

H255E-U

Wi-Fi Dual-band 1X1 802.11a/b/g/n

USB Module Datasheet

Version V1.5



H255E-U Module Datasheet

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Customer Approval : _____ Company

Title

Signature

Date

Fn-Link

Revision History

Version	Date	Revision Content	Draft	Approved
1.0	2020/11/13	New version	Lxy	Szs
1.1	2020/12/17	Update PCB to 0.8mm and 5G power to 13.	Lxy	Szs
1.2	2020/12/28	更新載帶信息	Lxy	Szs
1.3	2021/05/08	Update material list	Lxy	Szs
1.4	2021/08/07	Update P/N description	LXY	QJP
1.5	2023/07/13	Update module dimension	LXY	QJP

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1 Overview

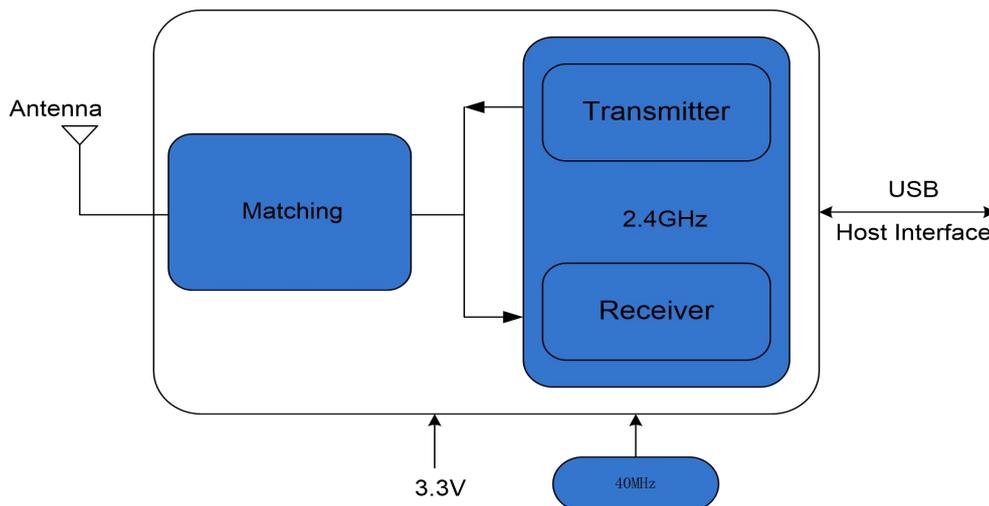
1.1 Introduction

H255E-U is a low-cost and low-power consumption module which has all of the Wi-Fi functionalities. It is a highly-integrated IEEE 802.11 a/b/g/n MAC/Baseband/RF WLAN single chip. For Wireless LAN(WLAN)operation. The integrated module provides USB interface for Wi-Fi . The module provides simple legacy and 20MHz/40MHz 2.4G+5G co-existence mechanisms to ensure backward and network compatibility.

1.2 Features

- Operate at ISM frequency bands (2.4GHz)
- Support 5G frequency band
- USB2.0 for Wi-Fi
- IEEE standards support: IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n
- Enterprise level security which can apply WPA/WPA2 certification for Wi-Fi.
- Wi-Fi 1 T 1R allow data rates supporting up to 150 Mbps PHY rates
- With IPEX connector

Block Diagram:



1.3 General Specification

Model Name	H255E-U
Main Chipset	SV6255P/SV6256P

Product Description	Support Wi-Fi functionality
Dimension	L x W x H: 12.2 x 14 x1.8 mm (typical)
Wi-Fi Interface	Support USB2.0
Operating temperature	-10°C to 70°C
Storage temperature	-40°C to 85°C
RoHS	All hardware components are fully compliant with EU RoHS directive

1.4 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	-10	25	70	deg.C
VCC33	3.15	3.3	3.45	V

