欧智通科技

Fn-Link
6110H-IX

WiFi Single-band 1X1 802.11b/g/n IOT

Module Datasheet

Revision History

Version	Date	Modifications	Draft	Approved
1.0	2019-12-30	Initial release	Tz	
1.1	2021-06-03			

CONTENTS

1. Introduction

6110H-IX is a highly integrated module with low power 802.11b/g/n Wireless LAN(WLAN) network controller. It combines an ARM-CM4 MCU, WLAN MAC, a 1T1R capable WLAN baseband, and RF function. It also provides a bunch of configurable GPIO which are configured as digital peripherals for different applications and control usage.

6110H-IX integrates internal memories for complete WIFI protocol functions.

6110H-IX integrates 512KB ROM to provide high access speed, low leakage memory. The ROM memory clock speed is up to 62.5MHz.The ROM lib provides the following functions:

- Boot Code and MCU initialization.
- Default UART driver.
- Non-flash booting functions and drivers.
- Peripheral libs.
- Security functions libs.

2. Features

General

- 18.0mm*20.0mm*3.21mm
- CMOS MAC, Baseband PHY, and RF in the module for 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4G band
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth

Standards Supported

- 802.11b/g/n compatible WLAN
- 802.11e QoS Enhancement(WMM)
- 802.11i(WPA,WP2). Open, shared key, and pair-wise key authentication services
- WiFi Direct support
- Light Weight TCP/IP protocol

WLAN PHY Features

- 802.11n OFDM
- One Transmit and one Receive path(1T1R)
- 20MHz and 40MHz bandwidth transmission
- Short Guard Interval(400ns)
- Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n

Host Interface

- 1 high speed UART
- 1 I2C
- 6 PWM
- 1 SPI
- GPIO

The general block diagram for the module is shown in Figure 1
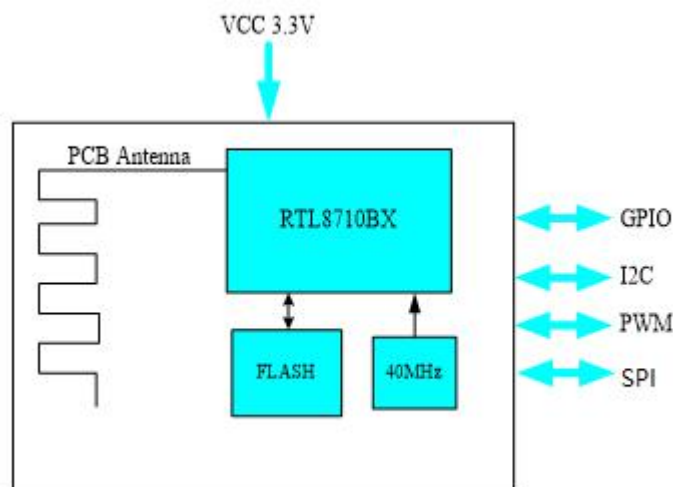
Figure 1

3. General specification

3.1 General Information

Model Name	6110H-IX
Main Chipset	Realtek RTL8710BX
Host Interface	UART,GPIO,PWM
Wifi Standards	802.11b/g/n
Dimension	L18.0mm*W20.0mm*H3.21mm

3.2 Operating Conditions

Operating Voltage	3.3±5% Vdc
Operating Temperature	-20°C to +85°C
Storage Temperature	-40°C to +125°C

