



TG-12F-KIT Specification

Version V1.0

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Document development/revision/revocation resume

Version	Date	Revised content	Edition	Approve
V1.0	2020.11.26	First Edition	Chen Cong	Xu Hong

一、Product Overview

TG-12F-KIT development board is a multi-functional development board designed for TG-12F module, there are five routes PWM, all the modules are available IO to pin out use the pin header, convenient for developers to develop and debug;

TG-12F is 2.4G band, WiFi 802.11b/g/n and BLE5.0 baseband/ MAC design, built-in 276KB SRAM, 128KB ROM, provides a rich peripheral interface, including DSIO、SPI、I2C、IR remote、PWM、ADC、DAC、PIR and GPIO interfaces. Support AT command development and secondary development. Support Android / IOS APP control and Tmall genie control.

TG-12F the characteristics of high performance, low cost and agile development, it is suitable for all kinds of low power and high performance application development, such as electrical lighting, life appliances, home security, intelligent detection and other products.

Characteristics

Module Type: TG-12F;

Interface type: standard micro USB+ 2.54mm pin header;

Support SDIO/SPI/UART/I2C/IR remote/PWM/ADC/DAC/PIR/GPIO interfaces;

Own R/G/B Sanhe one lamp bead and cold / warm lamp bead;

Own reset button and a user-defined button;

Support Tmall genie voice control directly;

Support Android/IOS APP control;

802.11 b/g/n Wi-Fi BLE SoC module with data rate up to 150 Mbps;

Ultra-low power: sleep power only 0.5 uA, network standby power only 40 uA (DTIM10);

Common AT command can be easy and quickly used; support secondary development, integrated Linux development environment;

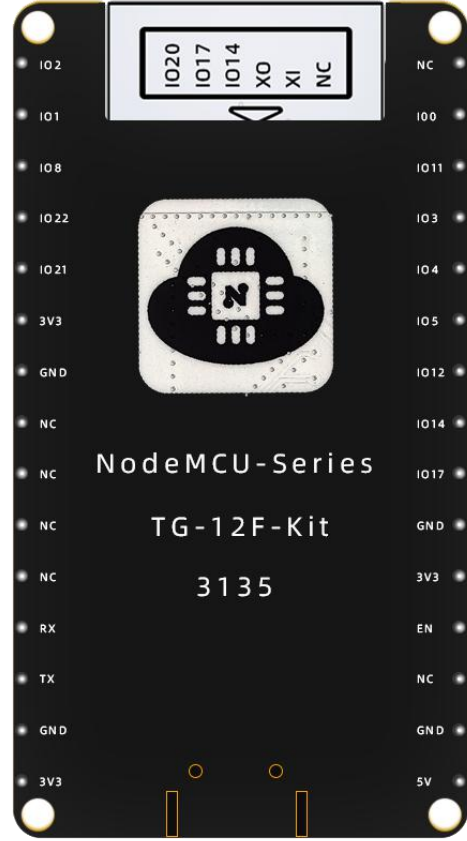
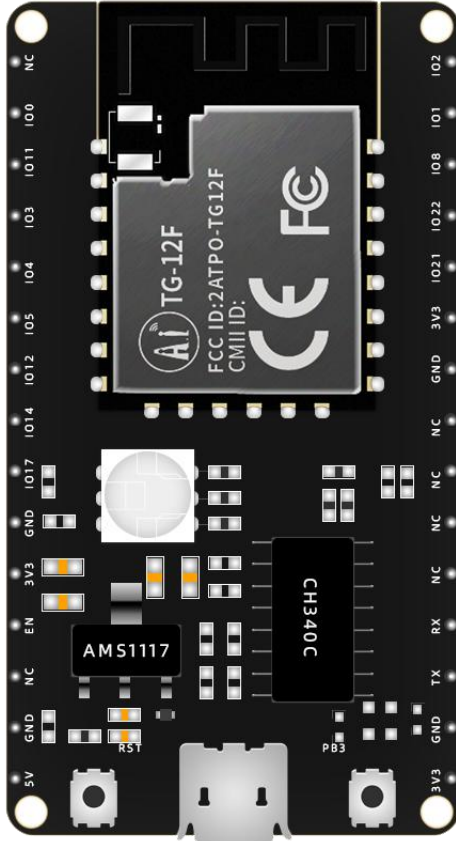
Module uses open source autonomous controllable RISC-V CPU, adjustable for 1~160 MHz , 276 KB SRAM;

