FN-LINK欧智通

PRODUCT SPECIFICATION

6192E-UC

Wi-Fi Single-band 2x2 11n Module Datasheet

Version:v1.2

6192E-UC Module Datasheet

Ordering Information	Part NO.	Description
	FG6192EUCX-00	RTL8192FC,802.11b/g/n ,2T2R,12.2*12.9,USB2.0

Customer: _____

Customer P/N:_____

Signature:_____

Date:_____

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Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2020/08/13	New version	LXY	LXY	LGP
V1.1	2021/06/24	Revise TX power spec.	LXY	LXY	QJP
V1.2	2022/03/02	Update the specification format change the standaard to ±2dbm Modify Interface Circuit time series	Fc	LXY	QJP

1. General Description

1.1 Introduction

6192E-UC base on RTL8192FC complied with IEEE 802.11 b/g/n standard from 2.4G-2.5GHz. Support 300Mbps high speed wireless network connection with USB interface.

1.2 Description

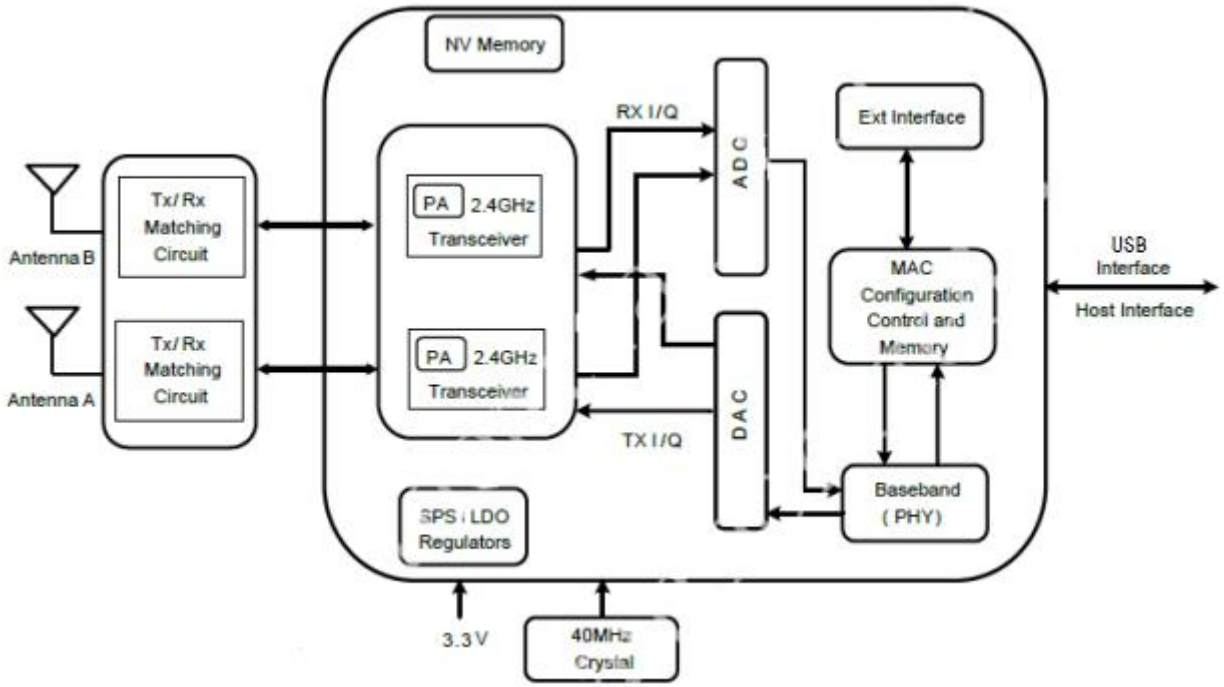
Model Name	6192E-UC
Product Description	Support Wi-Fi functionalists
Dimension	L x W x H: 12.2 x 12.9 x 1.7 (typical) mm
Wi-Fi Interface	Support USB V1.0/1.1/2.0
OS supported	Android /Linux/ Win CE /iOS /XP/WIN7/WIN10
Operating temperature	-10°C to 70°C
Storage temperature	-40°C to 85°C

2. Features

General Features

- 12.2x12.9mm, 3.3V power in
- RTL8192FC.
- Complete 802.11n 2x2 MIMO solution for 2.4GHz, maximum data rate up to 300Mbps using 40Mhz bandwidth.
- Complies with USB2.0 for WLAN.

