

PRODUCT SPECIFICATION

6221CPUC

Wi-Fi Dual-band 1T1R 11ac + Bluetooth 5.0

Combo Module

Version:v3.0

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

Office: 14th floor, Block B, phoenix zhigu, Xixiang Street, Baoan District, Shenzhen

Factory: NO.8, Litong RD., Liuyang Economic & Technical Development Zone, Changsha, CHINA

TEL:+86-755-2955-8186

Website:www.fn-link.com

6221CPUC Module Datasheet

Ordering Information	Part NO.	Description
	FG6221CPUC-00	RTL8821CE-VC,802.11a/b/g/n/ac+BT5.0, 1T1R, 12*16, PCIe/USB
	FG6221CPUC-01	RTL8821CE-CG,802.11a/b/g/n/ac+BT5.0,1T1R,12*16, PCIe/USB
	FG6221CPUC-03	RTL8821CE-VB-CG,802.11a/b/g/n/ac +BT4.2,1T1R,12*16, PCIe/USB
	FG6221CPUC-RTC	RTL8821CE-VC,802.11a/b/g/n/ac+BT5.0, 1T1R, 12*16, PCIe/USB,,PCB 0.6mm
	FG6221CPUC-0M	RTL8821CE-VC,802.11a/b/g/n/ac+BT4.2, 1T1R, 12*16, PCIe/USB,关闭 modernstandbyL1SS,0.6PCB
	FG6221CPUC-GSR	RTL8821CE-VC,802.11a/b/g/n/ac+BT4.2, 1T1R, 12*16, PCIe/USB,0.6PCB

Target power:

2.4G : 17/15/14

5G: 13/12/11

CONTENTS

1. General Description	5
1.1 Introduction	5
1.2 Description	5
2. Features	6
3. Block Diagram	7
4. General Specification	7
4.1 2.4GHz RF Specification	7
4.2 5GHz RF Specification	9
4.3 Bluetooth Specification	11
5. ID setting information	12
6. Pin Definition	13
6.1 Pin Outline	13
6.2 Pin Definition details	14
7. Electrical Specifications	16
7.1 Power Supply DC Characteristics	16
7.2 Power Consumption	16
7.3 Interface Circuit time series	17
7.3.1 PCIe Bus during Power On Sequence	17
7.3.2 PCIe PERST# Timing Sequence	18
7.3.3 Power Off Sequence	18
8. Size reference	19
8.1 Module Picture	19
8.2 Marking Description	20
8.3 List of certified information	22
8.4 Physical Dimensions	23
8.5 Layout Recommendation	24
9. The Key Material List	24
10. Reference Design	25
10.1 Reference Design	25
10.2 Connector Specification	26
11. Recommended Reflow Profile	27
12. RoHS compliance	27
13. Package	28
13.1 Reel	28
13.2 Carrier Tape Detail	28
13.3 Packaging Detail	29
13.4 Tray	29

14. Moisture sensitivity 30

Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2018/12/14	New version	Lzm	Lzm	Jacky
V1.1	2018/12/18	Modify the telephone number	Lzm	Lzm	Lxy
V1.2	2018/12/25	Modify the office and TEL	Lzm	Lzm	Lxy
V1.3	2019/07/08	Update timing information	Lxy	Lxy	Szs
V1.4	2020/07/16	Delete '2x2' information	Lxy	Lxy	Lgp
V1.5	2020/11/17	Update material list	Lxy	Lxy	Szs
V1.6	2021/03/05	Update BT feature	Lxy	Lxy	Szs
V1.7	2021/06/09	Added -VC chipset version	Lxy	Lxy	Szs
V1.8	2022/01/05	1.Update the specification format 2.The RF index was changed to $\pm 2\text{dbm}$ 3.Update the list of critical materials 4.Changed Bluetooth support to V5.0	FC	LXY	QJP
V1.9	2022/03/29	Add - 01 P/N	FC	LXY	QJP
V2.0	2023/01/09	Update material list	LXY	LXY	QJP
V2.1	2023/05/08	Add - 03 P/N	FC	LXY	QJP
V2.2	2023/08/17	Add - RTC P/N PCB thickness update to 0.6mm	LXP	LXY	QJP
V2.3	2023/10/24	Update antenna connector information	LXP	LXY	QJP
V2.4	2024/01/26	Add Part NO -0M 、 -RM、 -GSR Update material list	LXP	LXY	QJP
V2.5	2024/05/06	Delete Part NO -RM Update Ordering Information Description	LXP	LXY	QJP
V2.6	2024/08/16	Add Certificate No	LXP	LXY	QJP
V2.7	2024/10/11	Update Marking Description	LXP	LXY	QJP
V2.8	2024/10/21	Update Module Picture	LXP	LXY	QJP
V2.9	2024/10/29	Update Module Picture and Marking Description Update Certificate No	LXP	LXY	QJP
V3.0	2025/03/17	Update -03 Module Picture and -03 Marking Description	LXP	LXY	QJP

1. General Description

1.1 Introduction

Fn-Link Technology would like to announce 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/ac MAC/Baseband/RF WLAN single chip. For Wireless LAN(WLAN)operation. The integrated module provides PCI-e interface for Wi-Fi . The module provides simple legacy and 20MHz/40MHz/80MHz co-existence mechanisms to ensure backward and network compatibility

The wireless module complies with IEEE 802.11 a/b/g/n/ac 1x1 SISO standard and it can achieve up to a speed of 433Mbps to connect the wireless LAN. The integrated module provides PCI-e interface for Wi-Fi, USB/ PCM interface for Bluetooth.

This compact module is a total solution for a combination of Wi-Fi and Bluetooth V5.0 technologies. The module is specifically developed for all portable devices.

1.2 Description

Model Name	6221CPUC
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W: 16x 12 (typical) mm
Wi-Fi Interface	Support PCI-e
BT Interface	USB / PCM
OS supported	Android /Linux/ Win CE /XP/WIN7/WIN10
Operating temperature	0°C to 70°C
Storage temperature	-55°C to 85°C

2. Features

General

- Highly integrated wireless local area network(WLAN) system-on-chip (SOC) for 5 GHZ 802.11ac, or 2.4G/5G 802.11n WLAN applications
- Supports 20/40MHz at 2.4GHz and supports 20/40/80MHz at 5GHz
- Supports Bluetooth for class1 and class2 power level transmissions without requiring an external PA
- -VC chipset support Modern standby feature