※1.5 EEPROM Information

WI-FI

Vendor ID	-
Product ID	-

2 Wi-Fi RF Specification

2.1 2.4GHz RF Specification

Feature	Description			
WLAN Standard	IEEE 802.11 b/g/n Wi-Fi compliant			
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)			
Number of Channels	2.4GHz: Ch1 ~ Ch14			
Spectrum Mask	Min. b/g/n	Typ. b/g/n	Max. b/g/n	Unit b/g/n
1st side lobes(to fc ± 11MHZ)	-	-43/-30/-40	-	dBr
2st side lobes(to fc ± 22MHZ)	-	-52/-33/-58	-	dBr
Freq. Tolerance	-20/-20/-20	-	20/20/20	ppm
Test Items	Typical Value			EVM
Output Power	802.11b /11Mbps : 17dBm ± 2 dB			EVM ≤ -9dB
	802.11g /54Mbps : 13dBm ± 2 dB			EVM ≤ -26dB
	802.11n /MCS7 : 13dBm ± 2 dB			EVM ≤ -28dB
Test Items	TYP Test Value			Standard Value

SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -92 dBm	≤-83
	- 2Mbps PER @ -90 dBm	≤-80
	- 5.5Mbps PER @ -87 dBm	≤-79
	- 11Mbps PER @ -85 dBm	≤-76
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -89 dBm	≤-85
	- 9Mbps PER @ -88 dBm	≤-84
	- 12Mbps PER @ -87 dBm	≤-82
	- 18Mbps PER @ -84 dBm	≤-80
	- 24Mbps PER @ -81 dBm	≤-77
	- 36Mbps PER @ -78 dBm	≤-73
	- 48Mbps PER @ -73 dBm	≤-69
	- 54Mbps PER @ -70 dBm	≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -87 dBm	≤-85
	- MCS=1 PER @ -84 dBm	≤-82
	- MCS=2 PER @ -82 dBm	≤-80
	- MCS=3 PER @ -78 dBm	≤-77
	- MCS=4 PER @ -75 dBm	≤-73
	- MCS=5 PER @ -70 dBm	≤-69
	- MCS=6 PER @ -69 dBm	≤-68
	- MCS=7 PER @ -67 dBm	≤-66
SISO Receive Sensitivity (11n ,40MHz) @10% PER	- MCS=0, PER @ -86 dBm	≤-82
	- MCS=1, PER @ -83 dBm	≤-79
	- MCS=2, PER @ -81 dBm	≤-77
	- MCS=3, PER @ -78 dBm	≤-74
	- MCS=4, PER @ -74 dBm	≤-70
	- MCS=5, PER @ -69 dBm	≤-66
	- MCS=6, PER @ -68 dBm	≤-65
	- MCS=7, PER @ -66 dBm	≤-64
Maximum Input Level	802.11b : -10 dBm	
	802.11g/n : -20 dBm	
Antenna Reference	Small antennas with 0~2 dBi peak gain	

2.2 5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11 a/n Wi-Fi compliant
Frequency Range	5150MHz ~ 5850 GHz (5 GHz Band)