3. Block Diagram



4. General Specification

4.1 WI-FI Specification

Feature	**Description**	
WLAN Standard	IEEE 802.11 b/g/n Wi-Fi compliant	
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)	
Number of Channels	2.4GHz：Ch1 ~ Ch14	
Test Items	**Typical Value**	**EVM**
Output Power	802.11b /11Mbps : 17dBm ± 2 dB	EVM ≤ -10dB
	802.11g /54Mbps : 16dBm ± 2 dB	EVM ≤ -25dB
	802.11n /MCS7 : 16dBm ± 2 dB	EVM ≤ -28dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	±20ppm	
Test Items	**TYP Test Value**	**Standard Value**

SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps	PER @ -88 dBm	≤-83
	- 2Mbps	PER @ -87 dBm	≤-80
	- 5.5Mbps	PER @ -85 dBm	≤-79
	- 11Mbps	PER @ -82 dBm	≤-76
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps	PER @ -86 dBm	≤-85
	- 9Mbps	PER @ -85 dBm	≤-84
	- 12Mbps	PER @ -84 dBm	≤-82
	- 18Mbps	PER @ -82 dBm	≤-80
	- 24Mbps	PER @ -80 dBm	≤-77
	- 36Mbps	PER @ -77 dBm	≤-73
	- 48Mbps	PER @ -73 dBm	≤-69
	- 54Mbps	PER @ -71 dBm	≤-65
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0	PER @ -83 dBm	≤-82
	- MCS=1	PER @ -82 dBm	≤-79
	- MCS=2	PER @ -80 dBm	≤-77
	- MCS=3	PER @ -78 dBm	≤-74
	- MCS=4	PER @ -75 dBml	≤-70
	- MCS=5	PER @ -71 dBm	≤-66
	- MCS=6	PER @ -69 dBm	≤-65
	- MCS=7	PER @ -67 dBm	≤-64
SISO Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0	PER @ -82 dBm	≤-79
	- MCS=1	PER @ -81 dBm	≤-76
	- MCS=2	PER @ -80 dBm	≤-74
	- MCS=3	PER @ -76 dBm	≤-71
	- MCS=4	PER @ -72 dBm	≤-67
	- MCS=5	PER @ -68 dBm	≤-63
	- MCS=6	PER @ -66 dBm	≤-62
	- MCS=7	PER @ -65 dBm	≤-61

