TB-04-KIT Specification

Version V1.0

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Revision History

Version	Date	Development/revision	Development	Approval
V1.0	2020.9.30	Initial edition	Junx	

1.Product Overview

TB-04-Kit development board is an intelligent lighting development board designed for TB-04 modules, with IPEX external antennas, a total of five PWM, can be adjusted by themselves RGB colorful lights and two cold and warm lamp beads adjustment, all modules IO interface can be lead out used the pin header, easy for developers to develop and debug;

The integration of rich information, including AT commands, SDK secondary development, support Bluetooth mesh networking, as well as Android / IOS APP control and WeChat Mini Program control, but also support Tmall genie voice direct connection control; multiple development boards interconnected, can be used to Mesh networking debugging ,2.54 mm pin header to lead out all GPIO/PWM/I2C/ADC interfaces, free to match peripherals.

UART interface support firmware burning, simple and fast! At the same time pin SWS pin with Telink official burning tools can also achieve firmware burning.

Characteristics

- Module : TB-04-Kit (TB-04 module development board)
- Two options for firmware: Ali Tmall genie version; common AT version
- BLE5.0，support Mesh
- Interface Type: Standard   micro USB + 2.54mm spacing pin header
- PWM/I2C/GPIO/ADC interface
- With R/G/B colorful lights and   cold and warm lamp beads
- With reset and user-defined button
- Support Tmall Genie Voice Direct Control
- Support Android/ IOS APP control and WeChat Mini Program control

Main parameters

Table 1 Main parameters description

Model	TB-04-KIT Development Board
Package	DIP-20（2.54 mm spacing pin header）
Dimension	30mm(W)*40mm(H) ±0.2 mm
Wireless standard	Bluetooth 5.0，support Mesh
Frequency range	2400~2483.5MHz
Transmit power	Maximum 10dBm
Receiving sensitivity	Minimum-94dBm
Interface	PWM/I2C/GPIO/ADC
Operating temperature	-20℃~70℃
Storage temperature	-40℃~125℃，<90%RH
Power supply range	Micro USB supply voltage 4.75V~5.25V, recommend 5.0V
Power consumption	Deep sleep mode：0.8uA（only module）
	Standby mode：3mA（only module）
	Full-load mode（TX：10dBm）：23mA（only module）
	Development Board PCB：4mA

2. Electrical parameters

Electrical characteristics

Absolute maximum rating

Any excess of the following absolute maximum can cause chip damage

Name	Min.	Typ.	Max.	Unit
Micro USB supply voltage	4.75	5.0	5.25	V
Operating temperature	-20	4.75	+70	℃
Storage temperature	-40	5.0	+125	℃

Power consumption

Parameter Name	Typ.	Unit
Emission power（10dBm）	23	mA
Standby power cunsumption	3	mA
Sleep mode	0.8	uA

Note：The consumption is for module consumption only.

RF parameters

RF transmit power

Name	Min.	Typ.	Max.	Unit
Average power	7.1	8.5	10	dBm

Receiving sensitivity

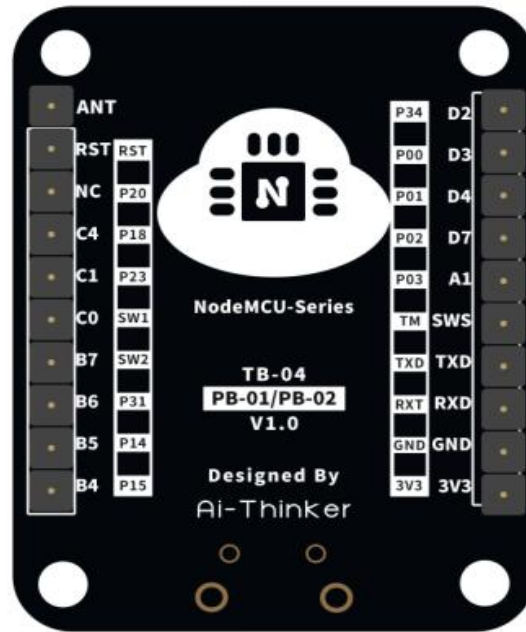| Name	Min.	Typ.	Max.	Unit
Receiving sensitivity	-94	-93	-92	dBm