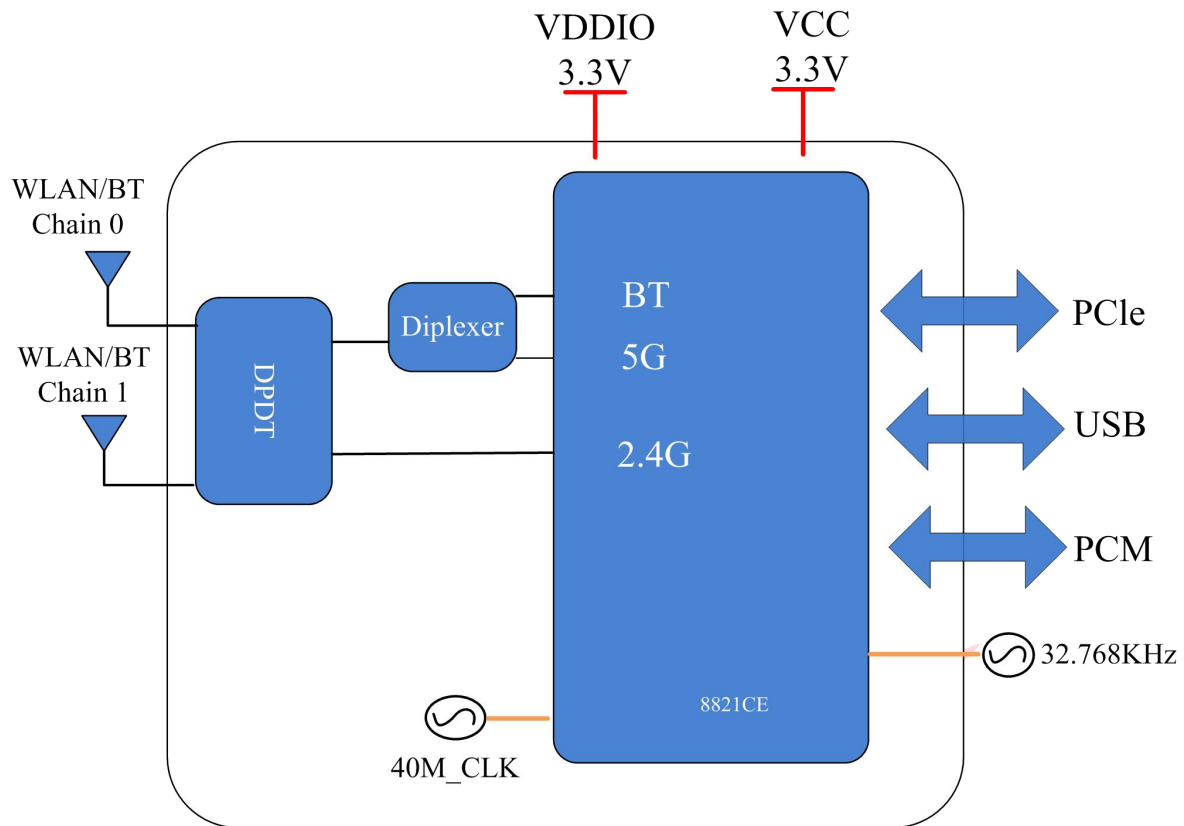
Host Interface

- Supports low power PCI-e interface for WLAN and USB/PCM interface for Bluetooth

Bluetooth Features

- Supports Bluetooth V4.2
- Support bluetooth 4.2system, compatible with BT v2.1+EDR
- for BT5.0, only support BT5.0 High duty cycle non-connectable advertising
- support BT 4.0 dual mode:simultaneous LE and BR/EDR
- Supports WLAN-Bluetooth coexistence and ISM-LTE coexistence.
- BT host digital interface:
 - USB1.1
 - PCM for audio data

3. Block Diagram



4. General Specification

4.1 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 ~ Ch13	
Test Items	Typical Value	EVM
Output Power	802.11b /11Mbps : 17dBm $\pm$ 2 dB	EVM $\leq$ -9dB
	802.11g /54Mbps : 15dBm $\pm$ 2 dB	EVM $\leq$ -25dB
	802.11n /MCS7 : 14dBm $\pm$ 2 dB	EVM $\leq$ -28dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	$\pm$ 20ppm	

Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -97dBm	≤-83
	- 2Mbps PER @ -93dBm	≤-80
	- 5.5Mbps PER @ -91dBm	≤-79
	- 11Mbps PER @ -88dBm	≤-76
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -92dBm	≤-85
	- 9Mbps PER @ -91dBm	≤-84
	- 12Mbps PER @ -88dBm	≤-82
	- 18Mbps PER @ -87dBm	≤-80
	- 24Mbps PER @ -83dBm	≤-77
	- 36Mbps PER @ -80dBm	≤-73
	- 48Mbps PER @ -76dBm	≤-69
	- 54Mbps PER @ -75dBm	≤-68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -91dBm	≤-85
	- MCS=1 PER @ -88dBm	≤-82
	- MCS=2 PER @ -85dBm	≤-80
	- MCS=3 PER @ -82dBm	≤-77
	- MCS=4 PER @ -79dBm	≤-73
	- MCS=5 PER @ -75dBm	≤-69
	- MCS=6 PER @ -74dBm	≤-68
	- MCS=7 PER @ -72dBm	≤-67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -88dBm	≤-82
	- MCS=1 PER @ -85dBm	≤-79
	- MCS=2 PER @ -82dBm	≤-77
	- MCS=3 PER @ -79dBm	≤-74
	- MCS=4 PER @ -76dBm	≤-70
	- MCS=5 PER @ -72dBm	≤-66
	- MCS=6 PER @ -70dBm	≤-65
	- MCS=7 PER @ -69dBm	≤-64
Maximum Input Level	802.11b : -10 dBm	
	802.11g/n : -20 dBm	

4.2 5GHz RF Specification

Conditions : VBAT=3.3V ; VDDIO=3.3V ; Temp:25°C

Feature	Description	
WLAN Standard	IEEE 802.11a/n/ac, Wi-Fi compliant	
Frequency Range	5.150 GHz ~ 5.850 GHz (5.0 GHz ISM Band)	
Number of Channels	5.0GHz: Please see the table1	
Output Power	802.11a /54Mbps : 13 dBm $\pm$ 2 dB	EVM $\leq$ -25dB
	802.11n /MCS7 : 12 dBm $\pm$ 2 dB	EVM $\leq$ -28dB
	802.11ac /MCS9 : 11 dBm $\pm$ 2 dB	EVM $\leq$ -32dB
Test Items	Test Value	Standard Value
Receive Sensitivity (11a, 20MHz) @10% PER	- 6Mbps PER @ -91dBm	$\leq$ -85
	- 9Mbps PER @ -88dBm	$\leq$ -84
	- 12Mbps PER @ -85dBm	$\leq$ -82
	- 18Mbps PER @ -84dBm	$\leq$ -80
	- 24Mbps PER @ -81dBm	$\leq$ -77
	- 36Mbps PER @ -78dBm	$\leq$ -73
	- 48Mbps PER @ -75dBm	$\leq$ -69
	- 54Mbps PER @ -74dBm	$\leq$ -68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -89dBm	$\leq$ -85
	- MCS=1 PER @ -85dBm	$\leq$ -82
	- MCS=2 PER @ -83dBm	$\leq$ -80
	- MCS=3 PER @ -80dBm	$\leq$ -77
	- MCS=4 PER @ -77dBm	$\leq$ -73
	- MCS=5 PER @ -72dBm	$\leq$ -69
	- MCS=6 PER @ -71dBm	$\leq$ -68
	- MCS=7 PER @ -69dBm	$\leq$ -67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -87dBm	$\leq$ -85
	- MCS=1 PER @ -82dBm	$\leq$ -82
	- MCS=2 PER @ -81dBm	$\leq$ -80
	- MCS=3 PER @ -77dBm	$\leq$ -76
	- MCS=4 PER @ -74dBm	$\leq$ -73
	- MCS=5 PER @ -71dBm	$\leq$ -68
	- MCS=6 PER @ -69dBm	$\leq$ -67
	- MCS=7 PER @ -69dBm	$\leq$ -65
Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0 PER @ -88dBm	$\leq$ -83
	- MCS=1 PER @ -85dBm	$\leq$ -82
	- MCS=2 PER @ -83dBm	$\leq$ -80