5. ID setting information

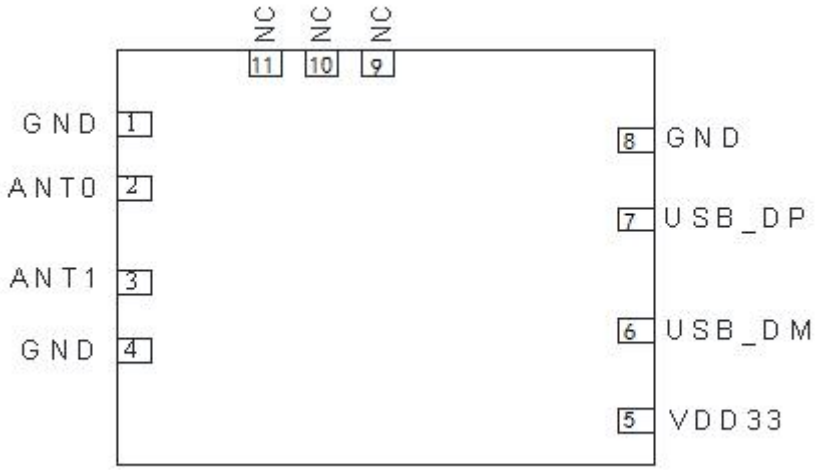
WI-FI

Vendor ID	-
Product ID	-

6. Pin Definition

6.1 Pin Outline

< TOP VIEW >



6.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	GND	—	Ground connections	
2	ANT 0	I/O	RF I/O port0	
3	ANT 1	I/O	RF I/O port1	
4	GND	—	Ground connections	
5	VDD33	P	Main power voltage source input 3.3V	3.3V
6	USB_DM	I/O	USB D-	
7	USB_DP	I/O	USB D+	
8	GND	—	Ground connections	
9	NC	—	Floating (Don’t connected to ground)	
10	NC	—	Floating (Don’t connected to ground)	
11	NC	—	Floating (Don’t connected to ground)	

P:POWER I:INPUT O:OUTPUT

7. Electrical Specifications

7.1 Power Supply DC Characteristics

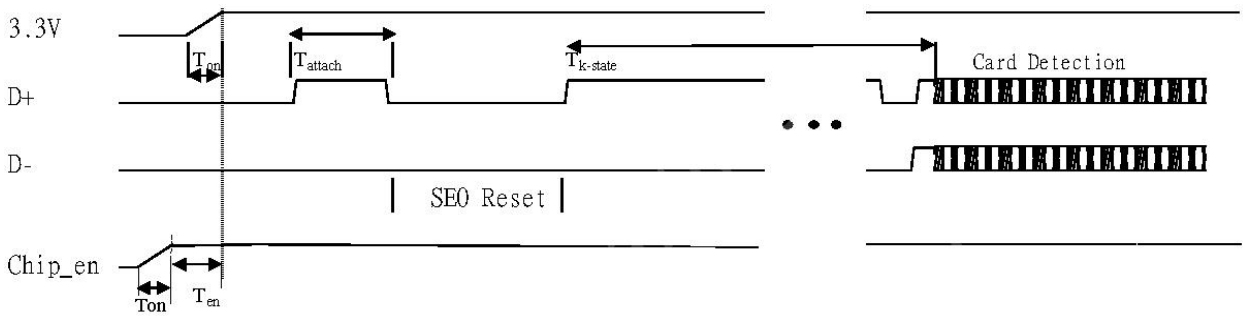
	MIN	TYP	MAX	Unit
Operating Temperature	-10	25	70	deg.C
VCC33	3.0	3.3	3.6	V

7.2 Power Consumption

		VCC33 = 3.3V(Unit:mA)
Power Consumption	Wi-Fi on Mode	115
	TX (2.4G 11b)	308.7
	TX (2.4G HT20)	231
	TX (2.4G HT40)	177
	RX (2.4G HT40)	118.6

7.3 Interface Circuit time series

7.3.1 USB Bus during Power On Sequence



T_{on}: The main power ramp up duration

T_{attach}: USB attach state

$T_{k\text{-}state}$: the duration from resister attached to USB host starting card detection procedure

T_{en}: The time interval from stable chip_en to 3.3V power supplied. It is worth noting that 3.3V should be powered on after chip_en is stable.

The power on flow description:

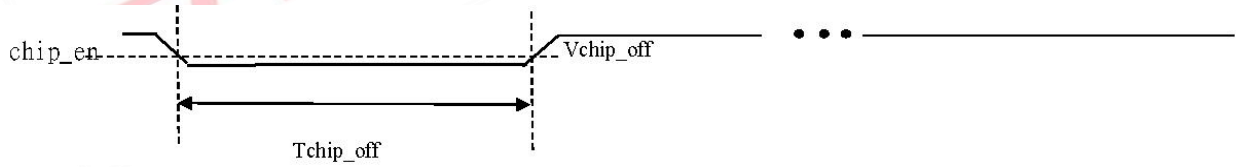
After main 3.3V ramp up, the internal power on reset is released by power ready detection circuit and the power management unit will be enabled. The power management unit enables the internal regulator and clock circuits.