3.Appearance dimensions
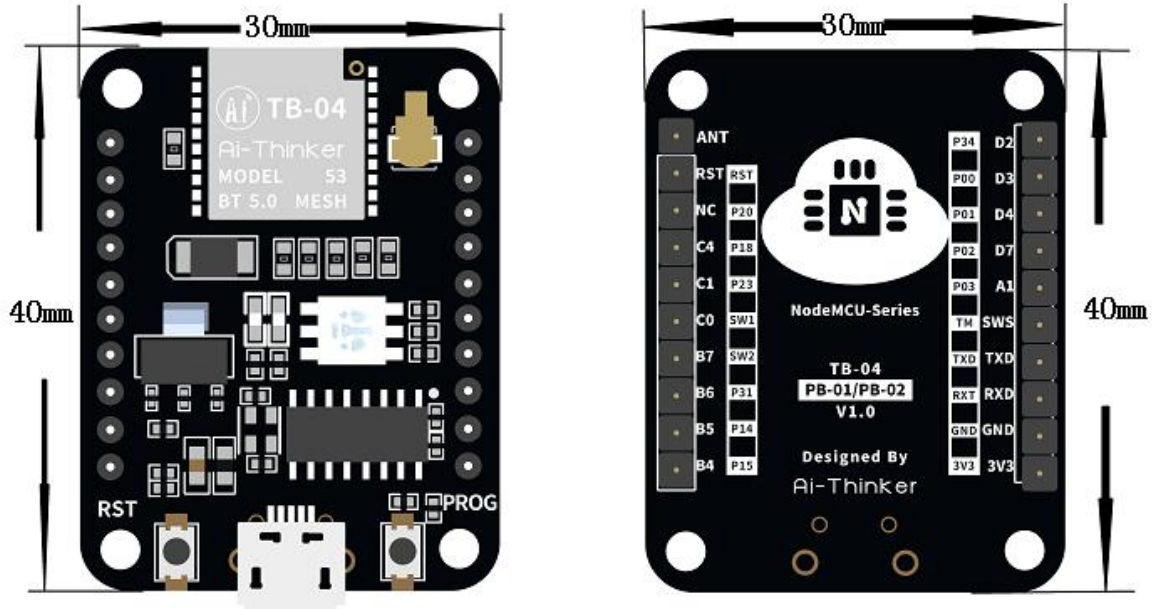
4.Pin definition

TB-04-KITthe development board module had lead out 20 interfaces, refer to below pin diagram, pin function definition table is interface definition.

TB-04-KIT pin diagram

Table　Pin　Definitions

| No.	Pin name	Function
1	ANT	Antenna interface
2	RST	reset
3	NC	No function definition
4	C4	PWM2 output/UART_CTS/PWM0 reverse output/SARADC input/GPIO PC4
5	C1	PWM0 output/I2C_SCK/PWM1 reverse output/GPIO PC1
6	C0	PWM4 reverse output/UART_RTS/I2C_SDA/GPIO PC0
7	B7	UART_RX/Low Power Input Pin/SAR ADC input/SPI data output/GPIO PB7
8	B6	SPI data input（I2C_SDA）/UART_RTS/SARADC input/GPIO PB6
9	B5	PWM5 output/SARADC input/GPIO PB5
10	B4	PWM4 output/SARADC input/GPIO PB4
11	D2	SPI chip selection（low level effective）/PWM3 output/GPIO PD2

12	D3	PWM1 reverse output/UART_TX/GPIO PD3
13	D4	PWM2 reverse output/SWM/GPIO PD4
14	D7	SPI clock/UART_TX/GPIO PD7
15	A1	GPIPO PA1
16	SWS	Single line slave/UART_RTS/GPIO PA7
17	TXD	UART TX/GPIO PB1
18	RXD	UART RX/GPIO PA0
19	GND	Ground
20	3V3	Power supply

