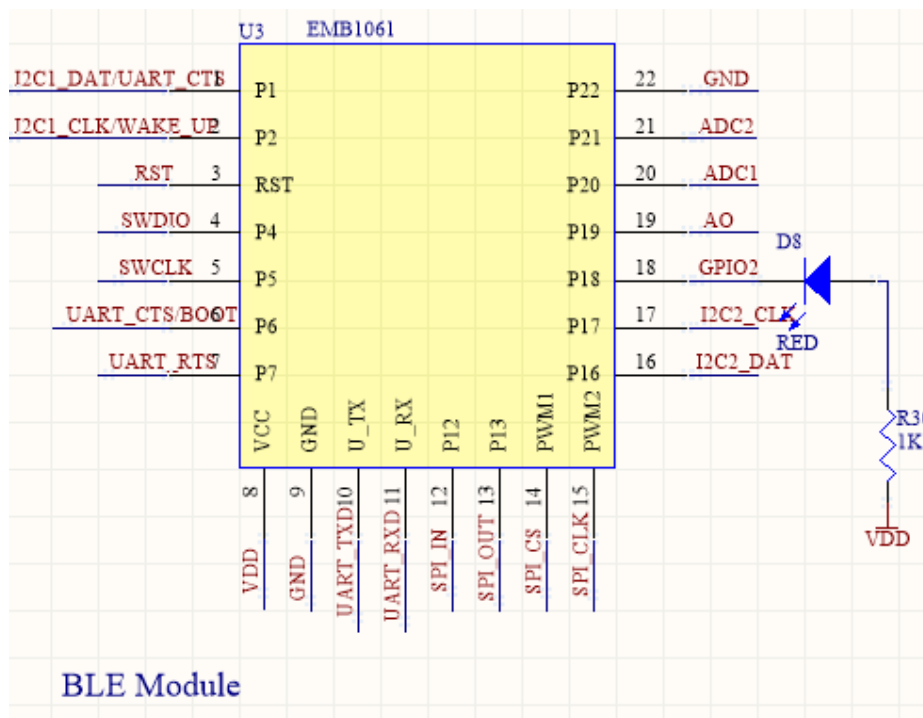


Figure 6 EMB1061

2.4 LED lights

In order to let users know about the working status, there are 3 LED lights D7, D8 and D9 on board.

When running demo firmware:

- D7 is power indicator LED.
- D8 is system status indicator LED.
- D9 is RGB LED for I2C debugging.