The power management unit also enables the USB circuits.

USB analog circuits attach resisters to indicate the insertion of the USB device

	Unit	Min	Typical	Max
T_{on}	ms	0.25	1.5	5
T_{attach}	ms	2	7	--
$T_{k\text{-}state}$	ms	50	250	--
T_{en}	ms	0	0	--

7.3.2 Chip_en reset Power Sequence

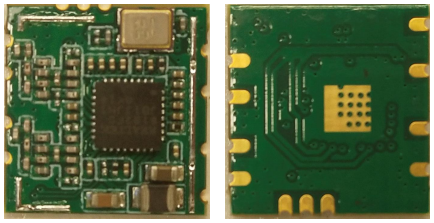
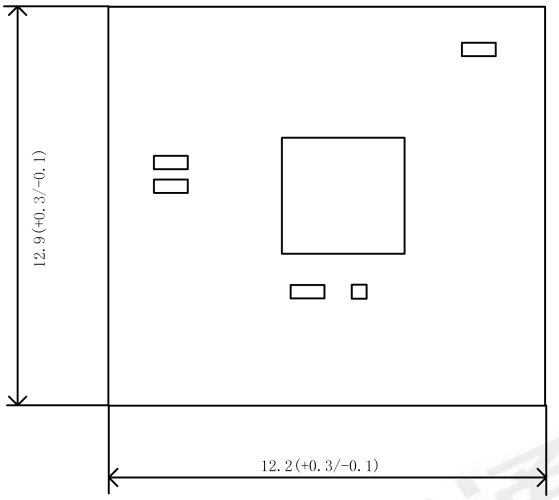
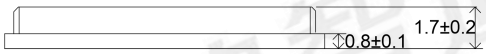


	Min	Typical	Max	Unit	Description
T_{chip_off}	10	100	--	ms	Chip_en reset time
V_{chip_off}	--	--	0.4	V	Chip_en reset voltage

When chip_en reset and on afterward, the voltage of chip_en must keep lower than Vchip_off, and the chip_en keeping off duration must be more than Tchip_off