Spectrum Mask	Min. b/g/n	Typ. b/g/n	Max. b/g/n	Unit b/g/n
1st side lobes(to fc ± 11MHZ)	-	-43/-30/-40	-	dBr
2st side lobes(to fc ± 22MHZ)	-	-52/-33/-58	-	dBr
Freq. Tolerance	-20/-20/-20	-	20/20/20	ppm
Test Items	Typical Value			EVM
Output Power	802.11a /54Mbps : 13dBm ± 2 dB			EVM ≤ -26dB
	802.11n /MCS7 : 13dBm ± 2 dB			EVM ≤ -28dB
Test Items	TYP Test Value			Standard Value
SISO Receive Sensitivity (11a,20MHz) @10% PER	- 6Mbps	PER @ -89 dBm		≤-85
	- 9Mbps	PER @ -88 dBm		≤-84
	- 12Mbps	PER @ -87 dBm		≤-82
	- 18Mbps	PER @ -84 dBm		≤-80
	- 24Mbps	PER @ -81 dBm		≤-77
	- 36Mbps	PER @ -78 dBm		≤-73
	- 48Mbps	PER @ -73 dBm		≤-69
	- 54Mbps	PER @ -70 dBm		≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0	PER @ -87 dBm		≤-85
	- MCS=1	PER @ -84 dBm		≤-82
	- MCS=2	PER @ -82 dBm		≤-80
	- MCS=3	PER @ -78 dBm		≤-77
	- MCS=4	PER @ -75 dBm		≤-73
	- MCS=5	PER @ -70 dBm		≤-69
	- MCS=6	PER @ -69 dBm		≤-68
	- MCS=7	PER @ -67 dBm		≤-67
SISO Receive Sensitivity (11n ,40MHz) @10% PER	- MCS=0,	PER @ -86 dBm		≤-82
	- MCS=1,	PER @ -83 dBm		≤-79
	- MCS=2,	PER @ -81 dBm		≤-77
	- MCS=3,	PER @ -78 dBm		≤-74
	- MCS=4,	PER @ -74 dBm		≤-70
	- MCS=5,	PER @ -69 dBm		≤-66
	- MCS=6,	PER @ -68 dBm		≤-65
	- MCS=7,	PER @ -66 dBm		≤-64
Maximum Input Level	802.11a/n : -20 dBm			
Antenna Reference	Small antennas with 0~2 dBi peak gain			

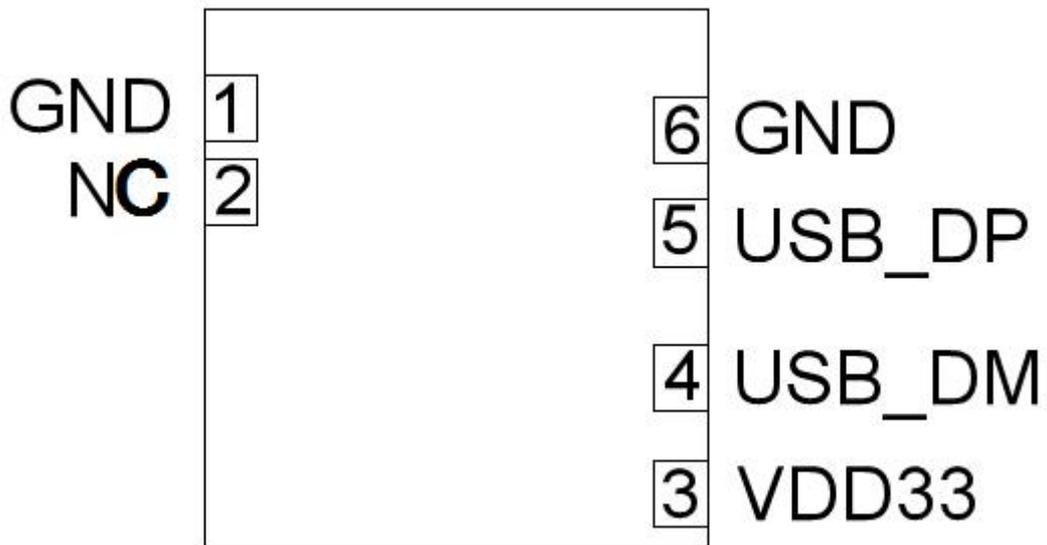
3 Power Consumption

Vcc=3.3V, Ta=25° C, unit: mA	
current	Typ.
2.4G Mode	
802.11b	11Mbps
TX mode	292.9
RX mode	116.1
802.11g	54Mbps
TX mode	262.6
RX mode	115.9
802.11n HT20	MCS7
TX mode	264.1
RX mode	115.9
802.11n HT40	MCS7
TX mode	265.4
RX mode	127.2
Standby mode	53
5G Mode	
802.11g	54Mbps
TX mode	328.9
RX mode	145.7
802.11n HT20	MCS7
TX mode	327.3
RX mode	145.8
802.11n HT40	MCS7
TX mode	331.3
RX mode	156.5