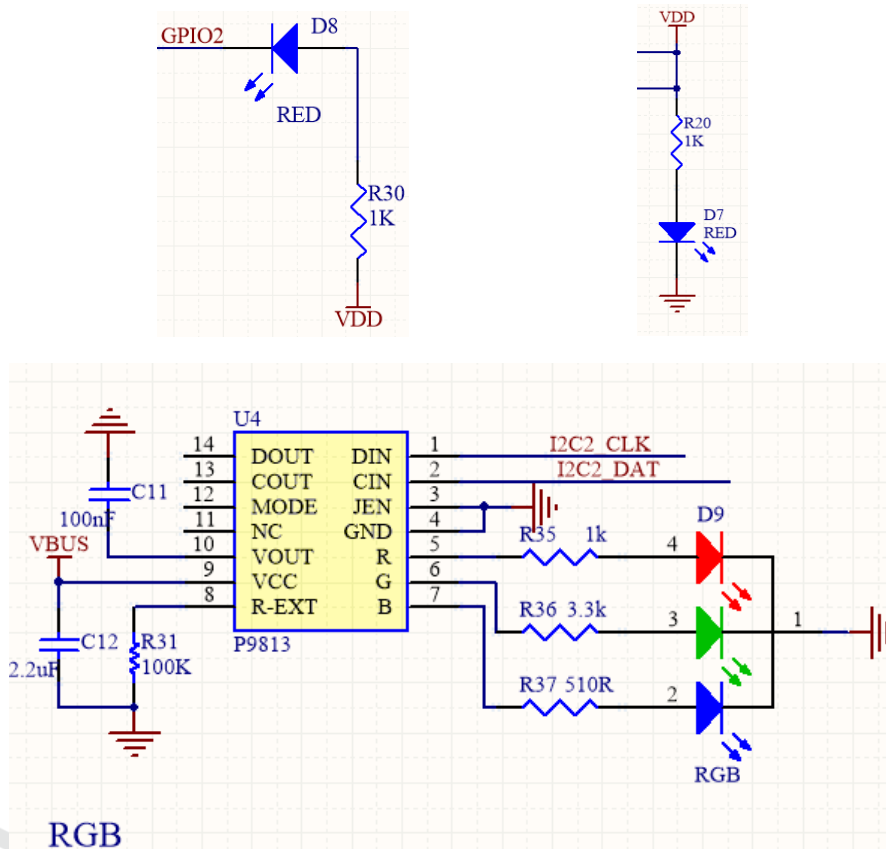


Figure 7 LED Circuit

2.5 Working mode

It designs 3 working mode switches on board for debugging.

Table 1 Working Mode

BOOT	RESET	WAKE_UP	Status
L	/	/	NORMAL WORK
/	L	/	QC (send command:AT+QC/r in one second)
H	L	/	BOOTLOADER
/	/	L	WAKE_UP

2.6 Buttons

There are 3 buttons on board: RESET, BOOT, and Wake up

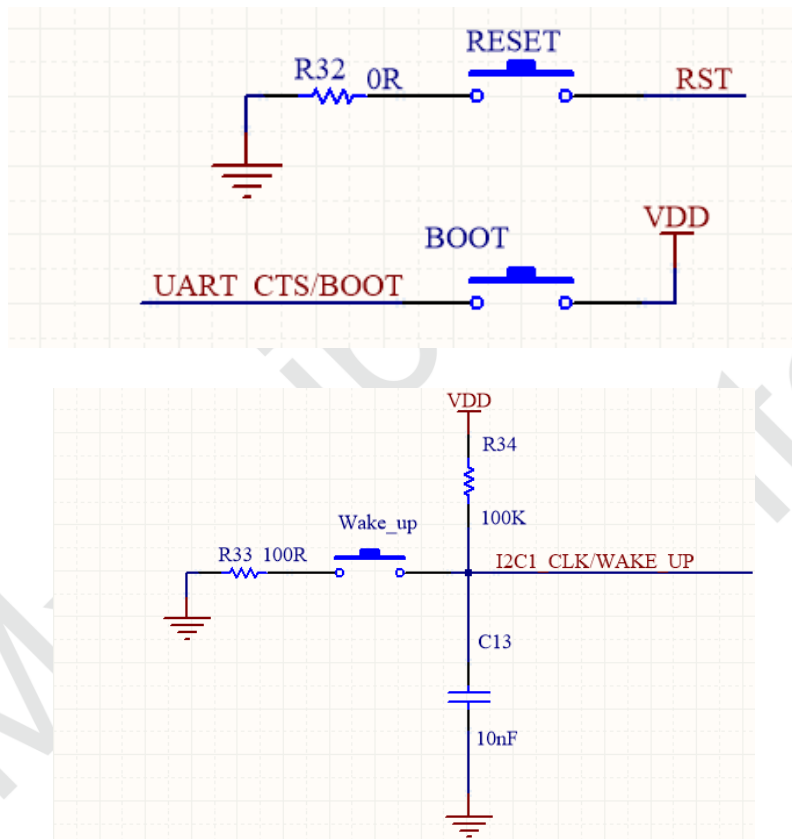


Figure 8 Buttons

2.7 JTAG debug connector

BLEKit-1061 uses standard JTAG (20PIN) debug connector for connecting with J-LINK or U-LINK2.