4. WIFI RF Specification

4.1 2.4GHz RF Specification

Operating Frequency	2.400~2.4835GHz
Channels	**WiFi:** USA/Canada: channel 1~11; Europe/China/Australia: channel 1~13; Japan: channel 1~14
Modulation	**WiFi:** 802.11b(DSSS): CCK(11, 5.5Mbps), DSSS(2Mbps), DSSS(1Mbps); 802.11g(OFDM): BPSK(9,6Mbps), QPSK(18,12Mbps), 　　　　　　　　　　　　　　16QAM(36,24Mbps), 64QAM(54,48Mbps); 802.11n(OFDM): BPSK, QPSK, 16QAM, 64QAM(150Mbps)
PHY Data rates	**WiFi:** 802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 150Mbps
Output Power	**WiFi:** 802.11b 17**±1.5**dBm 802.11g 15**±1.5**dBm 802.11n 14**±1.5**dBm
EVM	802.11b EVM≦35% 802.11g EVM≦-25dB 802.11n EVM≦-28dB
Sensitivity	**WiFi:** **802.11b@8% PER** 1Mbps -88dBm 2Mbps -87dBm 5.5Mbps -85dBm 11Mbps -82dBm **802.11g@10% PER** 6Mbps -86dBm 9Mbps -85dBm 12Mbps -84dBm 18Mbps -82dBm 24Mbps -80dBm 36Mbps -77dBm 48Mbps -73dBm 54Mbps -71dBm **802.11n_HT20@10% PER** MCS 0 -83dBm MCS 1 -82dBm

|	
	MCS 2 -80dBm
	MCS 3 -78dBm
	MCS 4 -75dBm
	MCS 5 -71dBm
	MCS 6 -69dBm
	MCS 7 -67dBm
	802.11n_HT40@10% PER
	MCS 0 -83dBm
	MCS 1 -81dBm
	MCS 2 -79dBm
	MCS 3 -76dBm
	MCS 4 -73dBm
	MCS 5 -70dBm
	MCS 6 -67dBm
	MCS 7 -65dBm
Network Architecture	**WiFi:** Ad-hoc mode (Peer-to-Peer) Infrastructure mode WiFi Direct
Security	802.11i(WPA,WP2). Open, shared key, and pair-wise key authentication services
Antenna	Internal Antenna

4.2 Current consumption

Status		VCC33 = 3.3V (Unit : mA)
ITEM	All off	0.02
WiFi	Wifi on mode	27
	WiFi scan mode	117
	WiFi link mode (2.4GHz)	47
	RX Throughput Test (2.4G mode HT20)	117
	TX Throughput Test (2.4G mode HT20)	162