4 Pin Assignments

4.1 Pin Outline

< TOP VIEW >



4.2 Pin Definition

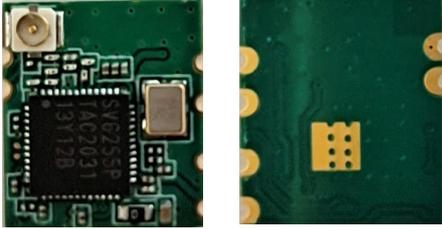
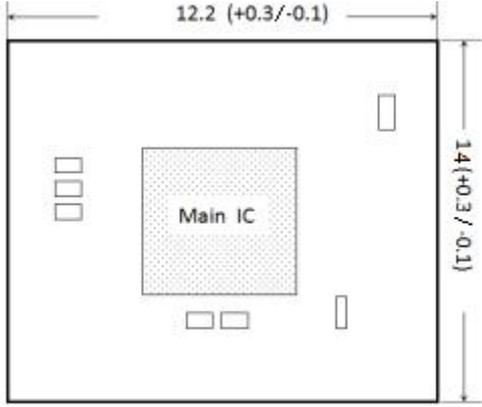
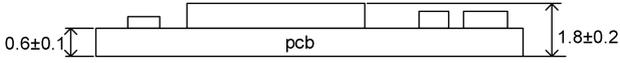
NO	Name	Type	Description	Voltage
1	GND	—	Ground connections	
2	NC	I/O	No connection	
3	VDD33	—	Main power voltage source input 3.3V	3.3V
4	USB_DM	I/O	USB2.0 D- for WLAN	
5	USB_DP	I/O	USB2.0 D+ for WLAN	
6	GND	—	Ground connections	