	- MCS=3	PER @ -81dBm	≤-75
	- MCS=4	PER @ -78dBm	≤-72
	- MCS=5	PER @ -73dBm	≤-68
	- MCS=6	PER @ -72dBm	≤-67
	- MCS=7	PER @ -71dBm	≤-62
	- MCS=8	PER @ -66dBm	≤-60
Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0	PER @ -86dBm	≤-80
	- MCS=1	PER @ -83dBm	≤-77
	- MCS=2	PER @ -81dBm	≤-74
	- MCS=3	PER @ -78dBm	≤-70
	- MCS=4	PER @ -74dBm	≤-69
	- MCS=5	PER @ -71dBm	≤-65
	- MCS=6	PER @ -70dBm	≤-64
	- MCS=7	PER @ -68dBm	≤-59
	- MCS=8	PER @ -64dBm	≤-57
	- MCS=9	PER @ -63dBm	≤-55
Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0	PER @ -83dBm	≤-79
	- MCS=1	PER @ -80dBm	≤-76
	- MCS=2	PER @ -78dBm	≤-74
	- MCS=3	PER @ -75dBm	≤-71
	- MCS=4	PER @ -72dBm	≤-67
	- MCS=5	PER @ -68dBm	≤-63
	- MCS=6	PER @ -67dBm	≤-62
	- MCS=7	PER @ -65dBm	≤-61
	- MCS=8	PER @ -60dBm	≤-56
	- MCS=9	PER @ -57dBm	≤-54
Maximum Input Level	802.11a/n : -30 dBm		
Antenna Reference	Small antennas with 0~2 dBi peak gain		

15GHz(20MHz) Channel table

Band range	Operating Channel Numbers	Channel center frequencies(MHz)
5150MHz~5250MHz	36	5180
	40	5200
	44	5220
	48	5240
5250MHz~5350MHz	52	5260
	56	5280
	60	5300
	64	5320

5470MHz~5725MHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
5725MHz~5850MHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

4.3 Bluetooth Specification

Feature	Description
General Specification	
Bluetooth Standard	BDR,EDR(1Mbps & 2Mbps & 3Mbps),LE(1Mbps)
Host Interface	USB
Frequency Band	2400 MHz ~ 2483.5 MHz
Number of Channels	79 channels for classic,40 channels for BLE
Modulation	GFSK, $\pi/4$ -DQPSK,8DPSK
RF Specification	
Output Power , tolerance ± 3 dB	
	CL1(dBm)
BDR Output Power	5
EDR Output Power	5
BLE Output Power	5
Sensitivity, tolerance : /	
Sensitivity @ BER=0.1% for GFSK (1Mbps)	-92

Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)	-92
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)	-85
Sensitivity @ BLE=30.8% for LE (1Mbps)	-90
Maximum Input Level	GFSK (1Mbps):-20dBm
	$\pi/4$ -DQPSK (2Mbps) :-20dBm
	8DPSK (3Mbps) :-20dBm