Main parameters

Table 1 main parameter descriptions

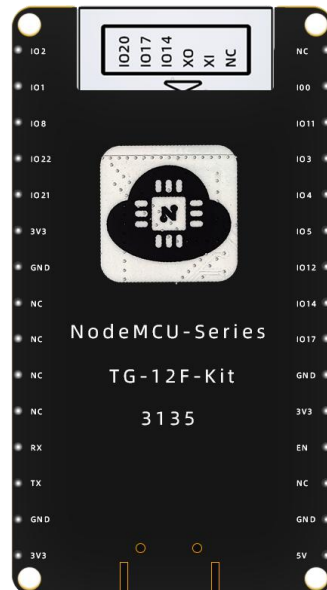
Model name	TB-12F-Kit
Package	DIP-30 (2.54 mm pin header)
Size	48.0mm * 25.0mm * 14.0mm (±0.2mm)
Frequency range	2400~2483.5MHz
Tx power	20dBm
Receiving sensitivity	-97dBm
Interface	SDIO/SPI/UART/I2C/IR remote/PWM/ADC/DAC/PIR/GPIO
Operating temperature	-40 °C ~ 85 °C
Storage environment	-40 °C ~ 125 °C , < 90%RH
Power supply range	Micro USB power supply voltage 4.75V~5.25V, recommend 5.0V , power supply >500mA
IO	14
UART port rate	support 110 ~ 4608000 bps , default 115200 bps
Security	AES/SHA/PKA
SPI Flash	2MB
Antenna	On-board PCB antenna /IPEX , default on-board PCB antenna

二、 Appearance dimensions



三、 Pin definition

TG-12F-KIT the development board moduleA,



with 30 interfaces , refer to the pin diagram, pin function definition table is interface definition.