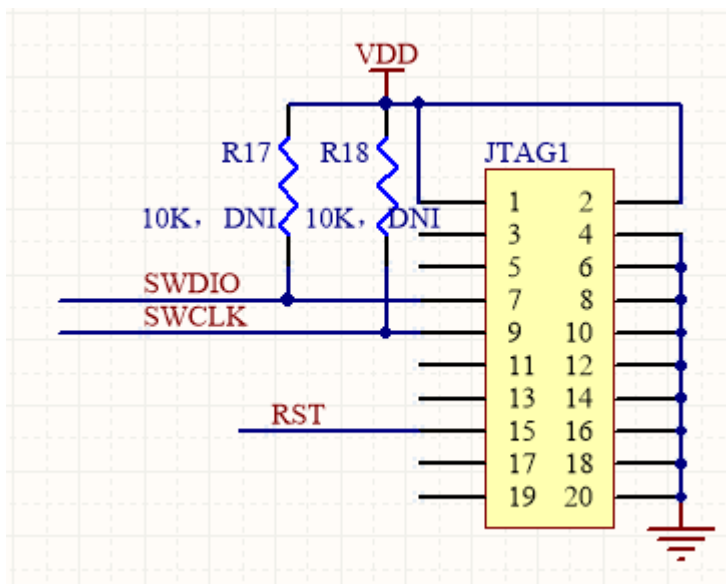


Figure 9 JTAG Connector

Notes:

Limited by the IO of EMB1061, the JTAG interface only supports for SWD debugging mode.

Using SWD will erase the Mac address in flash. Details please refer to EMB1061 firmware programming manual.

2.8 Arduino connector

MiCOKit uses standard Arduino connector for connecting with extender Arduino board.

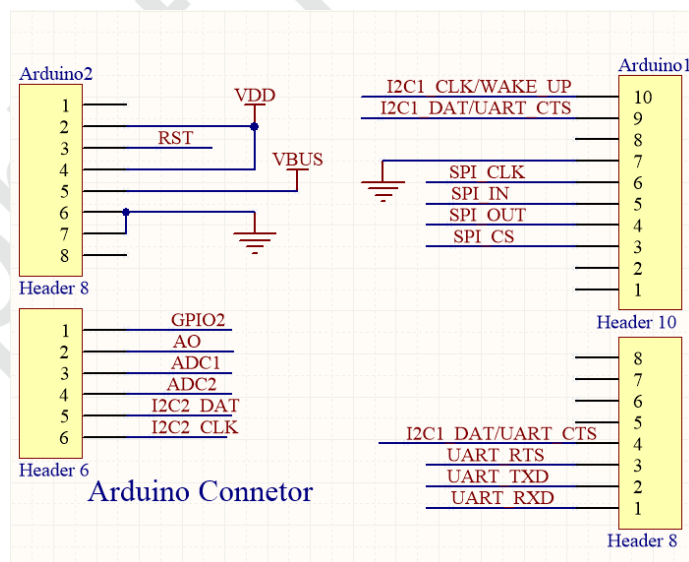


Figure 10 Arduino Connector

Note:

Because of the limitation of the number of IO, some pins of Arduino connector are not usable.

