



# XW-01-Kit Specification

Version V1.1  
Copyright ©2020

## Disclaimer and copyright notice

The information in this article, including the URL address for reference, is subject to change without prior notice. The Documentation is provided "as is" without any warranty, including any warranties of merchantability, fitness for a particular purpose, or non-infringement, and any warranties mentioned in the proposal, specification or sample. This document is not responsible for any infringement of any patent rights arising out of the use of the information in this document. No license, express or implied, by estoppel or otherwise, is hereby granted.

The test data obtained in this paper are all obtained by Ai-Thinker laboratory, and the actual results may be slightly different. The Wi-Fi alliance membership mark is owned by the WiFi alliance.

All trade mark names, trademarks and registered trademarks mentioned herein are the property of their respective owners and are hereby declared.

The final interpretation right is owned by Shenzhen Ai-Thinker Technology Co., Ltd.

### Note

The contents of this manual may be changed due to the version upgrade of the product or other reasons. Shenzhen Ai-Thinker Technology Co., Ltd. reserves the right to modify the contents of this manual without any notice. This manual is only used as a guide, and Shenzhen Ai-Thinker Technology Co., Ltd. makes every effort to provide accurate information in this manual, but Shenzhen Ai-Thinker Technology Co., Ltd. does not ensure that the contents of the manual are completely true. All statements and information in this manual and the recommendations do not constitute for any warranty, express or implied.



## Contents

一、 Product Overview.....	5
二、 Electrical parameters.....	7
三、 Appearance.....	8
四、 Pin definition.....	9
五、 Schematic diagrams.....	12
六、 Design guidance.....	12
七、 Reflow soldering curve.....	14
八、 Packaging information.....	14
九、 Contact us.....	15

## 一、Product Overview

XW-01-Kit is a core development board designed by Ai-Thinker for XW-01 module. The development board continues the classic design of the NodeMCU development board and leads to all I/O to both sides of the pin header. Developers can connect peripherals according to their own needs. When using bread board for development and debugging, the standard needle arrangement on both sides can make the operation more simple and convenient.

XW-01-KIT provide 1 Kbit eFuse, with more SRAM, support security start, hardware support encryption algorithm, more GPIO interface, support hardware PWM, provide more stable and reliable pulse, focus on low power, sleep fast wake-up field, suitable for sensor, door lock and other low power industry solutions.

XW-01-KIT special in low power sleep + cold start mode: refers to the cold start from the chip reset state to the configured network process, mainly used to meet the needs of the application of ultra-low power standby and fast networking at the same time, Complete network configuration in 150 ms~180 ms interval.

## Characteristics

- Support 802.11b/g/n
- WIFI frequency range 2400 ~ 2483.5MHz
- Interface type: standard micro USB + 2.54mm pin header
- Provide UART/GPIO/PWM/ADC/I2C interface
- With R/G/B Light bead
- Support second develop, integrated Linux development environment
- Very low power consumption, suitable for demanding power consumption occasions
- Support interface type: UART/GPIO/PWM/ADC/I2C

- Cold connection, wake up to the network only 150 ms-200ms (measured), making the total power consumption lower
- Support STA/AP/STA+AP operating mode
- Relatively rich on-chip resources, support secure start-up and hardware encryption algorithm
- Support docking Ali cloud Feiyan platform, rapid implementation of product end control
- General AT instructions can be used quick and easy

## Main parameters

**Table 1 main parameter descriptions**

<b>Model Name</b>	XW-01-Kit
<b>Size</b>	25.4mm(W)*48.3mm(H) ±0.2 mm
<b>Package</b>	DIP-30 (2.54 pin header)
<b>Antenna</b>	On-board PCB antenna or IPEX antenna
<b>Frequency range</b>	2400~2483.5MHz
<b>Interface</b>	UART/GPIO/PWM/ADC/I2C
<b>Operating temperature</b>	-40℃ ~ 85 ℃
<b>Storage temperature</b>	-40 ℃ ~ 125 ℃ , < 90%RH
<b>Power supply range</b>	Micro USB 4.75V~5.25V, recommend 5.0V Power supply voltage 3.0V ~ 3.6V, current >500mA, recommend 3.3V
<b>Uart baud rate</b>	Support 110 ~ 4608000 bps , default 115200 bps
<b>Security</b>	WEP/WPA-PSK/WPA2-PSK
<b>SPI Flash</b>	Default 32Mbit

## 二、Electrical parameters

### Electrical characteristics

*XW-01 series of modules are electrostatic sensitive equipment, special preventive measures should be taken during handling*