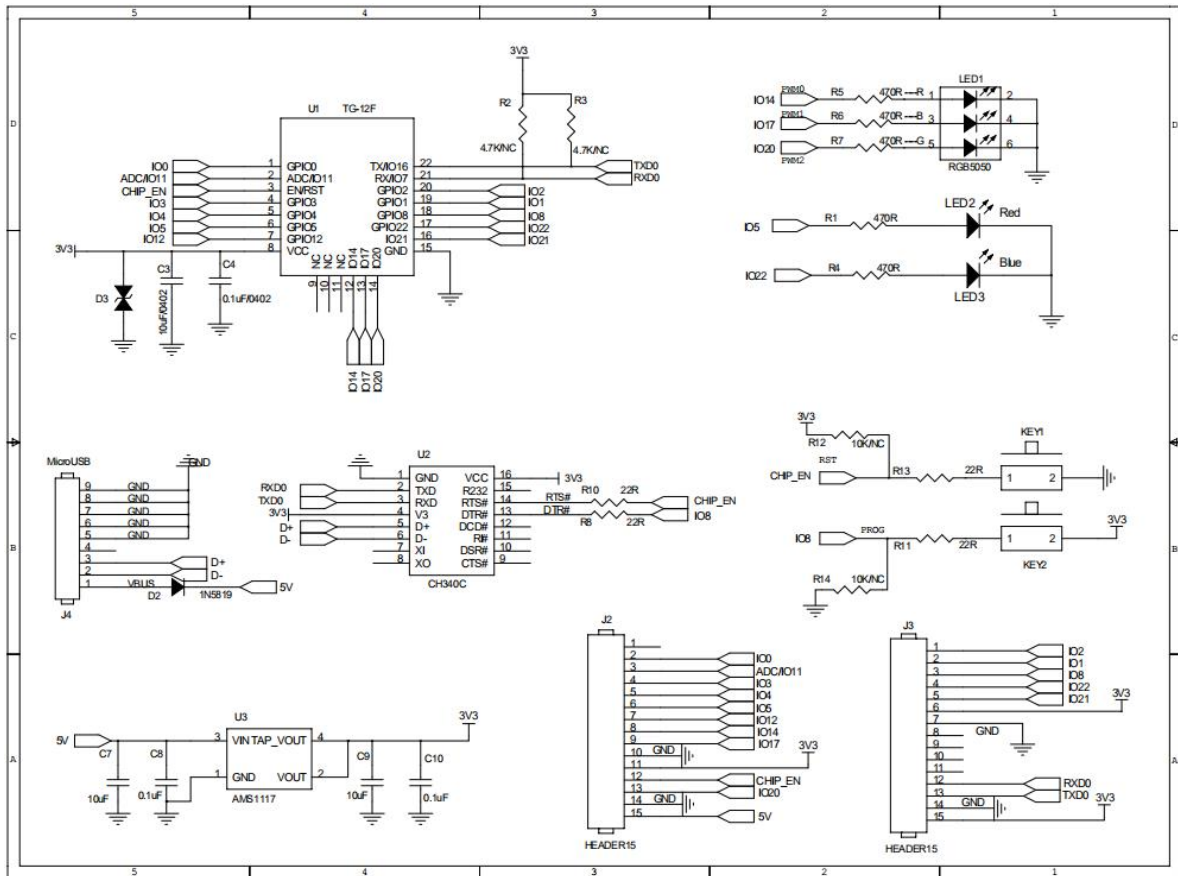
TB-04-KIT development board pin diagram

Pin Function Definition Table

No.	Pin	Function
1	NC	Empty Pin
2	IO0	SDIO,SFLASH,SPI,I2C,UART,PWM,GPIO
3	IO11	SPI,I2C,UART,PWM,AUXADC,GPIO
4	IO3	SDIO,SPI,I2C,UART,PWM,GPIO
5	IO4	SDIO,SPI,I2C,UART,PWM,GPIO
6	IO5	SDIO,SPI,I2C,UART,PWM,GPIO
7	IO12	SPI,I2C,UART,PWM,AUXADC,GPIO
8	IO14	SPI,I2C,UART,PWM,AUXADC,GPIO
9	IO17	SFLASH,SPI,I2C,UART,PWM,GPIO
10	GND	Ground

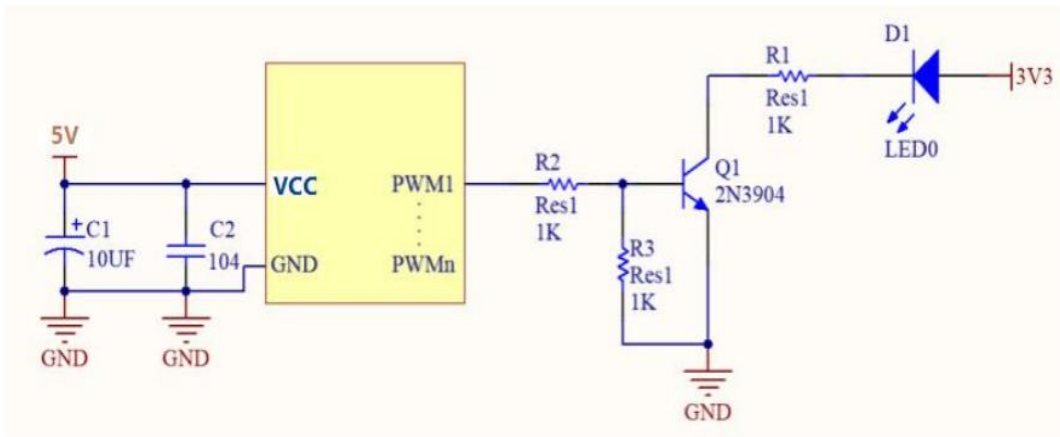
11	3V3	Power supply
12	EN	Chip enable
13	NC	Empty Pin
14	GND	Ground
15	5V	Power supply
16	3V3	Power supply
17	GND	Ground
18	TX	SPI,I2C,UART,PWM,GPIO
19	RX	SPI,I2C,UART,PWM,AUXADC,GPIO
20	NC	Empty pin
21	NC	Empty pin
22	NC	Empty pin
23	NC	Empty pin
24	GND	Ground
25	3V3	Power supply
26	IO21	GPIO4, ADC2_CH0, TOUCH0, RTC_GPIO10, HSPIHD,
27	IO22	SFLASH,SPI,I2C,UART,PWM,GPIO
28	IO8	SPI,I2C,UART,PWM,AUXADC,GPIO
29	IO1	SDIO,SFLASH,SPI,I2C,UART,PWM,GPIO
30	IO2	SDIO,SFLASH,SPI,I2C,UART,PWM,GPIO