5. Pin Assignments

5.1 Pin outline
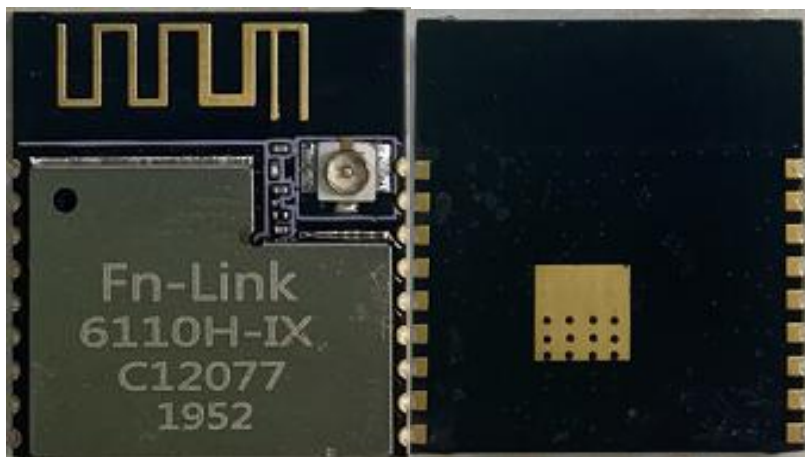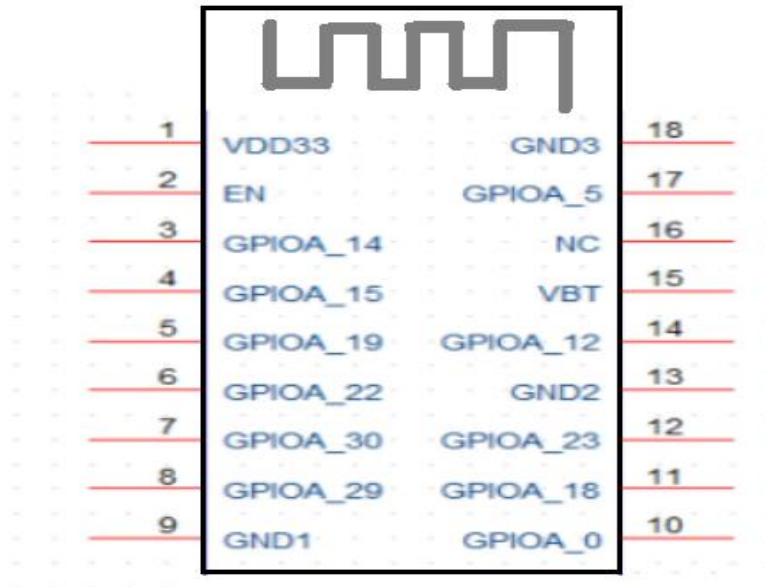
5.2 Pin Definition

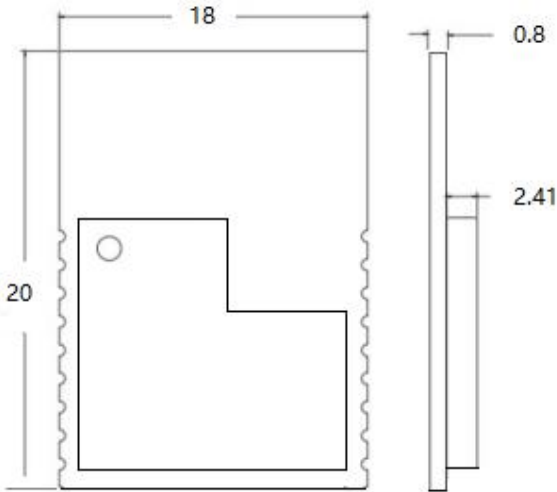| Pin#	Name	Description
1	VDD33	3.3V Input
2	EN	Enable chip. 1: Enable Chip,0: Shut Down Chip.
3	GPIOA_14	GPIO Pin. The MUX Function can be referred to Pin Function Table
4	GPIOA_15	GPIO Pin. The MUX Function can be referred to Pin Function Table
5	GPIOA_19	GPIO Pin. The MUX Function can be referred to Pin Function Table
6	GPIOA_22	GPIO Pin. The MUX Function can be referred to Pin Function Table
7	GPIOA_30	GPIO Pin. The MUX Function can be referred to Pin Function Table
8	GPIOA_29	GPIO Pin. The MUX Function can be referred to Pin Function Table
9	GND1	Ground connections
10	GPIOA_0	GPIO Pin. The MUX Function can be referred to Pin Function Table
11	GPIOA_18	GPIO Pin. The MUX Function can be referred to Pin Function Table
12	GPIOA_23	GPIO Pin. The MUX Function can be referred to Pin Function Table
13	GND2	Ground connections
14	GPIOA_12	GPIO Pin. The MUX Function can be referred to Pin Function Table
15	NC	No connected
16	NC	No connected
17	GPIOA_5	GPIO Pin. The MUX Function can be referred to Pin Function Table
18	GND3	Ground connections