5. ID setting information

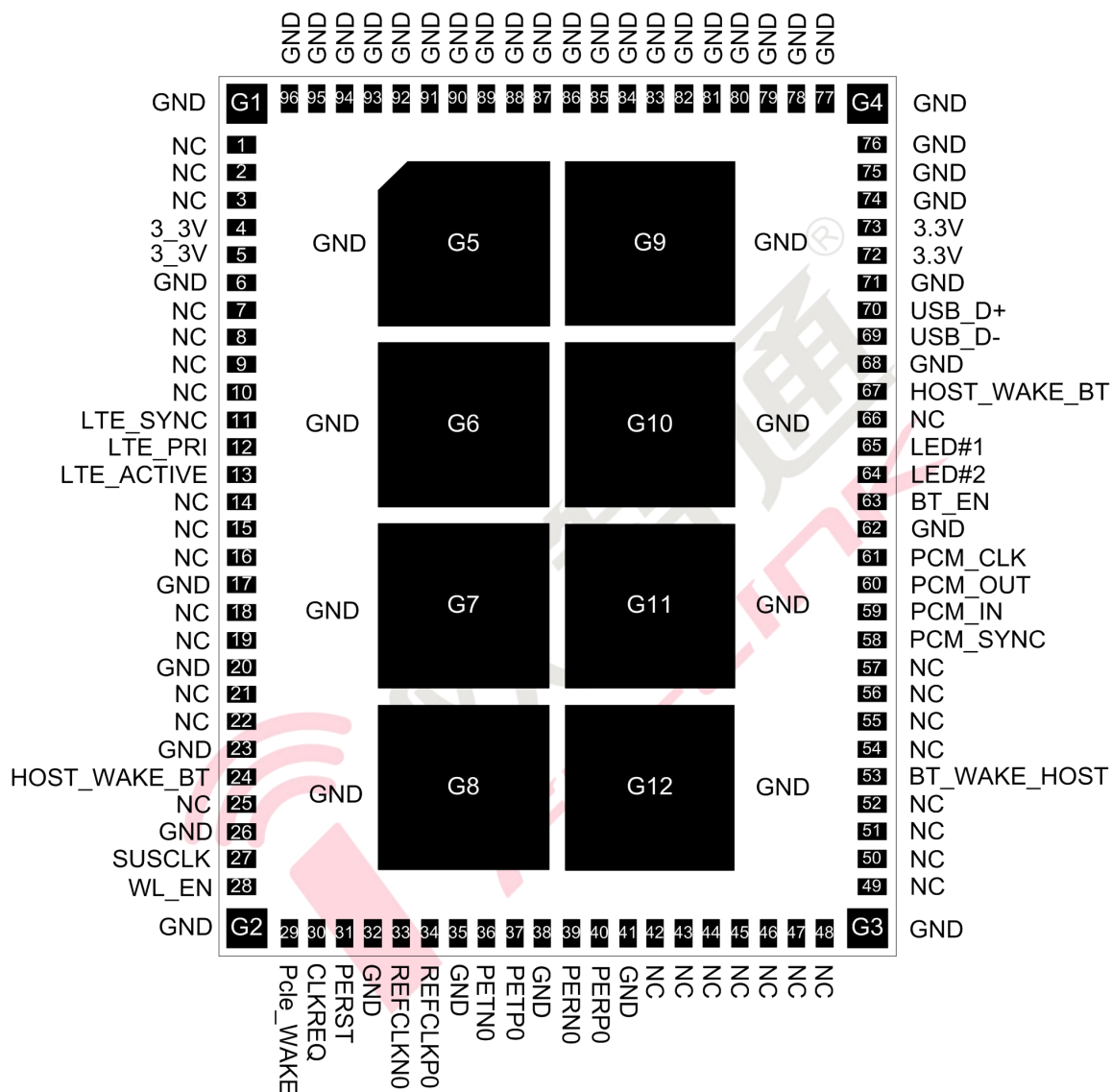
WI-FI

Vendor ID	10EC
Product ID	C821

6. Pin Definition

6.1 Pin Outline

< TOP VIEW >



6.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	NC	—	No connect	
2	NC	—	No connect	
3	NC	—	No connect	
4	3_3V	P	Main power voltage source input 3.3V	3.3V
5	3_3V	P	Main power voltage source input 3.3V	3.3V
6	GND	—	Ground connections	
7	NC	—	No connect	
8	NC	—	No connect	
9	NC	—	No connect	
10	NC	—	No connect	
11	LTE_SYNC	I	LTE coexist signal	3.3V
12	LTE_PRI	O	LTE coexistence signal	3.3V
13	LTE_ACTIVE	I/O	LTE coexistence signal	3.3V
14	NC	—	No connect	
15	NC	—	No connect	
16	NC	—	No connect	
17	GND	—	Ground connections	
18	NC	—	No connect	
19	NC	—	No connect	
20	GND	—	Ground connections	
21	NC	—	No connect	
22	NC	—	No connect	
23	GND	—	Ground connections	
24	HOST_WAKE_BT	PD	Host wake up BT	3.3V
25	NC	—	No connect	
26	GND	—	Ground connections	
27	SUSCLK	PD	External sleep clock input(32.768kHz),internal weak pull down.	3.3V
28	WL_EN	—	WLAN enable pin, High: enable,Low:disable	3.3V
29	PCIe_WAKE	OD	PCI-e wake up host	3.3V
30	CLKREQ	OD	PCI-e reference clock request signal	3.3V
31	PERST	PD	PCI-e reset module	3.3V
32	GND	—	Ground connections	
33	REFCLKN0	I	PCI-E CLK Difference -	
34	REFCLKP0	I	PCI-E CLK Difference +	

35	GND	—	Ground connections	
36	PETN0	O	PCI-E Data Out Difference -	
37	PETP0	O	PCI-E Data Out Difference +	
38	GND	—	Ground connections	
39	PERN0	I	PCI-E Data IN Difference -	
40	PERP0	I	PCI-E Data IN Difference +	
41	GND	—	Ground connections	
42	NC	—	No connect	
43	NC	—	No connect	
44	NC	—	No connect	
45	NC	—	No connect	
46	NC	—	No connect	
47	NC	—	No connect	
48	NC	—	No connect	
49	NC	—	No connect	
50	NC	—	No connect	
51	NC	—	No connect	
52	NC	—	No connect	
53	BT_WAKE_HOST	O	Bluetooth wake up host	3.3V
54	NC	—	No connect	
55	NC	—	No connect	
56	NC	—	No connect	
57	NC	—	No connect	
58	PCM_SYNC	I/O	PCM sync signal	3.3V
59	PCM_IN	I	PCM data input	3.3V
60	PCM_OUT	O	PCM Data output	3.3V
61	PCM_CLK	I/O	PCM clock	3.3V
62	GND	—	Ground connections	
63	BT_EN	PD	Bluetooth enable signal, internal pull up 100K Ω resistor and pull down 0.1uF capacitor,active high.	3.3V
64	LED#2	O	BT link LED, active low.	3.3V
65	LED#1	O	WLAN link LED,active low.	3.3V
66	NC	—	No connect	
67	HOST_WAKE_BT	PD	Host wake up BT, active high	3.3V
68	GND	—	Ground connections	
69	USB_D-	I/O	USB difference line for BT	
70	USB_D+	I/O	USB difference line for BT	

71	GND	—	Ground connections	
72	3.3V	P	Main power voltage source input 3.3V	3.3V
73	3.3V	P	Main power voltage source input 3.3V	3.3V
74~96	GND	—	Ground connections	
G1-G12	GND	—	Ground connections	

P:POWER I:INPUT O:OUTPUT

7. Electrical Specifications

7.1 Power Supply DC Characteristics

The digital IO supports VDD33 or VDD18 application.

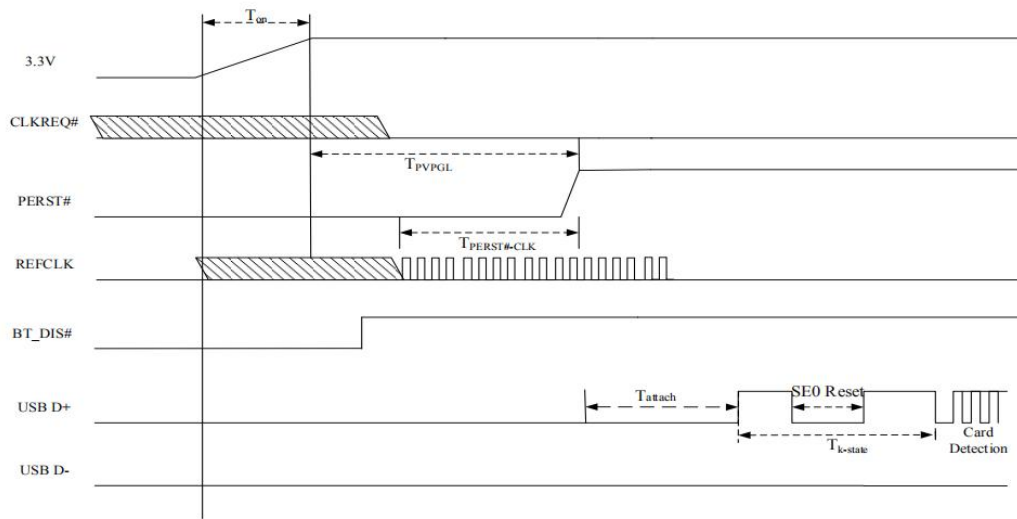
	MIN	TYP	MAX	Unit
Operating Temperature	0	25	70	deg.C
VCC33	3.0	3.3	3.6	V
VDDIO	3.0	3.3	3.6	V

7.2 Power Consumption

Power Consumption		VCC33 = 3.3V(Unit:mA)
	Wi-Fi on Mode	25
	TX (2.4G HT40)	275
	RX (2.4G HT40)	134
	TX (5G HT80)	264
	RX (5G HT80)	139
	BT on	23

7.3 Interface Circuit time series

7.3.1 PCIe Bus during Power On Sequence



T_{on} : The main power ramp up duration;

T_{PVPGL} : Power valid to PERST# input inactive;

$T_{PERST\#-CLK}$: Reference clock stable before PERST# inactive;

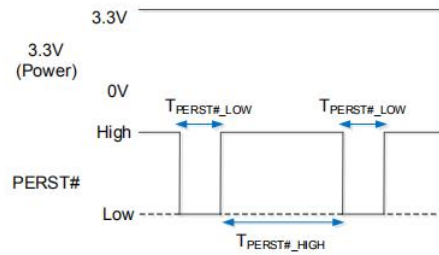
T_{attach} : The interval to turn on BT after PERST# de-asserted;

$T_{k-state}$: the duration from resistor attached to USB host starting card detection procedure;

The typical timing range

Symbol	Unit	Min	Typical	Max
T_{on}	ms	0.5	1.5	5
T_{PVPGL}	ms	Implementation specific; recommended 50ms		--
$T_{PERST\#-CLK}$	us	100		--
T_{attach}	ms	0.5	2	5
$T_{k-state}$	ms	50	250	--

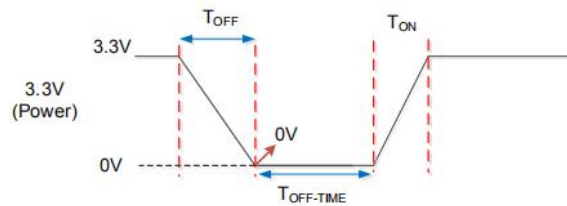
7.3.2 PCIe PERST# Timing Sequence



RTL8821CE-CG PCIE PERST# Timing Parameters

	Min	Typical	Max	Unit	Description
$T_{\text{PERST\#_LOW}}$	6	10	X	ms	PERST# low duration
$T_{\text{PERST\#_HIGH}}$	400	500	X	ms	PERST# high duration