8. Size reference

8.1 Module Picture

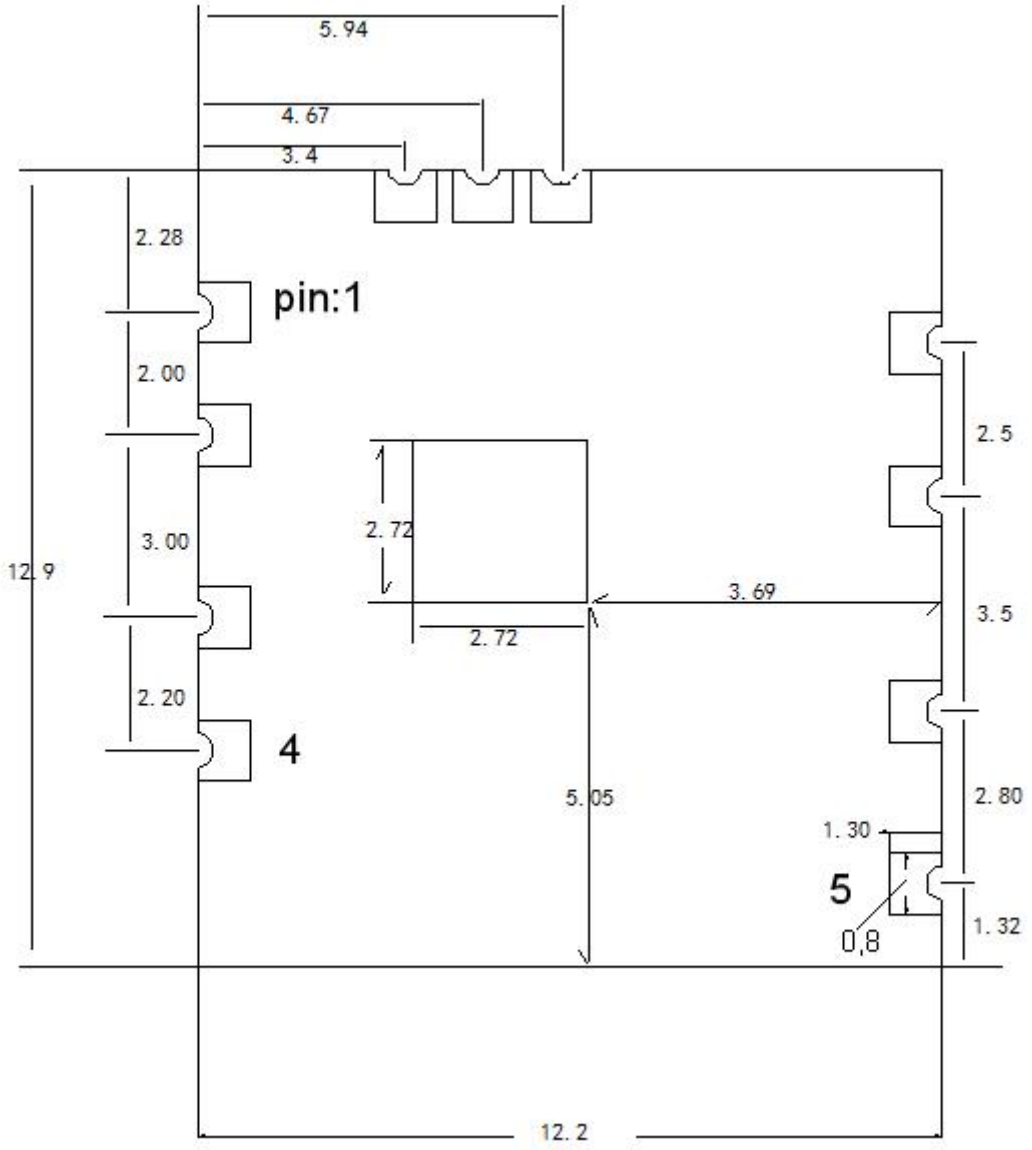
<table>
<tr><td>L x W : 12.2 x 12.9 (+0.3/-0.1) mm
  </td><td> 
</td></tr>
<tr><td>H: 1.7 (±0.2) mm</td><td> 
</td></tr>
<tr><td>Weight</td><td>0.44g</td></tr>
</table>

