TB-04-KIT Development Board Specification

Version

V1.0

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Document creation/revision/abolition calendar

version	date	Development/revision of content	develop	approve
V1.0	2020.9.30	First developed	junx	

I. Product overview

TB-04-Kit development board is designed for TB-04 module and a smart lighting development board, with IPEX seat need external antenna, a total of five PWM, adjustable RGB seven-color lights and two warm and cold beads adjustment, the module all available IO to pin out, easy for developers to develop their own debugging.

Integrated rich materials, including AT commands, SDK secondary development, support for Bluetooth mesh networking, as well as Android/IOS APP control and WeChat applet control, also support for Tmall Genie voice direct connection control; multiple development boards interconnected, can be used for Mesh networking debugging.

2.54mm pinout for all GPIO/PWM/I2C/ADC interfaces, free to match peripherals.

The UART interface supports firmware burning, easy and fast! The SWS pin at the row of pins can also be used for firmware burning with the official Telling tool.

characteristics

- Module Model: TB-04
- Two options: Ali Tmall Genie Special Edition; Regular AT Edition
- BLE5.0 with Mesh support
- Interface type: standard micro USB + 2.54mm pitch row of pins
- Provides PWM/I2C/GPIO/ADC interface
- Comes with R/G/B triple bead and with cool/warm bead
- Self-reset button and 1 user-defined button
- Support Tmall Genie Voice Direct Control
- Support Android/IOS APP control and WeChat app control

Main parameters

Table 1 Description of the main parameters

Module Model	TB-04-KIT Development Board
package	DIP-20 (2.54 pitch standard row of pins)
size	30mm(W)*40mm(H) ±0.2mm
Wireless standards	Bluetooth 5.0, Mesh Support
Frequency range	2400~2483.5MHz
transmitting power	Max 10dBm
reception sensitivity	Minimum -94dBm
interface	PWM/I2C/GPIO/ADC
Working temperature	-20℃~70℃
Storage Environment	-40℃~125℃, <90%RH
Scope of electricity supply	Micro USB power supply voltage 4.75V~5.25V,5.0V recommended
power consumption	Sleep mode: 0.8uA (single module)
	Standby mode: 3mA (single module)
	Full load mode (TX: 10dBm): 23mA (single module)
	Development board backplane: 4mA

II. Electrical parameters

Electrical Characteristics

Absolute maximum rating

Any exceedance of the following absolute maximum values may result in chip damage

name (of a thing)	minimum	typical	maximum	unit

	value	value	value	
Micro USB supply voltage	4.75	5.0	5.25	V
Operating temperature	-20	4.75	+70	℃
Storage temperature	-40	5.0	+125	℃

power wastage

Parameter Name	typical value	unit
Transmit Power Consumption (10dBm)	23	mA
Standby power consumption	3	mA
sleep	0.8	uA

Note: The power consumption here is for a single module.