7.3.3 Power Off Sequence



RTL8821CE-CG Power Off Sequence

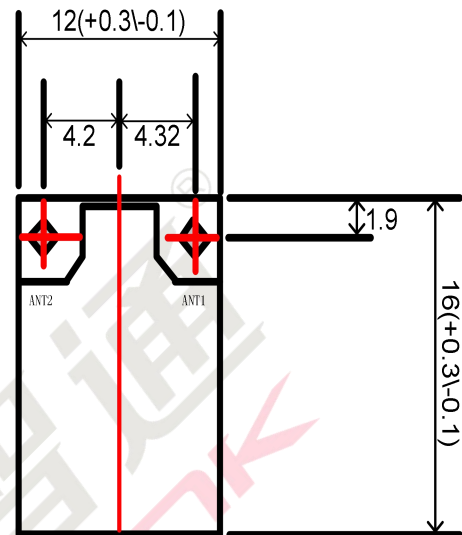
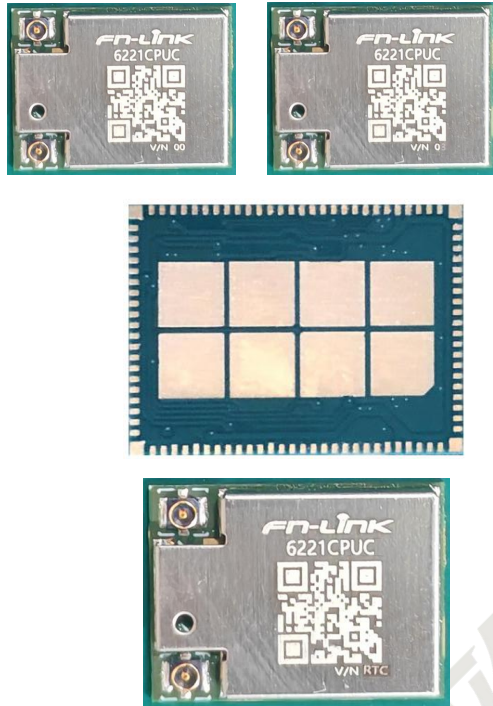
RTL8821CE-CG Power Off Timing Parameters

Symbol	Unit	Min	Typical	Max
T_{OFF}	ms	5	20	50
$T_{\text{OFF-TIME}}$	ms	500	--	--
T_{ON}	ms	0.5	1.5	5

8. Size reference

8.1 Module Picture

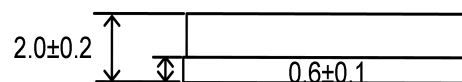
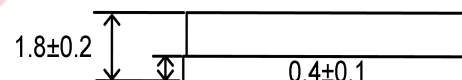
L x W : 16 x 12 (+0.3/-0.1) mm



H: 1.8 (±0.2) mm

H1: 2.0 (±0.2) mm

H1 for -RTC,-RM,-0M,-GSR,-03 model



Weight

0.64g

8.2 Marking Description



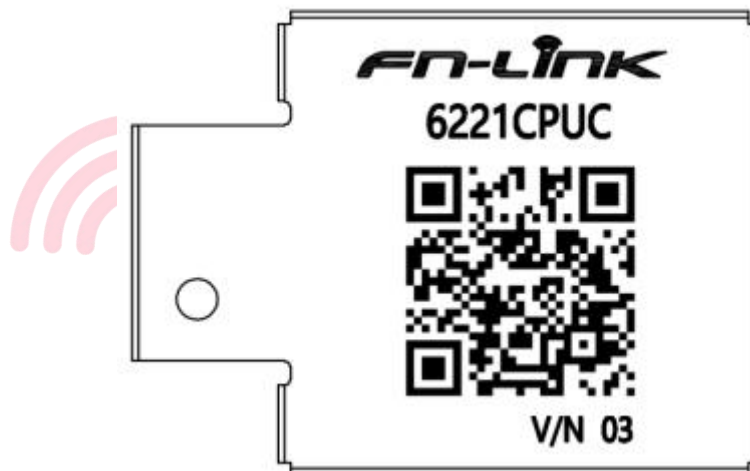
二维码内容: 112233445566;FG6221CPUC-00

1. Fn-Link 商标 logo
2. 机型: 6221C-PUC
3. 二维码: 编码规则为“wifi mac 地址;成品料号”

例如: 112233445566;FG6221CPUC-00 (MAC 地址以实际为准)

----BT MAC 在 WIFI MAC 基础上+1 (WIFI 地址需跳 1, 不能与 BT 地址重复), 二维码中不显示此内容。

4.V/N 00 (V/N 到 00 之间是两个空格, 00 为成品料号后缀, 与二维码右对齐)



备注:

二维码内容: 112233445566;FG6221CPUC-03

1. Fn-Link 商标 logo
2. 机型: 6221CPUC
3. 二维码: 编码规则为“wifi mac 地址;成品料号”

例如: 112233445566;FG6221CPUC-03 (MAC 地址以实际为准)

-----BT MAC 在 WIFI MAC 基础上+1 (WIFI 地址需跳 1, 不能与 BT 地址重复), 二维码中不显示此内容。

4.V/N 03 (V/N 到 03 之间是两个空格, 03 为成品料号后缀, 与二维码右对齐)



二维码内容：112233445566;FG6221CPUC-RTC

1. Fn-Link 商标 logo
2. 机型：6221C-PUC
3. 二维码：编码规则为“wifi mac 地址;成品料号”

例如：112233445566;FG6221CPUC-RTC（MAC 地址以实际为准）

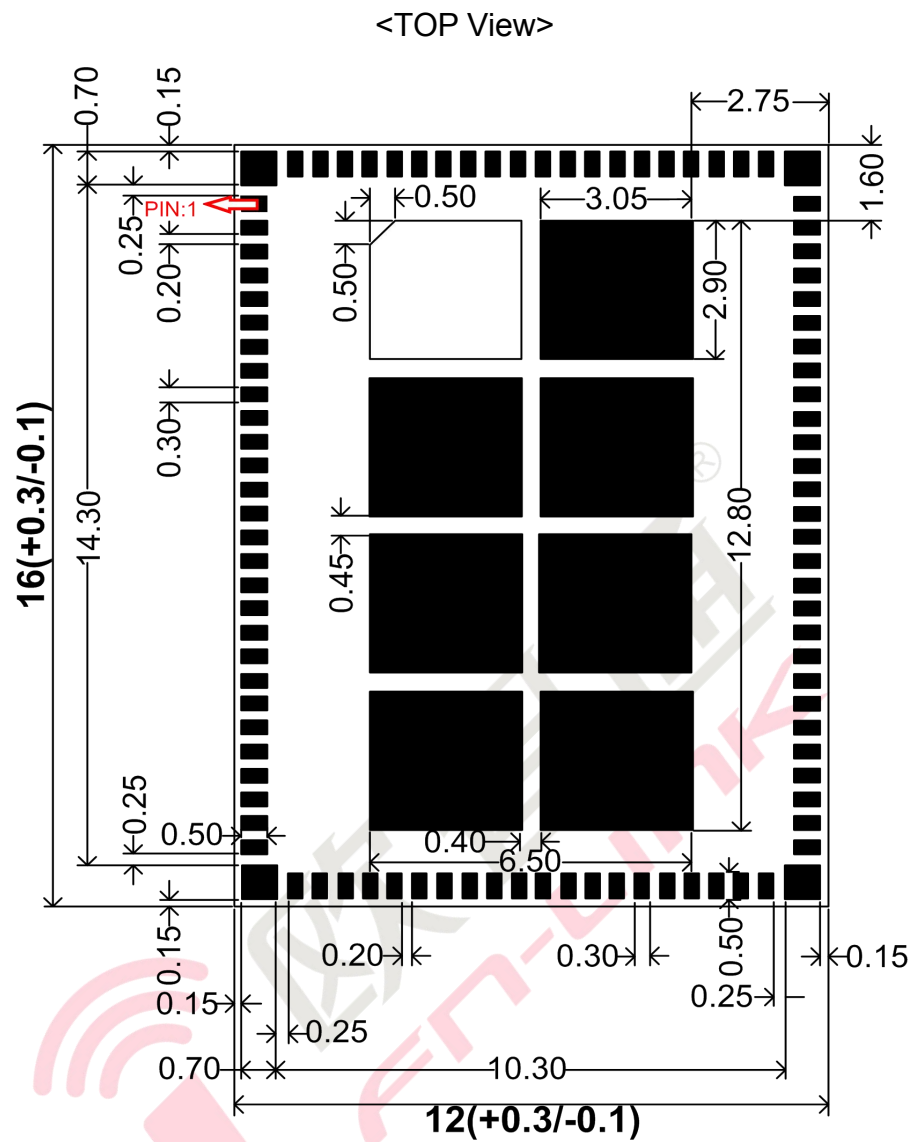
——BTMAC 在 WIFIMAC 基础上+1（WIFI 地址需跳 1，不能与 BT 地址重复），二维码中不显示此内容。