3. Schematics

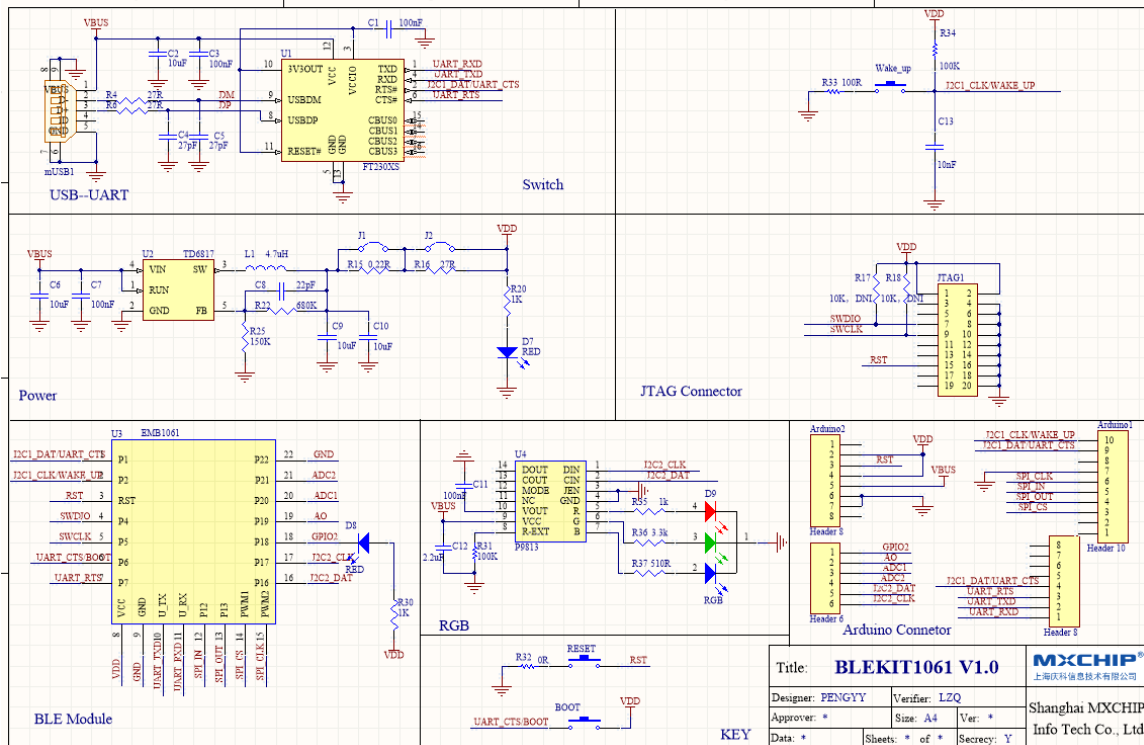
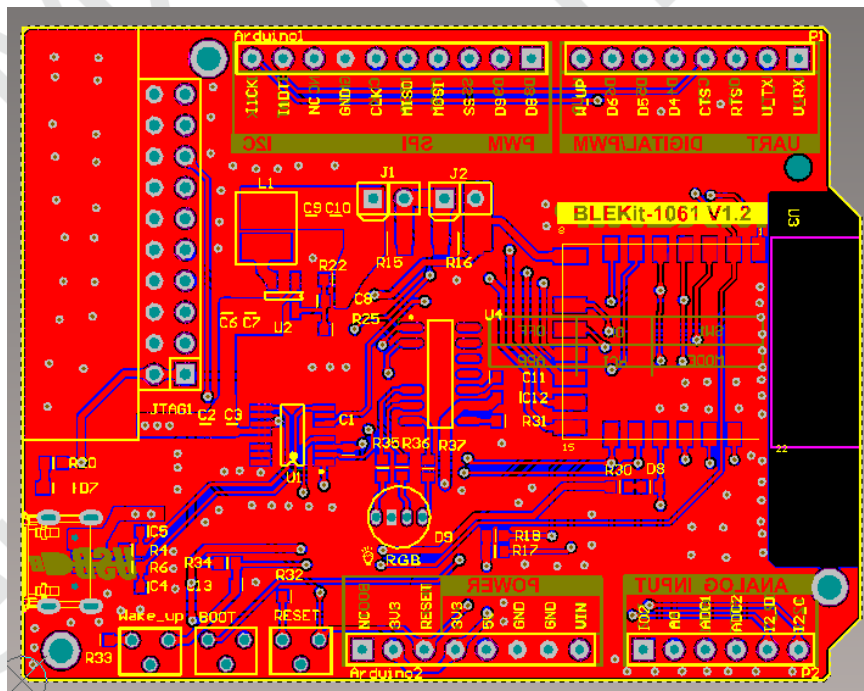
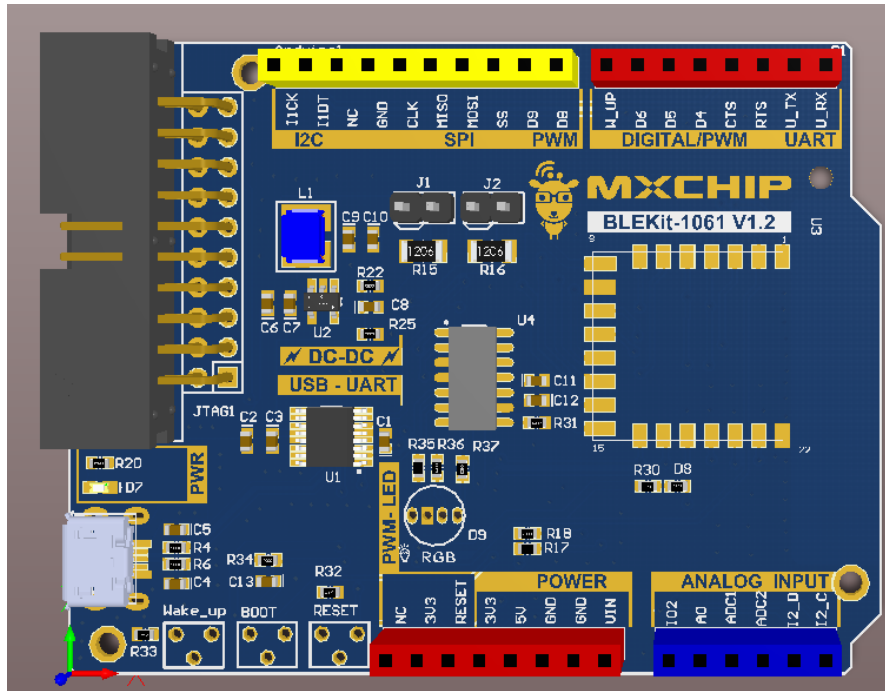