5.2.1 Pin Function Group Table

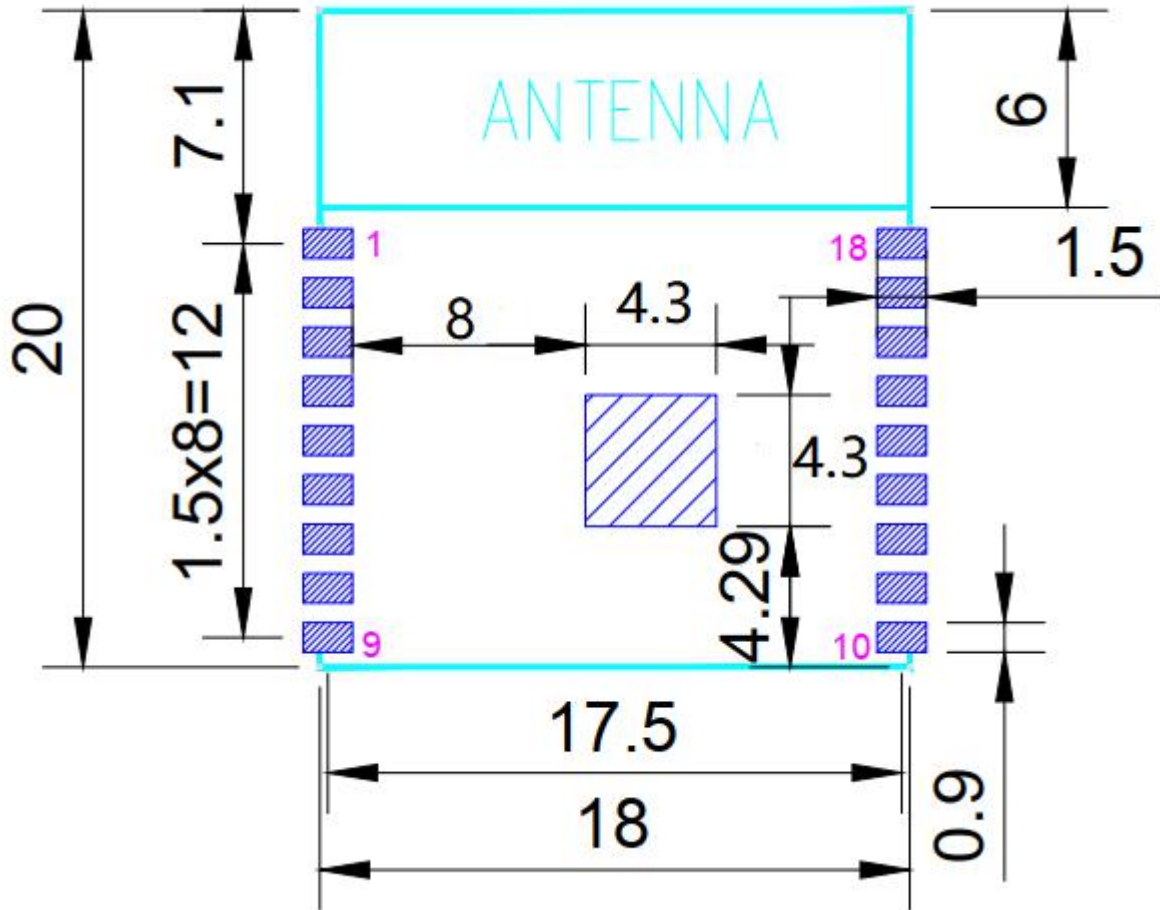|							
GPIOA_14				PWM0			SWD_CLK
GPIOA_15				PWM1			SWD_DATA
GPIOA_0				PWM2			
GPIOA_12				PWM3			
GPIOA_5				PWM4			
GPIOA_18	UART0_RXD	I2C1_SCL	I2S_MCK		SPI1_CLK	SPI0_SCK	
GPIOA_19	UART0_CTS	I2C0_SDA	I2S_SD_TX		SPI1_CS	SPI0_CS	
GPIOA_22	UART0_RTS	I2C0_SCL	I2S_WS	PWM5	SPI1_MISO	SPI0_MISO	
GPIOA_23	UART0_TXD	I2C1_SDA		PWM0	SPI1_MOSI	SPI0_MOSI	
GPIOA_30	UART2_Log_TXD	I2C0_SDA		PWM3			
GPIOA_29	UART2_Log_RXD	I2C0_SCL		PWM4			

6. Dimensions

6.1 Physical Outline

(unit: mm)