8.2 Marking Description

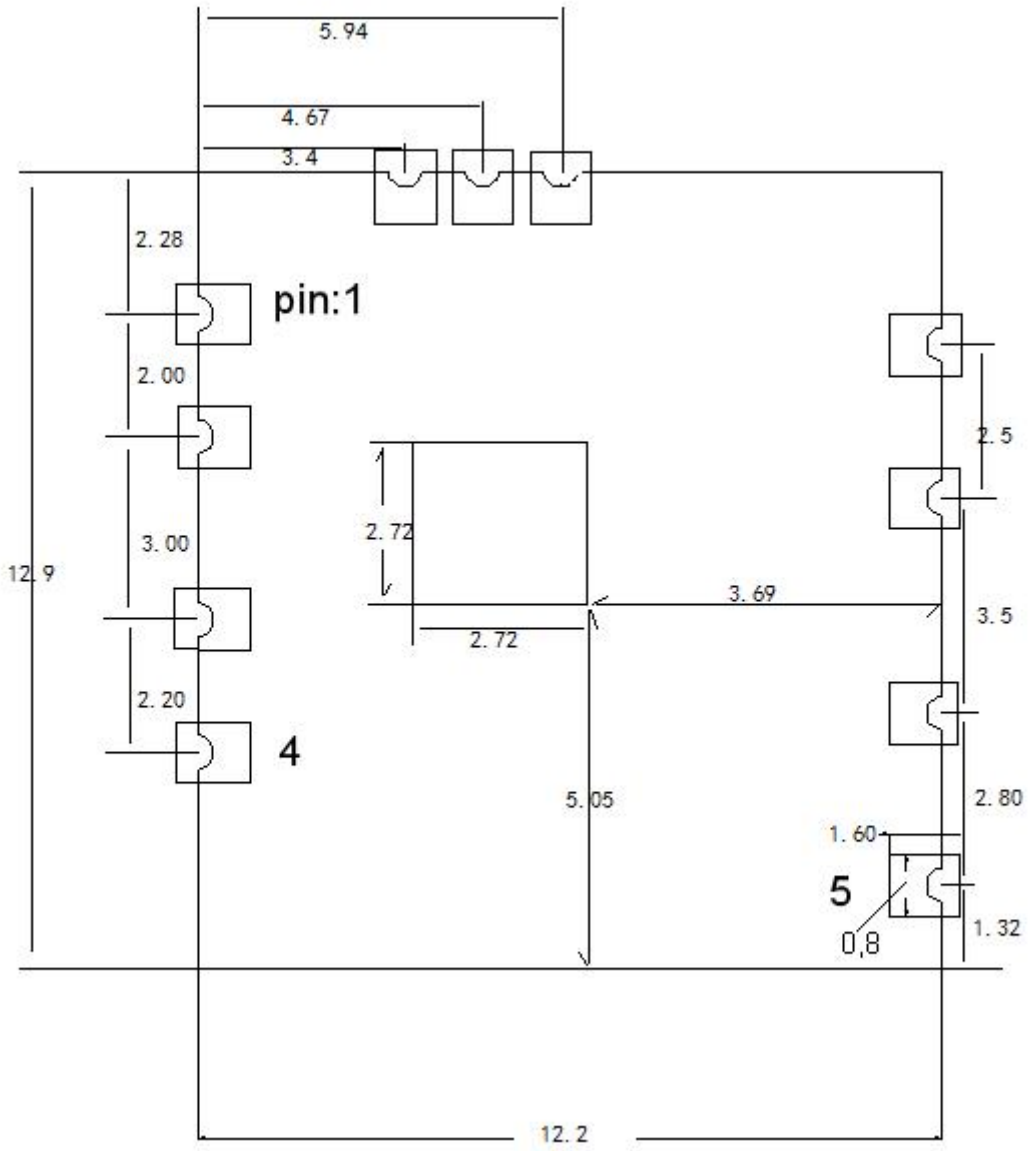
< TOP VIEW >

8.3 Physical Dimensions

<TOP View>



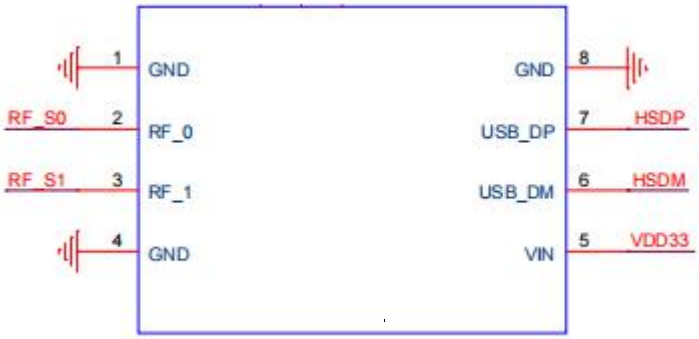
8.4 Layout Recommendation



9. The Key Material List

Item	Part Name	Description	Manufacturer
1	TVS	0201 4V 0.05pF 15KV TVS	Murata,Sunlord,WAYON
2	Inductor	0806 2.2uH,±20%,1200mA	Sunlord,Cenke,Ceaiya,
3	Crystal	SMD3.2X2.5,40MHz,CL=15pF, 10ppm	TKD,ECEC,Hosonic,JWT
4	Chipset	RTL8192FC-CG,QFN-32,4x4mm	Realtek
5	PCB	6192E-UC Green,4L,12.2X12.9X0.8mm	XY-PCB,KX-PCB,SL-PCB,Sunlord