P:POWER I:INPUT O:OUTPUT

5 Dimensions

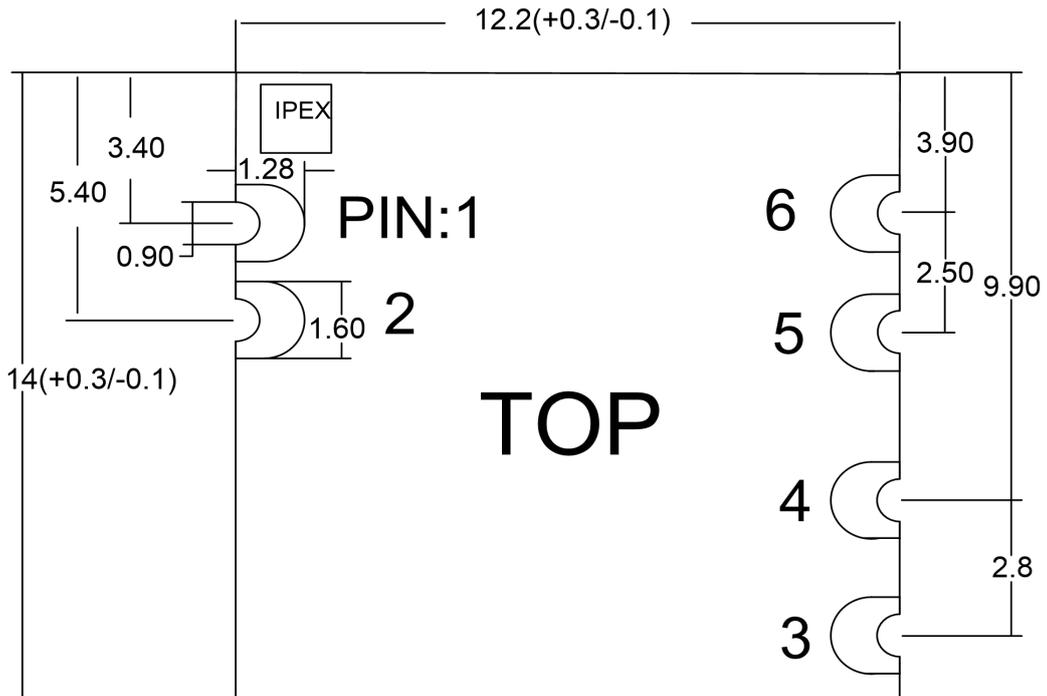
5.1 Physical Dimensions

(Unit: mm)

<p>< TOP VIEW > L x W: 12.2 x 14 mm</p> 	
<p>< Side View > H: 1.8 mm</p>	
<p>Weight</p>	<p>0.37g</p>

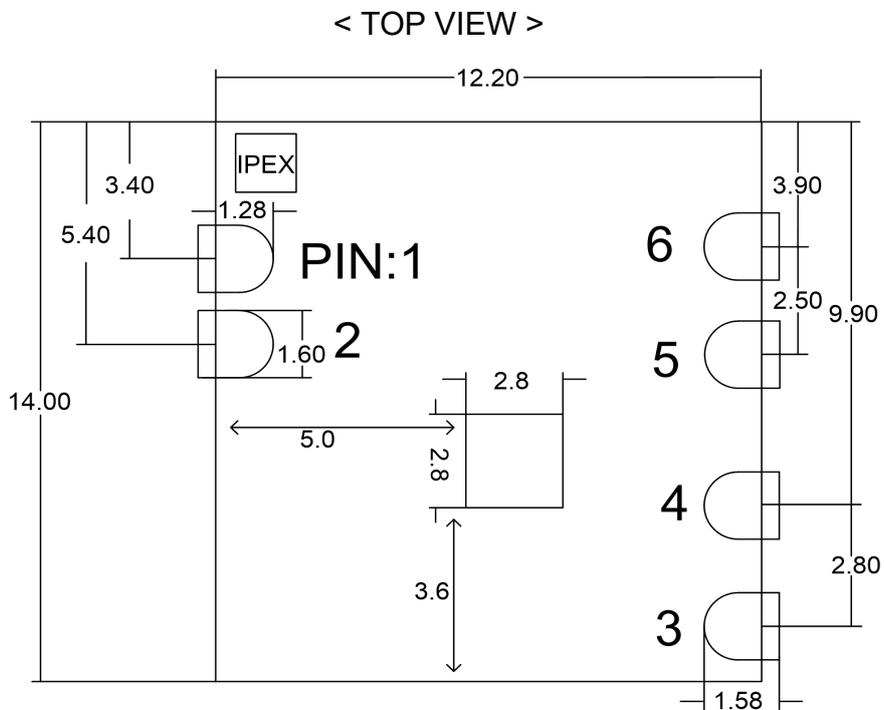
5.2 Module Physical Dimensions

(Unit: mm)