L x W: 18 x 20 (+0.3-0.1) mm	
H: 3.21 (±0.1) mm	
Weight	1.30(±0.1) g

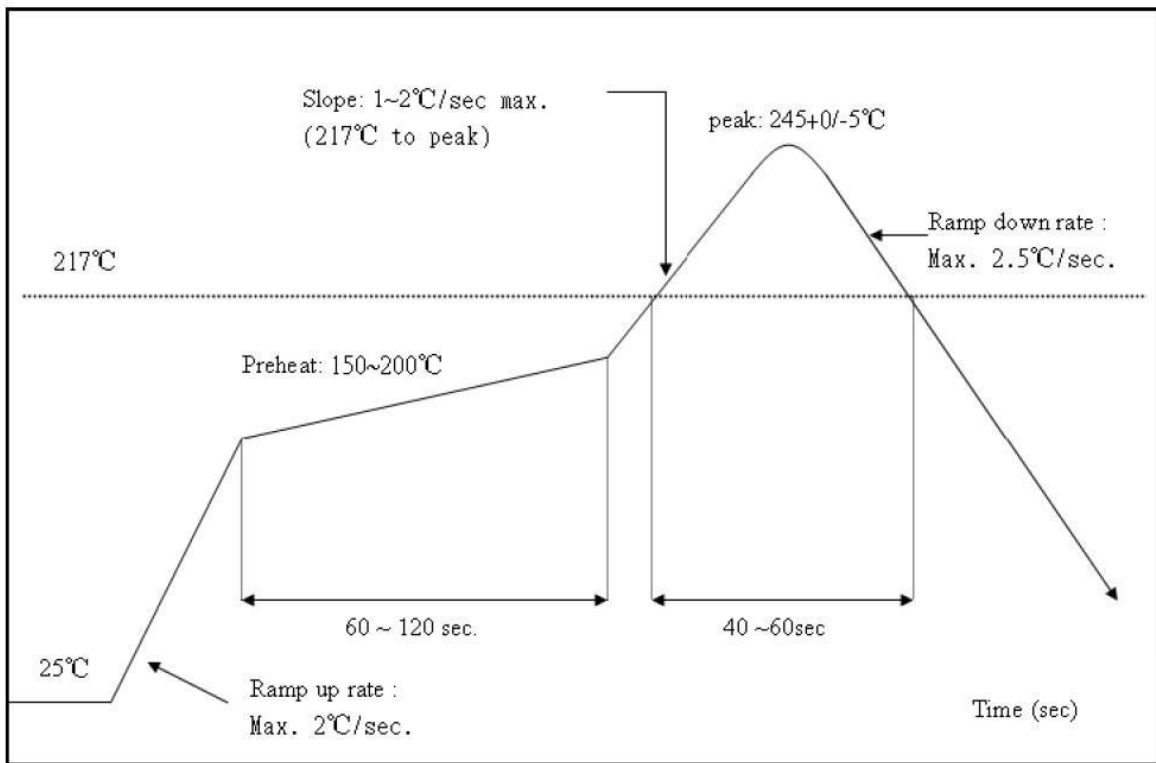## 6.2 Layout Recommendation

(unit: mm)