4.V/N RTC（V/N 到 RTC 之间是两个空格，RTC 为成品料号后缀，与二维码右对齐）

8.3 List of certified information

Certification project	Certificate number
SRRC	CMIIT ID:24J43T230813(M)
FCC	2AATL-6221CPUC
CE	HUNA67-EU
IC	TBD
NCC	CCAK20Y10010T2
KCC	R-R-FNL-6221CPUC
TELEC	TBD
Brazil	TBD
Argentina	TBD
Japan	TBD
BQB	D052017
马来西亚	RARL/80B/0824/S (24-3472)
智利	108834/F44
塞尔维亚	□ 1624111400
约旦	TRC/16/14868/2024
巴林	DLM/1968 /16997
卡塔尔	CRA/SM/2024/S-0017448
阿联酋	ER32975/24
阿曼	TRA/TA-R/18625/24
哥伦比亚	2024519847
柬埔寨	RC-TA-2024-0447
沙特阿拉伯	TA 2024-1260

8.4 Physical Dimensions



Technical drawing of a rectangular plate with dimensions and a grid of holes. The overall dimensions are 16.00 (height) and 12.00 (width). The drawing shows a grid of 6 holes (3 rows by 2 columns) with a central white square. Dimensions for the holes and grid are provided in millimeters.

Overall Dimensions:

- Height: 16.00
- Width: 12.00

Grid Dimensions:

- Grid Height: 12.80
- Grid Width: 6.50

Hole Dimensions:

- Hole Height: 2.90
- Hole Width: 3.05

Grid Spacing:

- Grid Spacing (Height): 0.40
- Grid Spacing (Width): 0.40

Plate Dimensions:

- Plate Height: 14.30
- Plate Width: 10.30

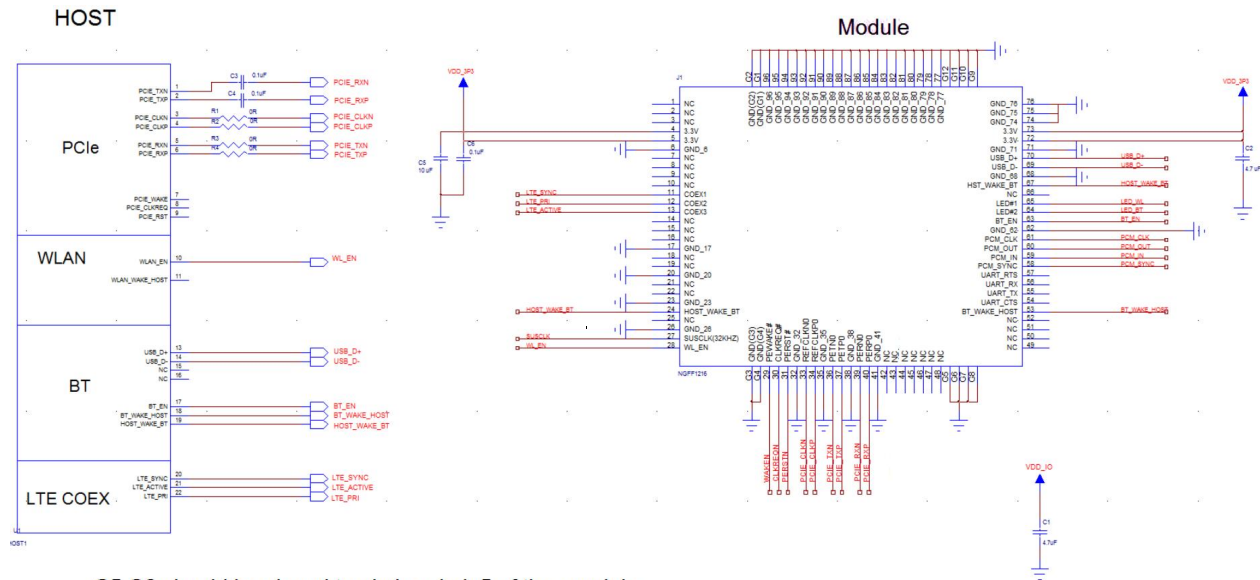
Other Dimensions:

- Top Margin: 0.25
- Bottom Margin: 0.25
- Left Margin: 0.25
- Right Margin: 0.25
- Top Hole Margin: 0.50
- Bottom Hole Margin: 0.50
- Left Hole Margin: 0.50
- Right Hole Margin: 0.50
- Top Hole Margin: 0.90
- Bottom Hole Margin: 0.90
- Left Hole Margin: 0.90
- Right Hole Margin: 0.90
- Top Hole Margin: 0.30
- Bottom Hole Margin: 0.30
- Left Hole Margin: 0.30
- Right Hole Margin: 0.30
- Top Hole Margin: 0.85
- Bottom Hole Margin: 0.85
- Left Hole Margin: 0.85
- Right Hole Margin: 0.85
- Top Hole Margin: 0.25
- Bottom Hole Margin: 0.25
- Left Hole Margin: 0.25
- Right Hole Margin: 0.25

Item	Part Name	Description	Manufacturer
1	PCB	6221CPUC-V1.0 12X16X0.4mm TG180	Brain-power, Truly, Sunlord
	PCB	6221CPUC-V2.0 12X16X0.6mm TG170	Brain-power, Truly, Sunlord
2	Crystal	40MHz 2016 15pF 10ppm	ECEC, Hosonic, TKD, JWT
3	Chipset	RTL8821CE	Realtek
4	Shielding	6221C-PUC V2.0 Shielding cover	SUNTECH, JLitong,卓益
5	Inductor	2016 2.2UH ±20%, 1200mA	Microgate,Sunlord,Ceaiya,ckcoil
6	Diplexer	DP1005 2.4G&5G	ACX,Murata,FTR,Glead
7	Diversity Switch	DPDT Diversity Switch DC~6.0GHz DFN 1.5mmx1.5mm 6pin	Qwave, Richwave,GSR
8	Antenna connector	4 代天线座,CD-ARF004-P01K	创迪尔