#### Absolute maximum rating

*Any excess of the following absolute maximum ratings can cause chip damage*

Name	Min	Typ	Max	Unit
Micro USB power supply voltage	4.75	5.0	5.25	V
Power supply voltage	2.6	3.3	3.6	V
Operating temperature	-40	-	+85	°C
Storage temperature	-40	-	+125	°C

#### RF parameters

Description	Typ	Unit
Operating frequency	2400 - 2483.5	MHz
<b>Output power</b>		
11n mode , PA output power	15±2	dBm
11g mode, PA output power	16±2	dBm

11b mode, PA output power	$18 \pm 2$	dBm
Receiving sensitivity		
CCK, 1 Mbps	$\leq -97$	dBm
CCK, 11 Mbps	$\leq -90$	dBm
6 Mbps (1/2 BPSK)	$\leq -93$	dBm
54 Mbps (3/4 64-QAM)	$\leq -74$	dBm
HT20 (MCS7)	$\leq -70$	dBm

## Power consumption

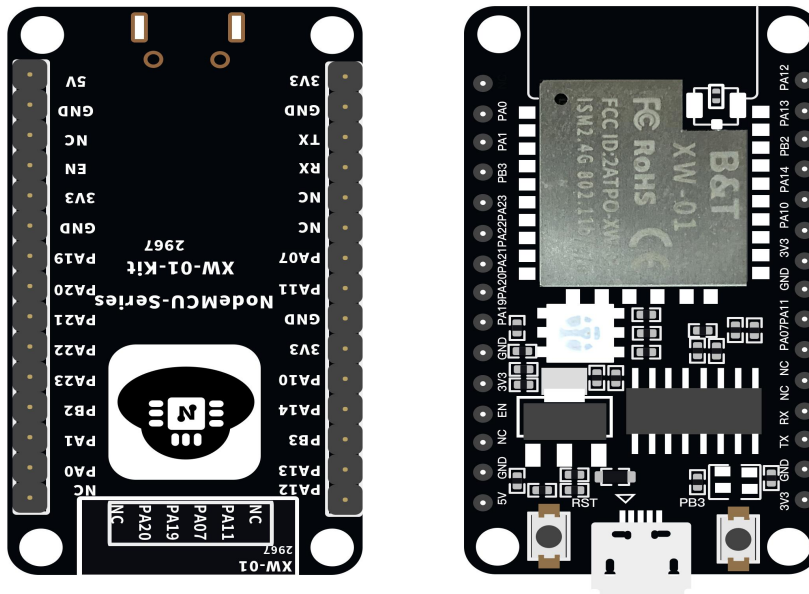
The following power consumption data are based on a 3.3 V power supply, 25° C ambient temperature and measured using an internal voltage regulator.

- All measurements were completed at the antenna interface without SAW filters
- All emission data are based on a duty cycle of 90%, measured in the mode of continuous emission.

Mode	Min	Typ	Max	Unit
Full load current	-	185	-	mA
Sleep	-	20	-	mA
Standby	-	102.2	-	$\mu$ A
Hibernation	-	4.6	-	$\mu$ A
Power Off	-	4.5	-	$\mu$ A

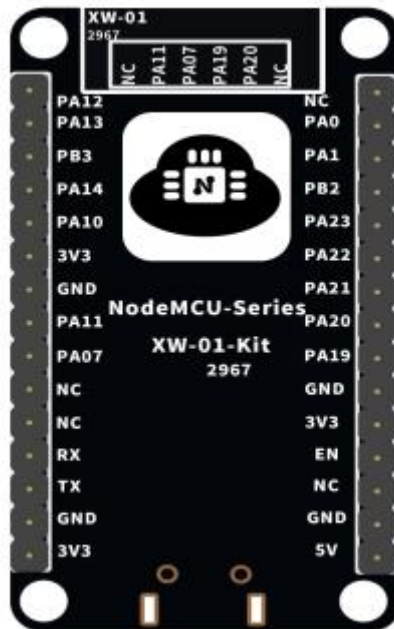
## 三、Appearance





#### 四、Pin definition

A total of 30 interfaces are connected XW-01-Kit the development board module, refer to the pin diagram, the pin function definition table is the interface definition