7. Reference Design
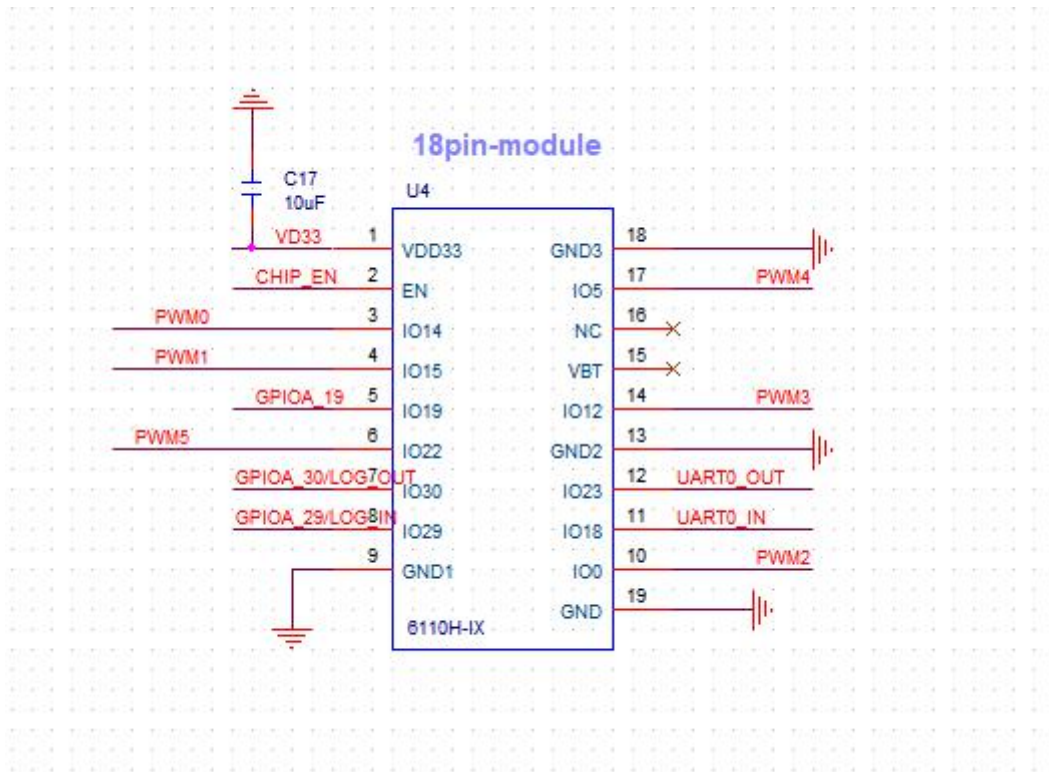
8. Environmental Requirements

8.1 Recommended Reflow Profile

Referred to IPC/JEDEC standard.
Peak Temperature : <250°C
Number of Times : ≤2 times

8.2 Patch WIFI modules installed before the notice:

WIFI module installed note:

1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.12 mm thickness When open a stencil

2. Take and use the WIFI module, please insure the electrostatic protective measures.

3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at 250 + 5 ℃ for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:

1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: < 40 ℃, relative humidity: < 90% r.h.

2. The module vacuum packing once opened, time limit of the assembly:

Card: 1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption.

2.) factory environmental temperature humidity control: ≦ 30 ℃, ≦ 60% r.h..

3). Once opened, the workshop the preservation of life for 168 hours.

3. Once opened, such as when not used up within 168 hours:

1). The module must be again to remove the module moisture absorption.

2). The baking temperature: 125 ℃, 8 hours.

3.) After baking, put the right amount of desiccant to seal packages.

When selecting PCB antenna, please pay attention to the following points when placing the module:

1. Components and floor cannot be placed in the area corresponding to the PCB bottom plate and the module antenna of the user. It is better to hollow out the PCB in this area.

2. It is suggested that no components should be placed within 10mm of the module antenna area, and the module baseplate should be avoided as far as possible in this area

3, line, do not apply copper.

4. Do not place the module in the metal shell or the mold with metal paint.

5. It is suggested that the user should try to place the wifi module antenna close to the edge of the bottom plate during the layout of the PCB board to ensure good antenna performance

9. List of key Components

Components	Specifications	manufacturer
CPU	RTL8710BX-A0-CG QFN32 5X5	realtek
Crystal	40MHZ 3225 10ppm -20~85℃	ECEC、TKD、HOSONIC、JWT
Flash	2M SOP8 200mil	MXIC、GigaDevice、Globalize