# 5.Schematics
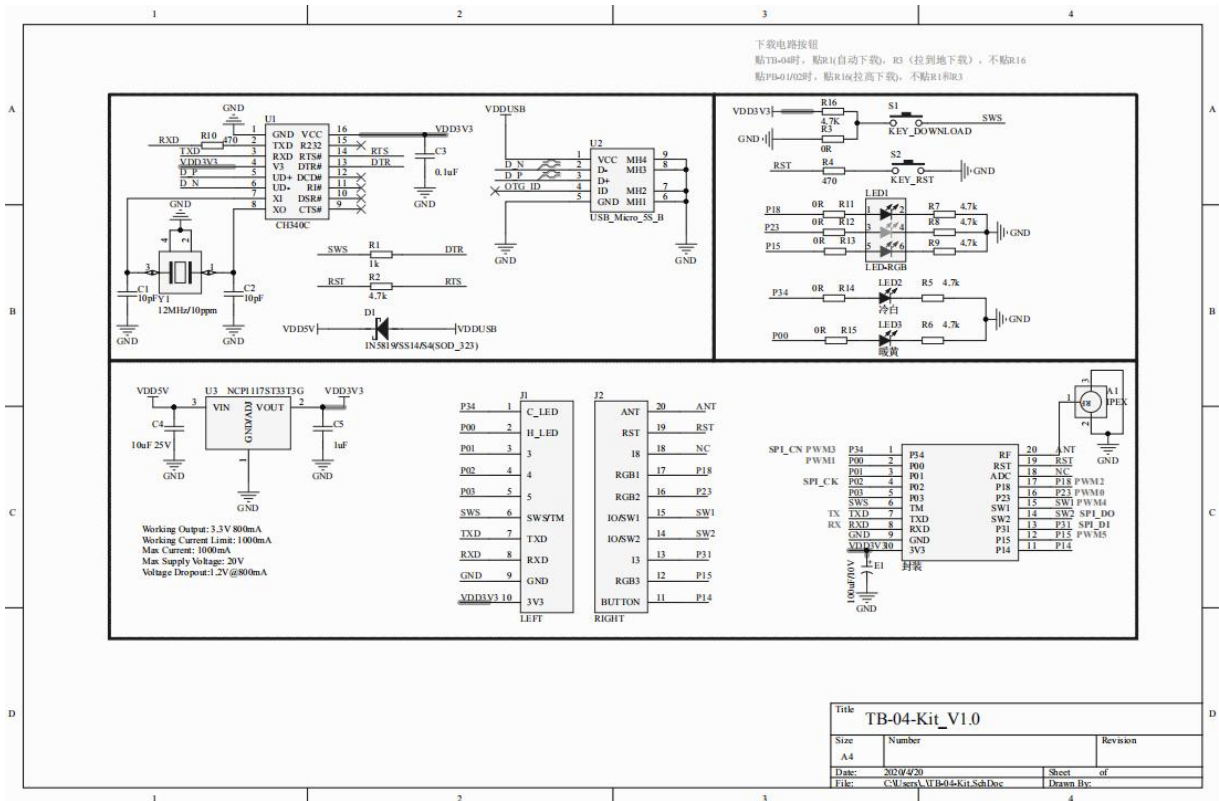
6.Design guidance

1、Application circuit
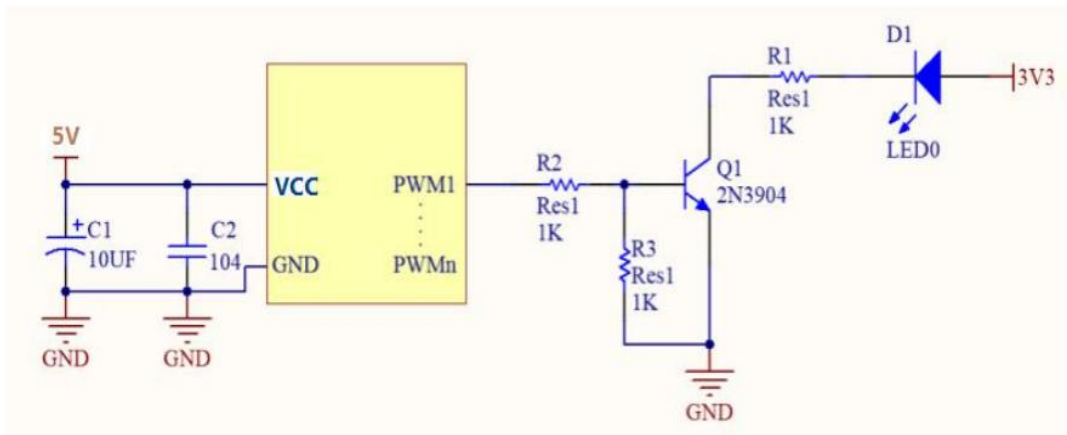
2、Antenna layout requirements

Do not place metal parts around the module antenna, away from high frequency devices.

3、Power supply

（1）、Recommended voltage 5V, Peak:Current over 800mA .

（2）、It is recommended to use the LDO power supply；If DC-DC is used, the ripple is controlled within 30 mV.

（3）、DC-DC power supply circuit is recommended to reserve the position of the dynamic response capacitor, and the output ripple can be optimized when the load change is large.