XW-01-Kit pin diagram

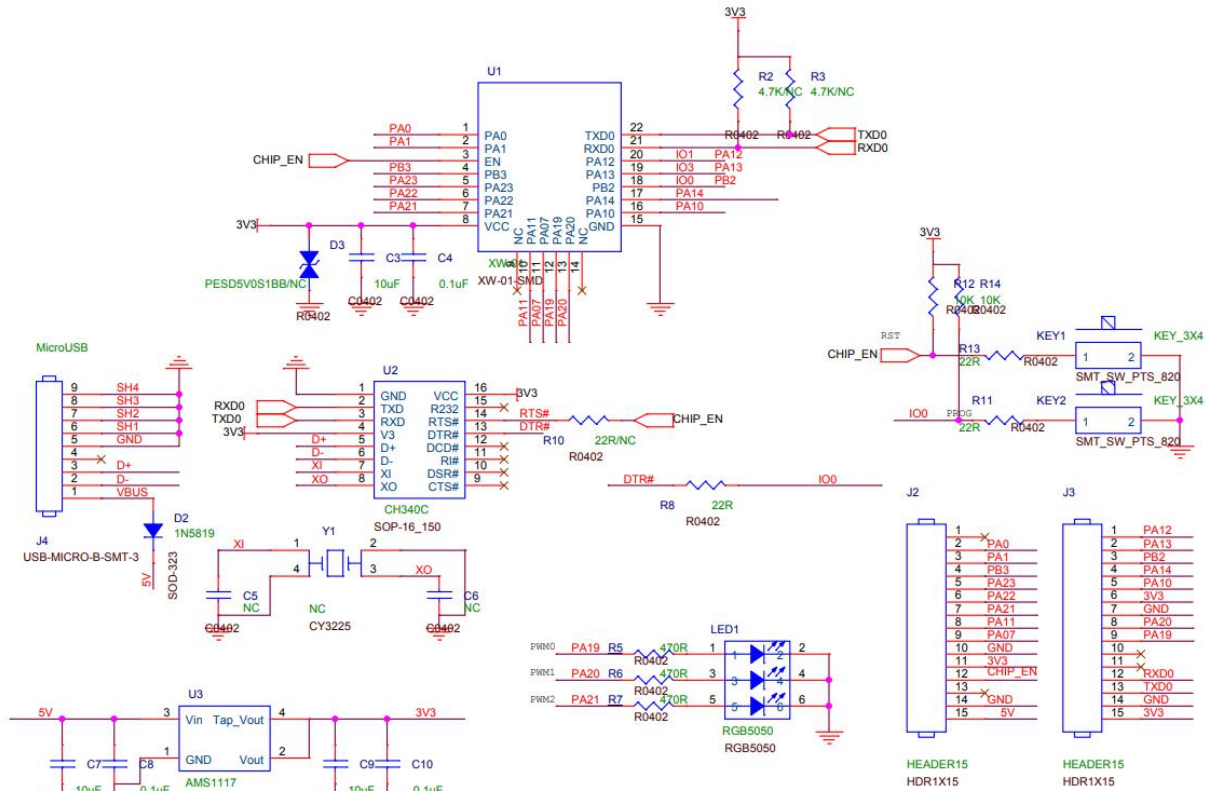
Pin Function Definition Table

Pin	Name	Function
-----	------	----------

1	PA12	GPI012/gpadc input
2	PA13	GPI013/gpadc input
3	PB3	GPI03
4	PA14	GPI014/gpadc input
5	PA10	GPI010/gpadc input
6	3V3	Power supply
7	GND	Ground
8	PA11	GPI012/HSPI_MISO
9	PA07	GPI014/HSPI_CLK
10	NC	/
11	NC	/
12	RX	UART_RX
13	TX	UART_TX
14	GND	Ground
15	3V3	Power supply3.3V
16	NC	/
17	PA0	GPI0 0
18	PA1	GPI0 1
19	PB2	GPI0 2
20	PA23	GPI0 23/ test pin/Awaken IO pin
21	PA22	GPI0 22/ Awaken IO pin
22	PA21	GPI0 21/ Awaken IO pin
23	PA20	GPI0 20/ Awaken IO pin
24	PA19	GPI0 19/ Awaken IO pin
25	GND	Ground
26	3V3	Power supply 3.3V
27	EN	Power enable pin