RF parameters

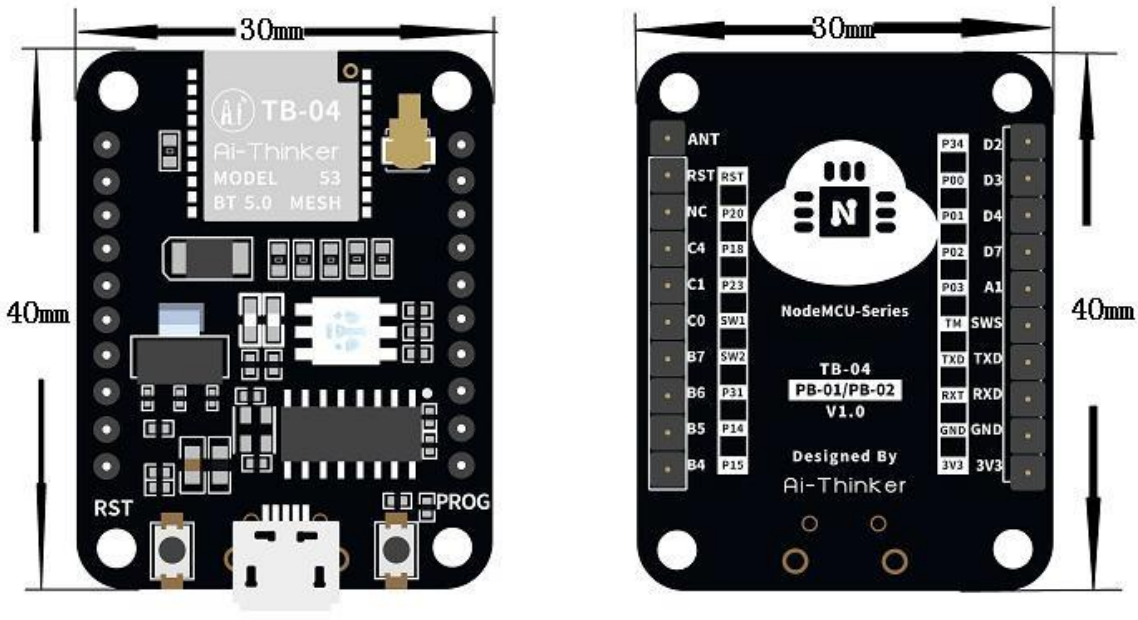
transmitting power

name (of a thing)	minimum value	typical value	maximum value	unit
average power	7.1	8.5	10	dBm

reception sensitivity

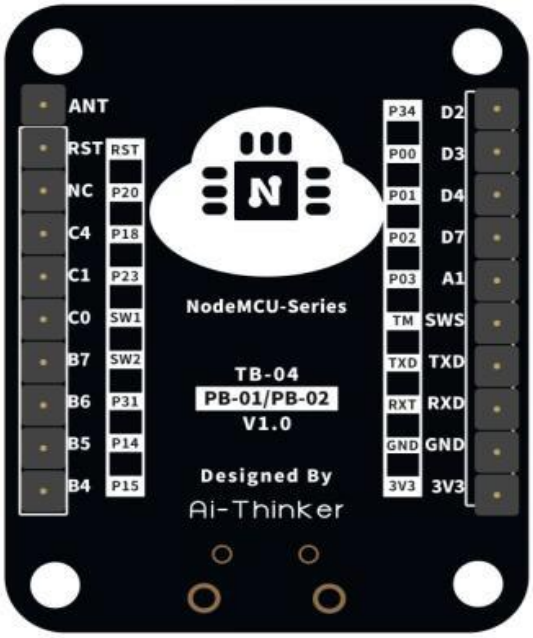
name (of a thing)	minimum value	typical value	maximum value	unit
reception sensitivity	-94	-93	-92	dBm

III. External dimensions



IV. Pin Definitions

The TB-04-KIT development board module has a total of 20 interfaces, as shown in the pin schematic, and the pin function definition table is the interface definition.