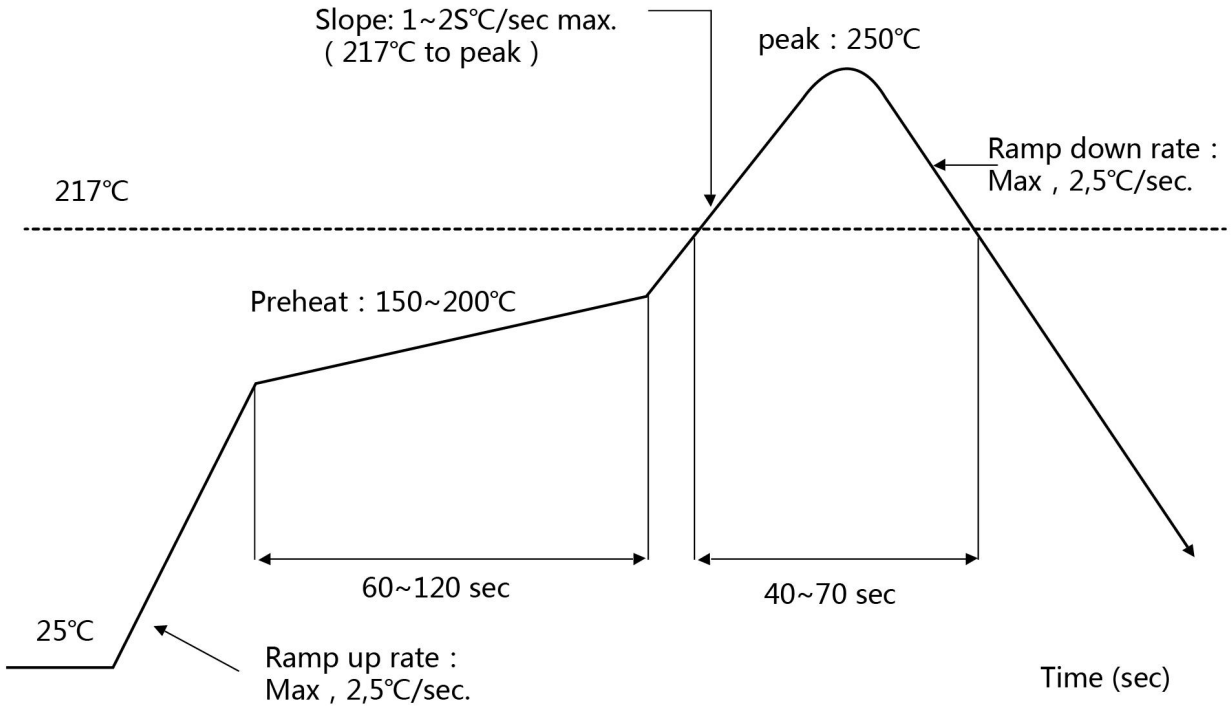
10. Reference Design



1. S0 /S1 2antenna trace as short as possible,better added πcircuit for matching tunning ;
2. USB trace control as 90ohm impedance;
3. 3V3 power supply added 2 filter capacitor (10uf+0.1uf)