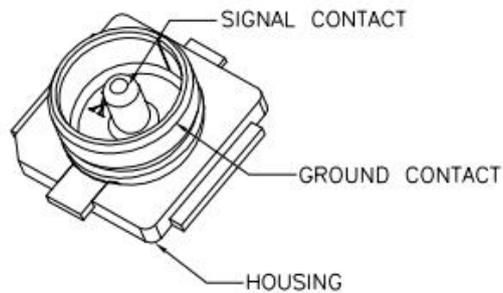
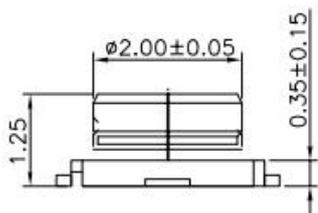
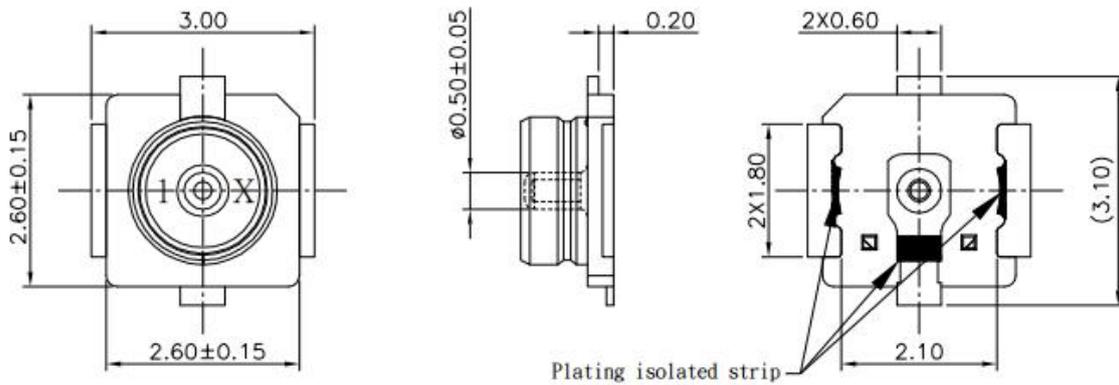
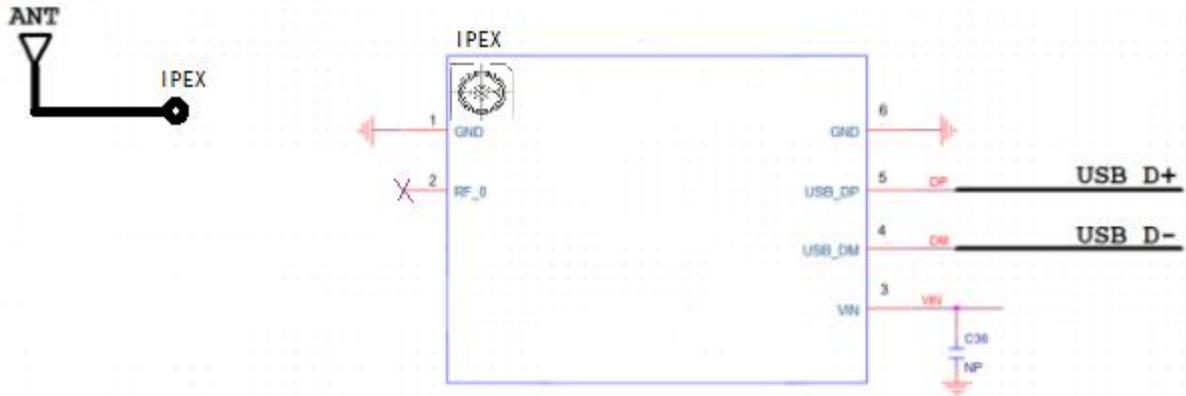


5.3 Layout Recommendation

(Unit: mm)



6 Reference Design



Note:

1. IPEX 为第 1 代版本;

7 Ordering Information

Part No.	Description
FGH255EUXX-01	SV6255P/SV6256P,a/b/g/n,Wi-Fi,1T1R,12.2X14mm,USB , IPEX 座子