TB-04-KIT Development Board
Pinout Diagram

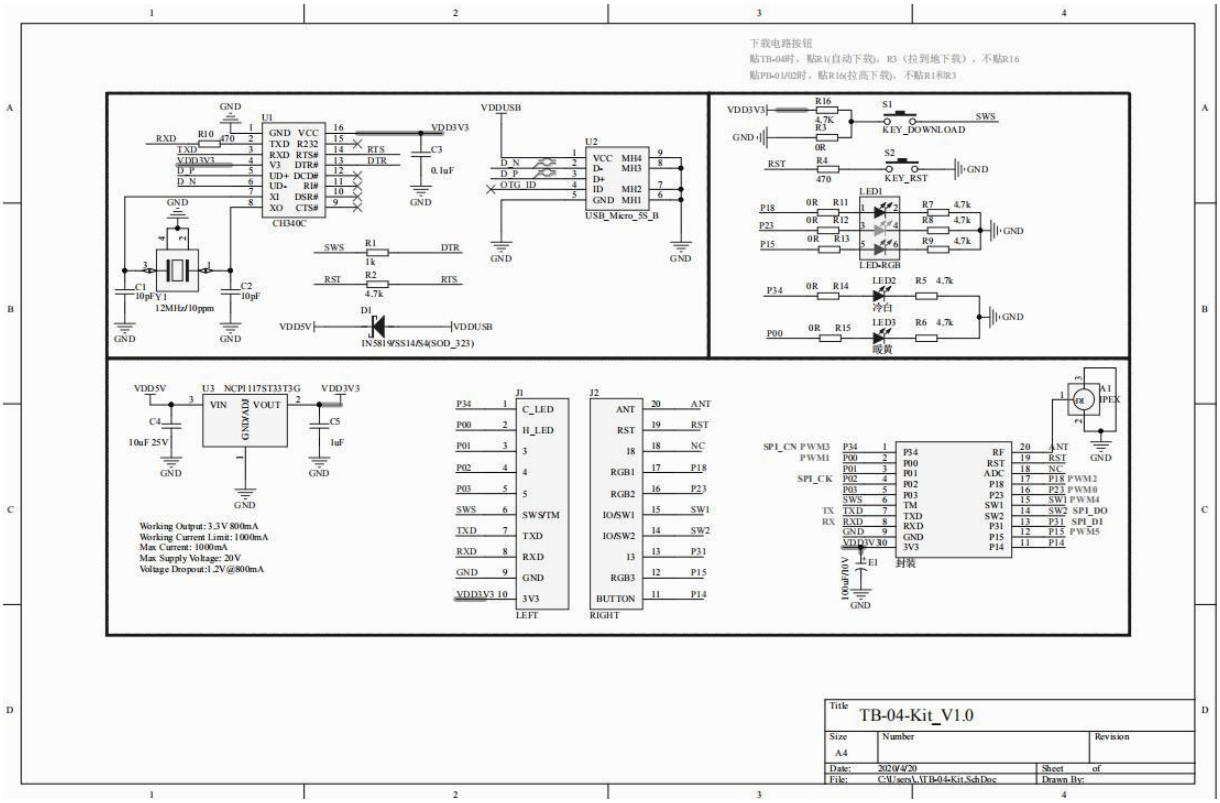
Pin Function Definition Table

Serial number	Pin Pin Name	Function description
1	ANT	Antenna Pinout
2	RST	reset (a dislocated joint)
3	NC	No functional definition
4	C4	PWM2 Output/UART_CTS/PWM0 Inverted 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 select (active low)/PWM3 output/GPIO PD2

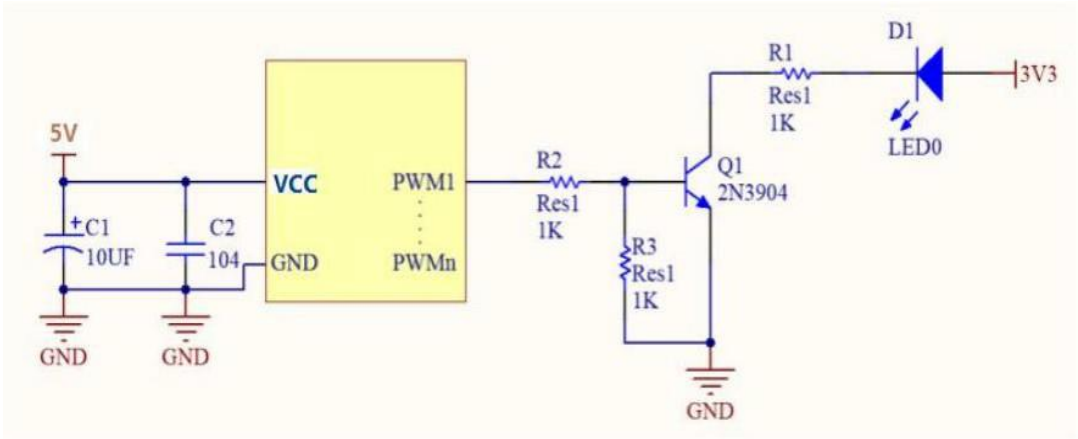
12	D3	PWM1 Reverse Output/UART_TX/GPIO PD3
13	D4	PWM2 Reverse Output/SWM/GPIO PD4
14	D7	SPI Clock/UART_TX/GPIO PD7
15	A1	GPIPO PA1
16	SWS	Single Wire Slave/UART_RTS/GPIO PA7
17	TXD	UART TX/GPIO PB1
18	RXD	UART RX/GPIO PA0
19	GND	earth (electric connection)
20	3V3	supply electricity

V. Schematics



VI. Design guidance

1、Application circuit



2、Antenna layout requirements

No metal parts are allowed to be placed around the module antenna, away from high frequency devices.