28	NC	/
29	GND	Ground
30	5V	5V Power supply

## 五、 Schematic diagrams

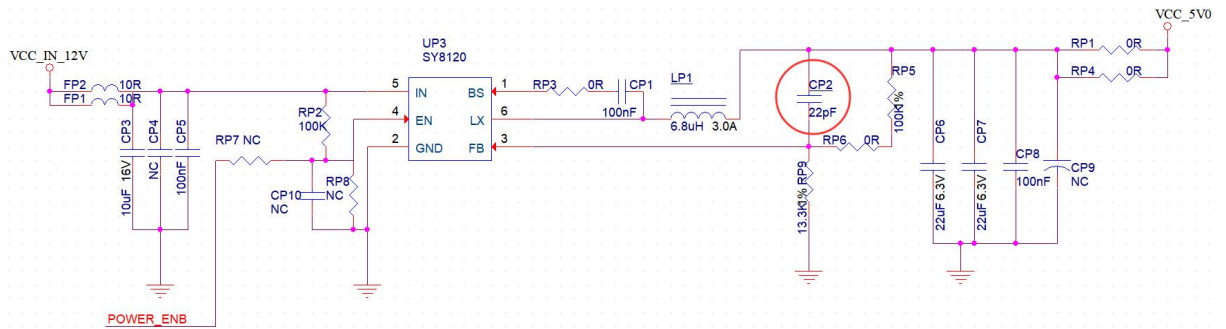


## 六、 Design guidance

### 1、 Power supply

- (1)、 Recommend 3.3V voltage, peak current above 500mA
- (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 5V power interface.

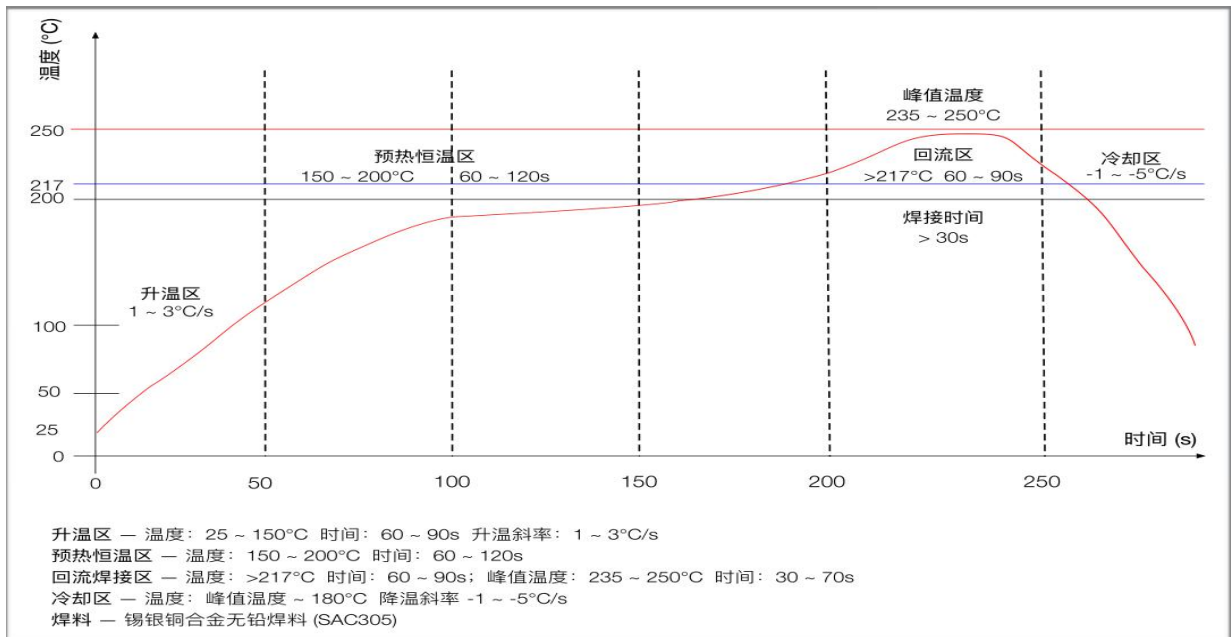
**12V--->5V0 2A**



## 2、Antenna layout requirements

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

## 七、Reflow soldering curve



## 八、Packaging information

XW-01-Kit development board packaging for pearl cotton electrostatic bag packaging.

## 九、Contact us

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

Development DOCS : <http s : //d ocs.ai-thinker.com>

Official Forum: <http://bbs.ai-thinker.com>

Sample purchase: <https://anxinke.taobao.com>

Business cooperation: [overseas@aithinker.com](mailto:overseas@aithinker.com)

Technical support: [support@aithinker.com](mailto:support@aithinker.com)

Company Address: Building C, Huafeng Intelligent Innovation Port, Xixiang, Baoan District,  
Shenzhen

Tel :0755-29162996