8 The Key Material List

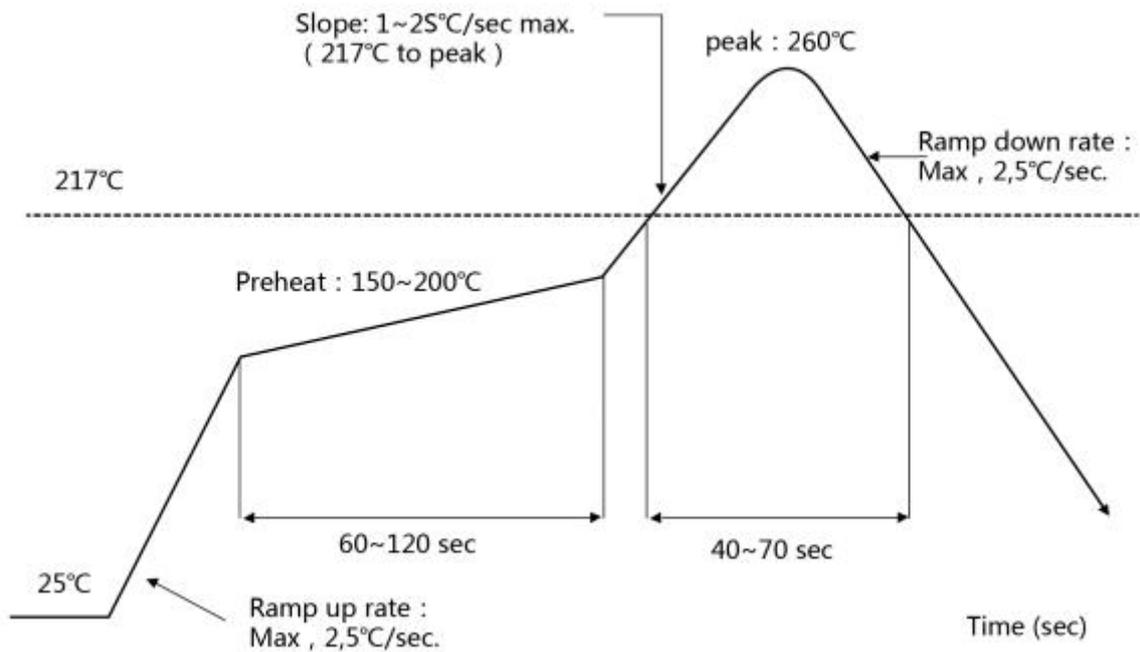
Crystal	3225 40Mhz ±10ppm	ECEC,TKD,HOSONIC
PCB	H255E-U PCB V2.0 12.2x14-0.6mm H255E-U PCB V4.0 12.2x14-0.8mm	翔宇,顺络, 科翔, 深联
Chipset	SV6255P/SV6256P,802.11b/g/n MAC/BB/Radio with USB/SDIO Interface	iComm-semi
IPEX	1代 IPEX 座	佳沃,创迪尔,启明盛