10. Reference Design

10.1 Reference Design



C5 C6 should be closed to pin4 and pin5 of the module

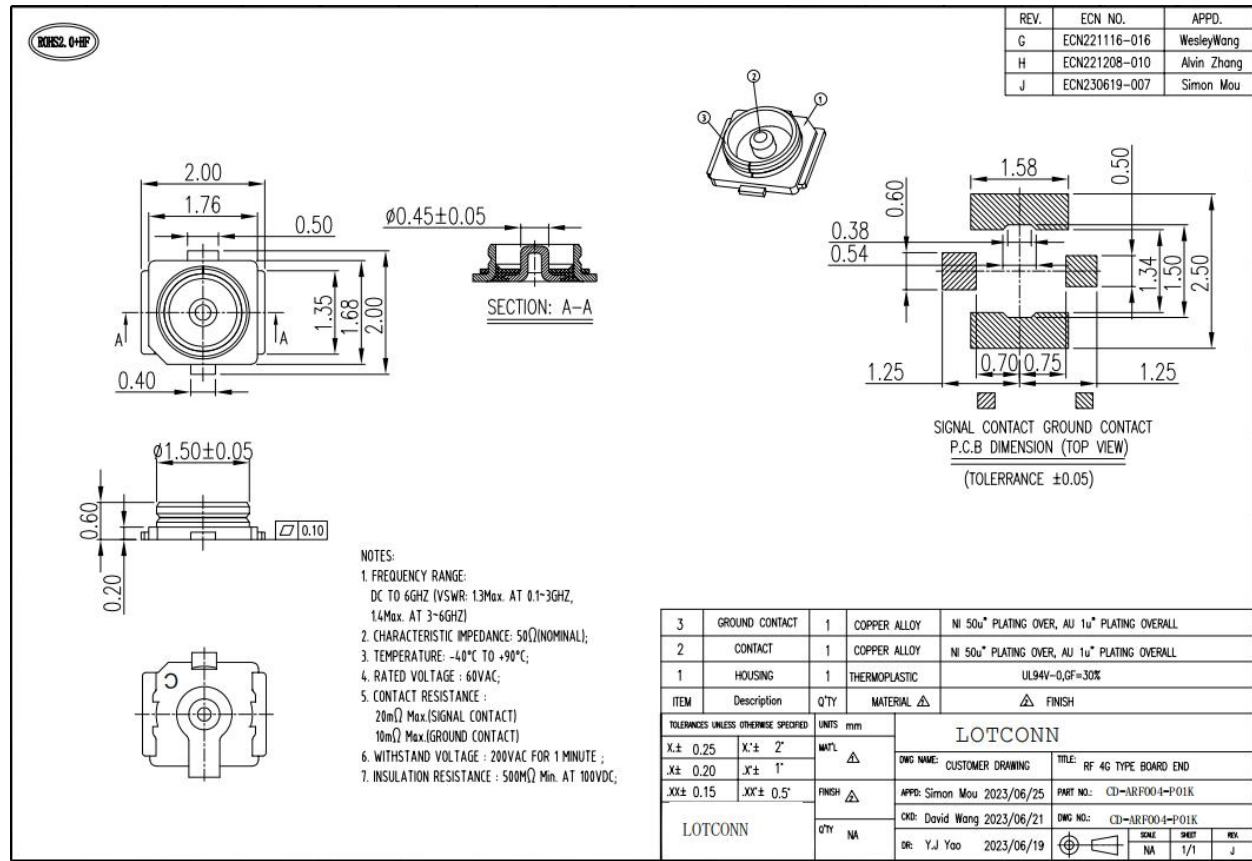
C1 should be closed to pin43 of the module

PCIe layout should be followed to end impedance 50 Ohm and difference impedance 100 Ohm.

Note:

1. ANT1 ,ANT2 all support 2.4G/5G/BT function.
2. 6221CPUC antenna port is control by driver if diversity function is enabled.
3. If diversity function is disabled, ANT1 is 5G & BT port, ANT2 is 2.4G port.

10.2 Connector Specification



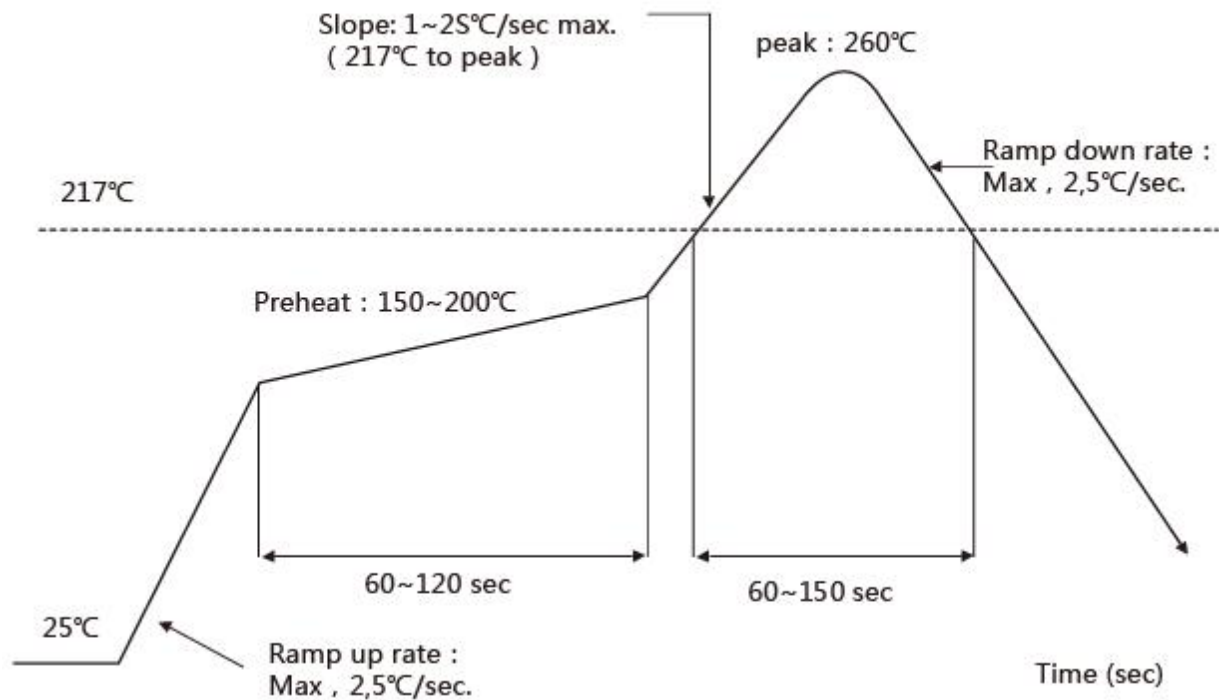
11. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature: $\leq 260^{\circ}\text{C}$