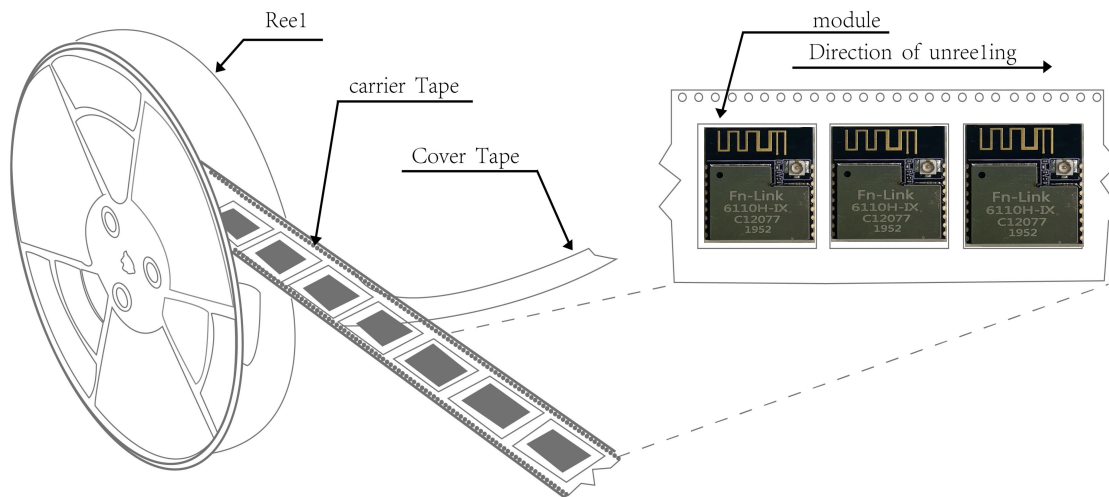# 10. Package Information

10.1 Reel

A roll of 800pcs

Figure 10-1 Package reel Reference

10.2 Carrier Tape Detail

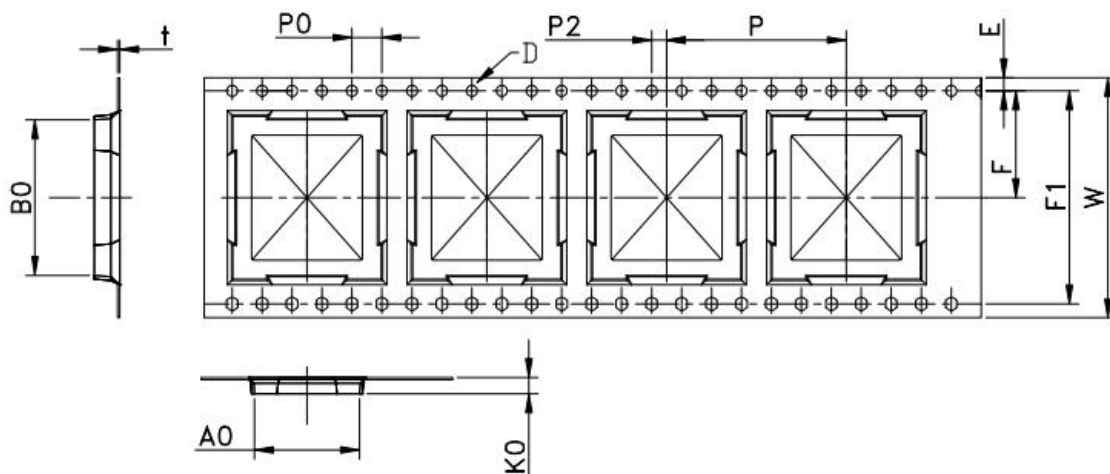| ITEM	W	A0	B0	D	E	F	F1	K0	P0	P2	P	T
DIM	32	18.40	20.30	1.5	1.75	14.20	28.4	3.50	4.0	2.0	24.0	0.30
TOLE	+0.3 −0.3	±0.15	±0.15	+0.1 −0.0	±0.1	±0.15	±0.10	±0.10	±0.1	±0.15	±0.1	±0.05

Figure 10-2 Carrier tape detail

10.3 Packaging Detail
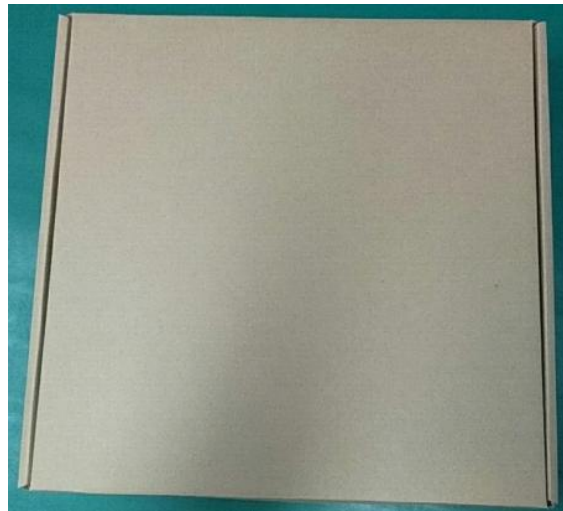
the take-up package

Using self-adhesive tape
Size of black tape:32mm*20.2m   the cover tape :25.5mm*20.2m
Color of plastic disc: blue

NY bag size:415mm*450mm

size ：350*350*35mm