9 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : ≤260°C

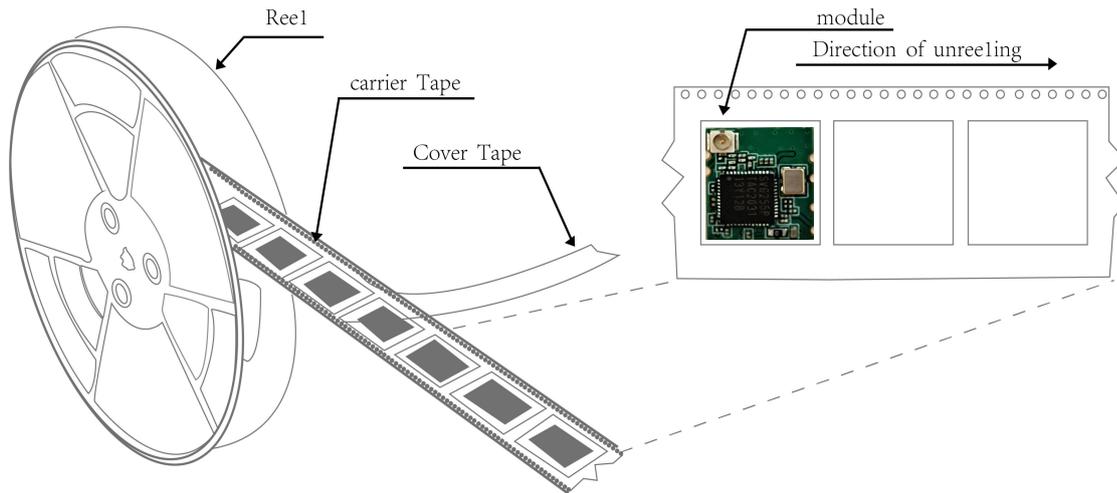
Number of Times : ≤2 times



10 Package Information

10.1 Reel

A roll of 1500pcs



10.2 Packaging Detail

the take-up package



Using self-adhesive tape

Size of black tape:24mm*32.6m the cover tape :21.33mm*32.6m

Color of plastic disc:blue

A roll of 2000pcs



NY bag size:460mm*385mm



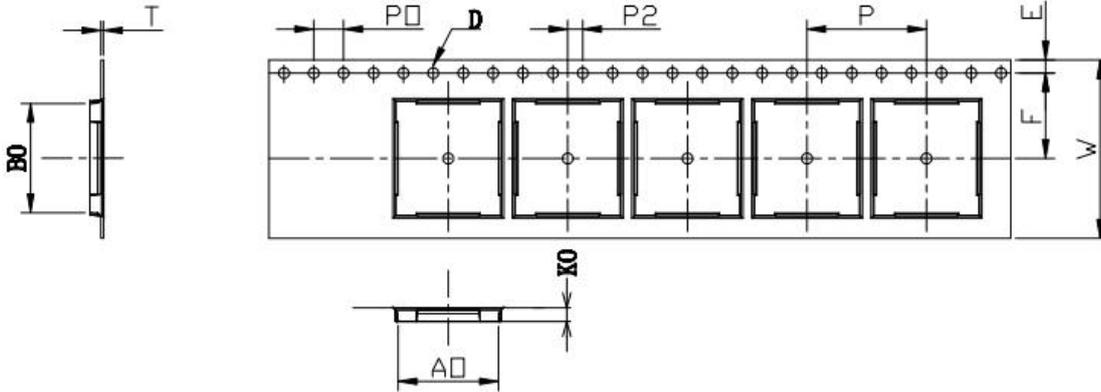
size : 350*350*35mm



The packing case size:350*210*370mm

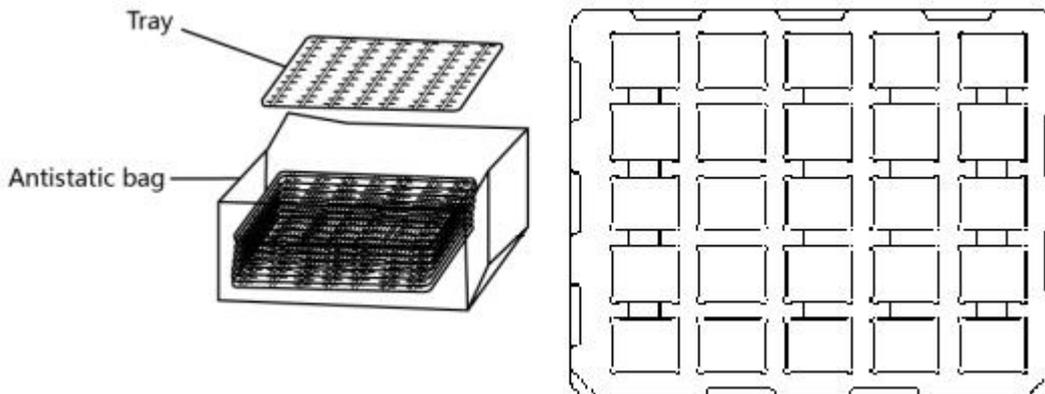
10.3 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.30	14.30	1.50	11.5	1.75	1.95	4.0	2.0	16.0	0.30
TOLE	+0.3 -0.3	±0.10	±0.10	+0.1 -0.0	+0.1 -0.1	±0.1	±0.10	±0.1	±0.1	±0.1	±0.05



10.4 Tray

Use pallet packaging for less than 300 pieces



11 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