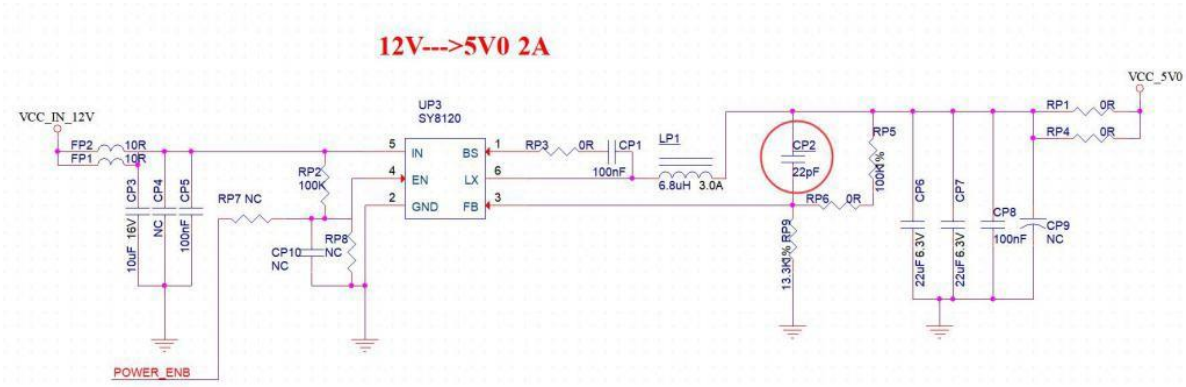
3. Power supply

（1），Micro USB recommended 5.0V, 100mA+ peak current

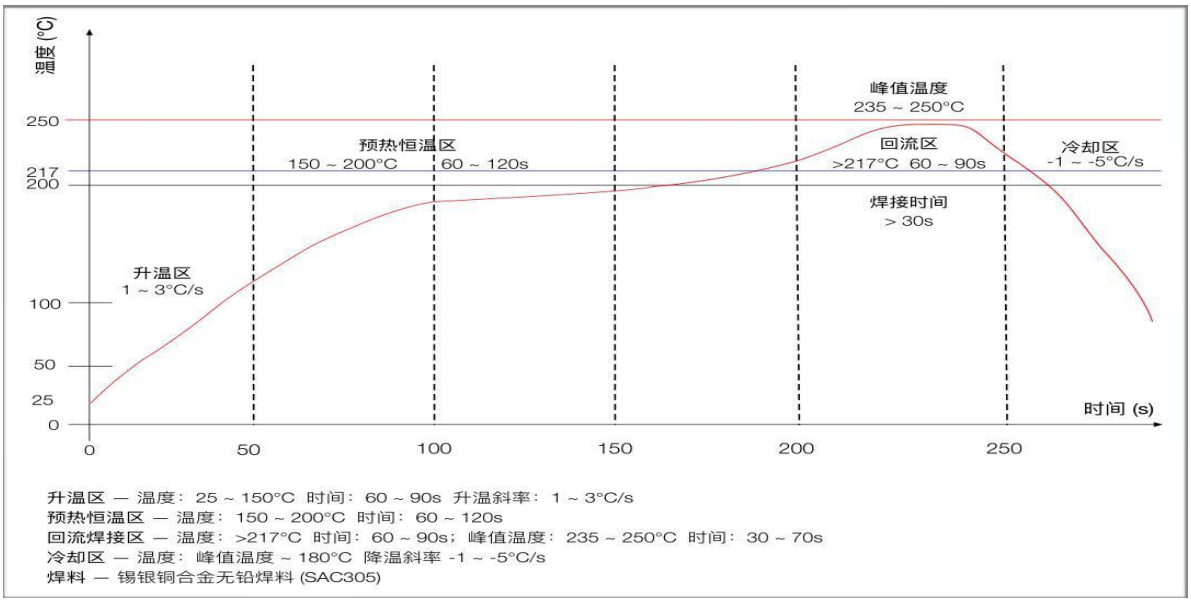
（2）It is recommended to use LDO power supply; if using DC-DC, it is recommended to keep the ripple within 30mV.

（3）The DC-DC power supply circuit recommends reserving the location of dynamic response capacitors to optimize output ripple during large load variations.

（4）It is recommended to add ESD devices to the 5V power supply interface.



VII. Reflow Profile



VIII. Packaging information

The TB-02-KIT development board is packaged in an electrostatic bag.

IX. Contact us

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