Figure 11 BLEKit-1061 schematics

Title: BLEKIT1061 V1.0		MXCHIP® 上海欣科信息技术有限公司	
Designer: PENGYY	Verifier: LZQ	Shanghai MXCHIP Info Tech Co., Ltd	
Approver: *	Size: A4	Ver: *	
Data: *	Sheets: * of *	Secrecy: Y	

4. PCB



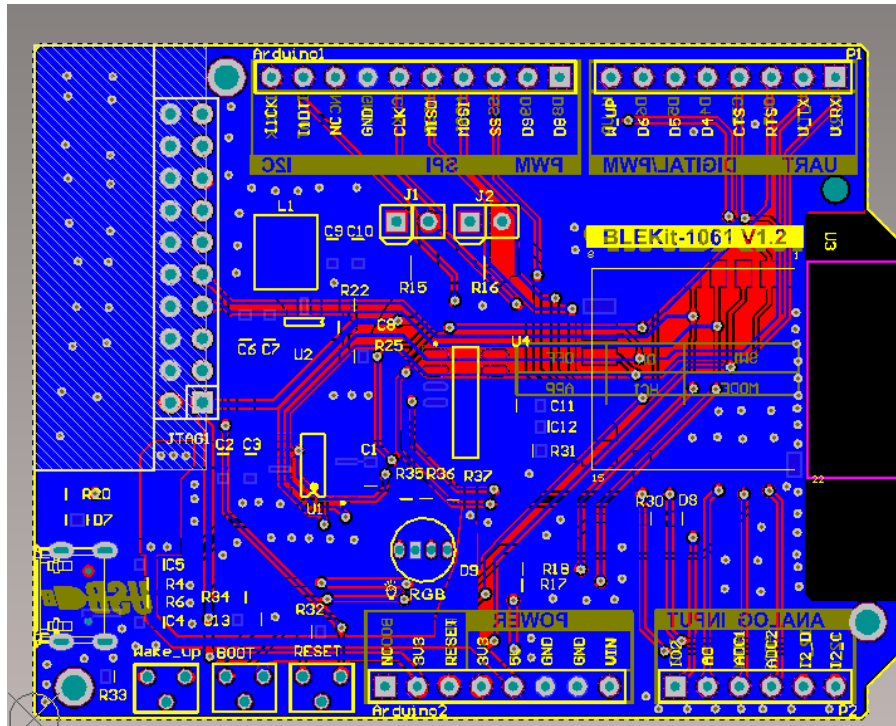


Figure 12 BLEKit-1061 PCB