（4）、5V power interface proposed to add ESD devices.
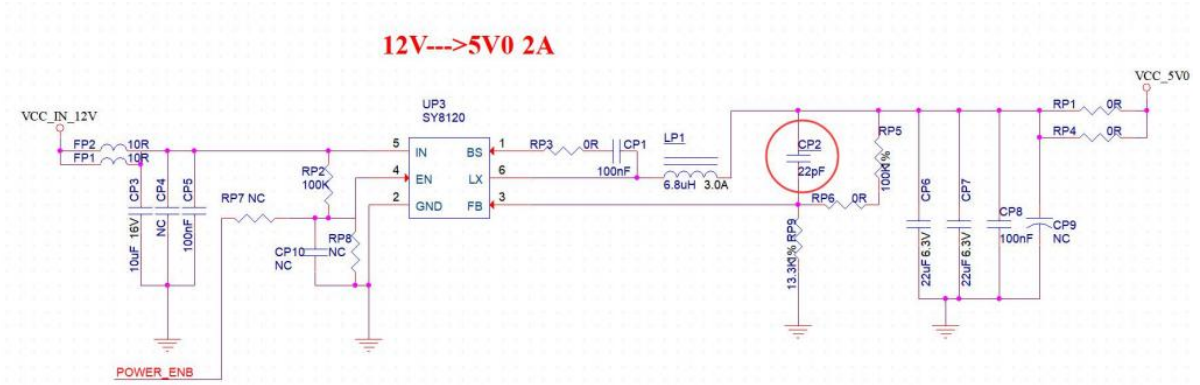
7.Reflow profile
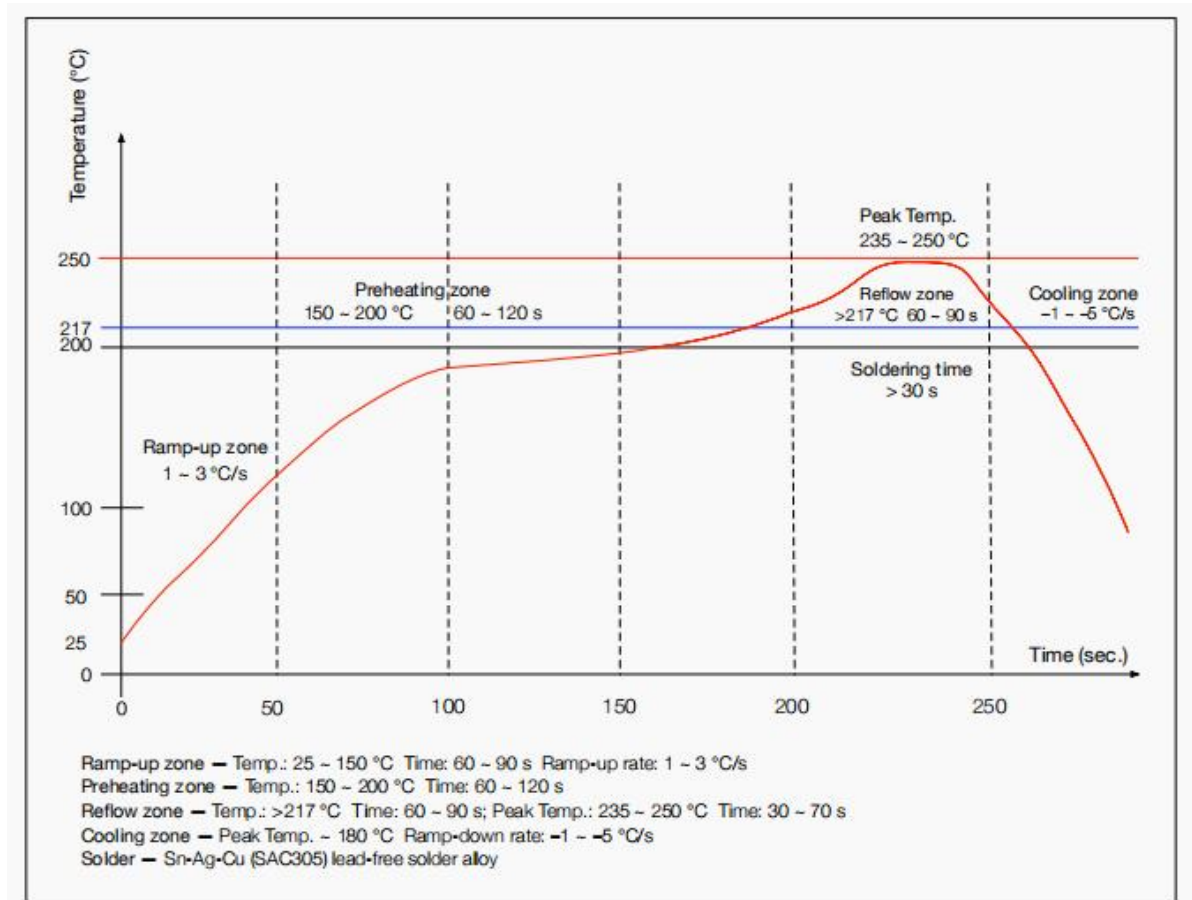
8.Package Information

TB-02-KIT is in anti-static bag package.

9.Contact us

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