11. Recommended Reflow Profile

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



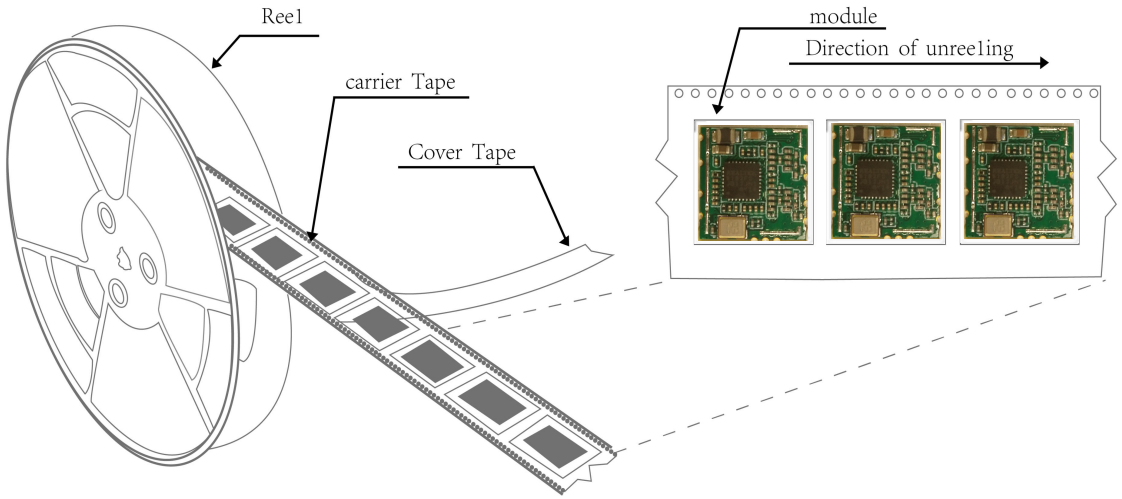
12. RoHS compliance

All hardware components are fully compliant with EU RoHS directive

13. Package

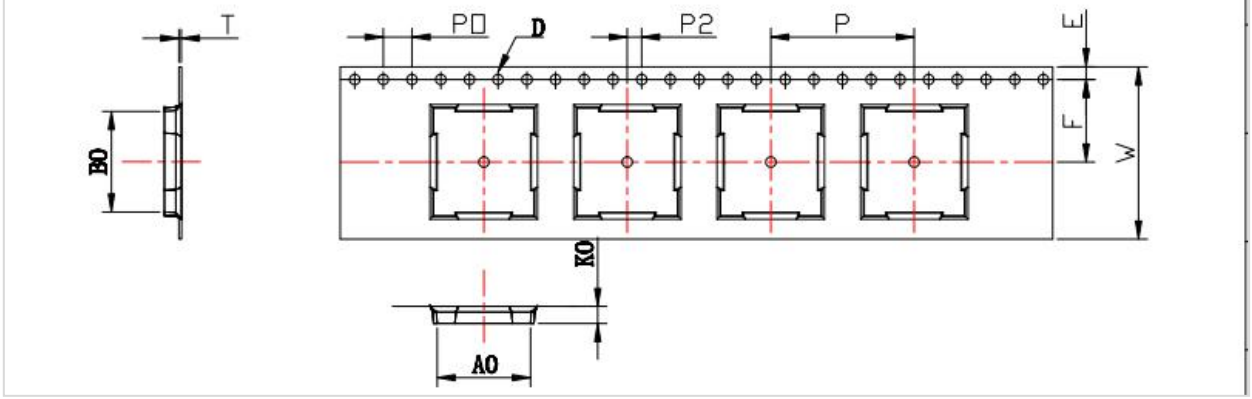
13.1 Reel

A roll of 1500pcs



13.2 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.50	13.50	1.50	11.5	1.75	2.40	4.0	2.0	20.0	0.30
TOLE	+0.3 -0.3	±0.15	±0.15	+0.1 -0.0	+0.1 -0.1	±0.1	±0.10	±0.1	±0.1	±0.1	±0.05



13.3 Packaging Detail

the take-up package

Using self-adhesive tape

Size of black tape: 24mm*32.6m the cover tape :21.3mm*32.6m

Color of plastic disc: blue

NY bag size:460mm*385mm size ： 350*350*35mm

The packing case size:350*210*370mmg

14. Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care
all the relatives requirements for using this kind of components.
Moreover, the customer has to take care of the following conditions:

a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)

b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5

c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition

b) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected

d) Baking is required if conditions b) or c) are not respected

e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more