四、Schematic diagram



五、Application guidance

1. Application circuit



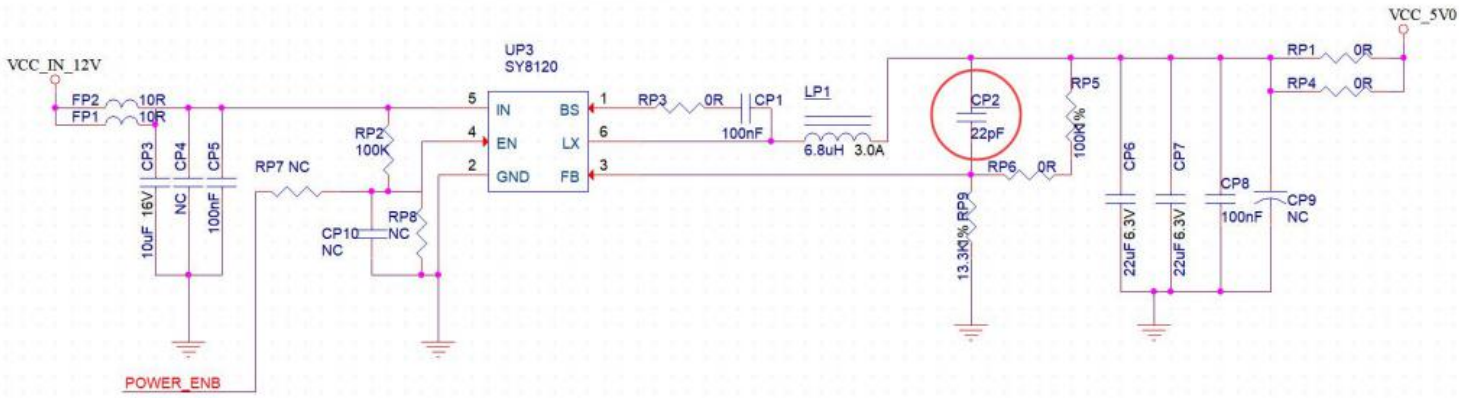
2、Antenna layout requirements

Metal parts are forbidden to be placed around the antenna, away from high frequency devices.

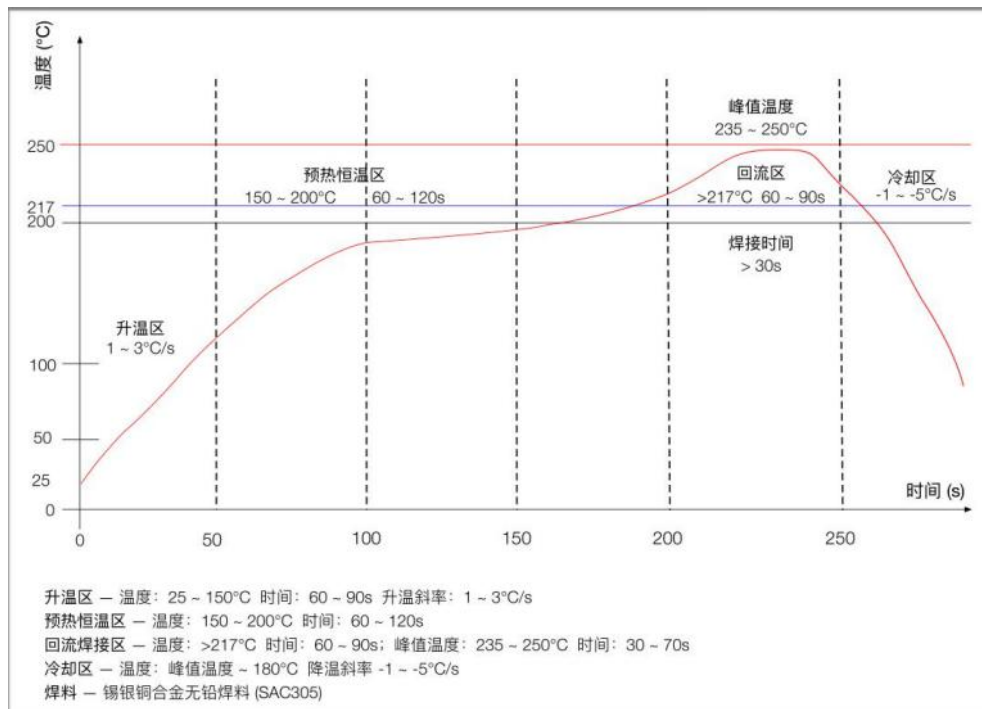
3、Power supply

- (1)、Recommend Micro USB 3.3V voltage, peak current above 50mA
- (2)、It is recommended to use LDO for power supply; if DC-DC is used, the ripple is recommended to be controlled within 30mV.
- (3)、DC-DC the power supply circuit, it is suggested to reserve the position of output ripple can be optimized when the load changes greatly.
- (4)、It is recommended to add ESD devices to the 3.3V power interface.

12V---->5V0 2A



六、Reflow soldering graphs



七、 Package information

TG-12F-KIT development board is packaged with electrostatic bag

八、 Contact us

Official website: <https://www.ai-thinker.com>

Development docs: <http://docs.ai-thinker.com>

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