Time within 5°C of peak temperature: $\geq 10\text{s}$

Number of Times: ≤ 2 times



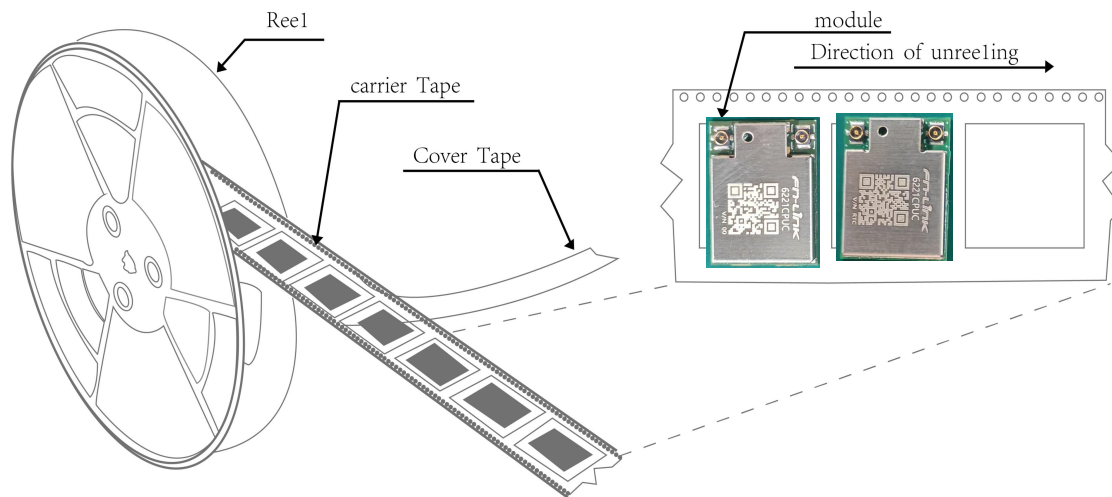
12. RoHS compliance

All hardware components are fully compliant with EU RoHS directive

13. Package

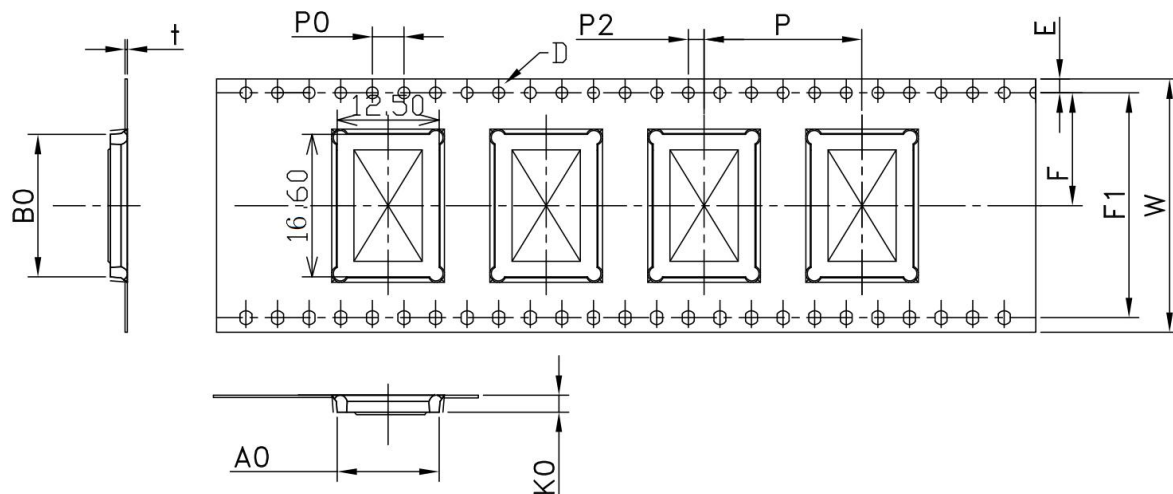
13.1 Reel

A roll of 2000pcs

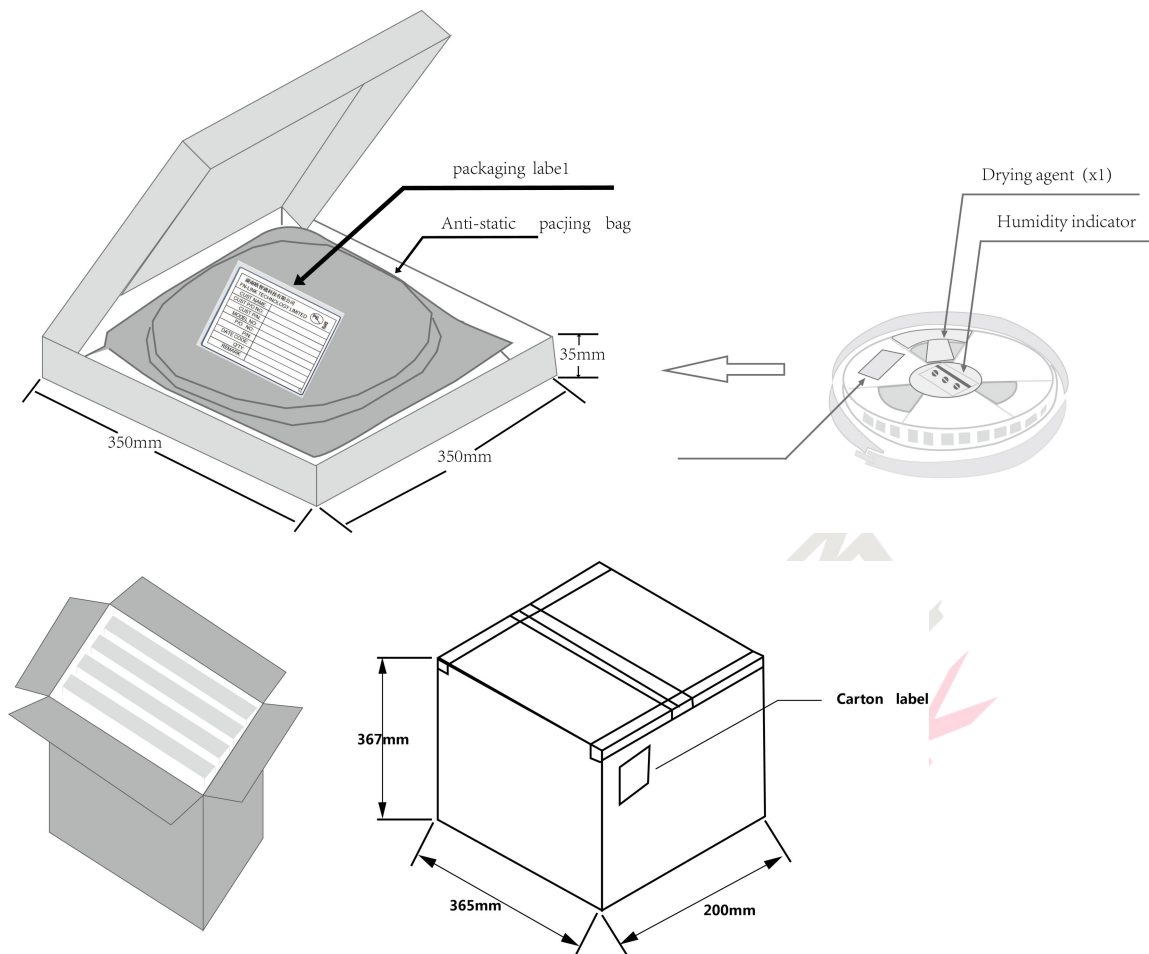


13.2 Carrier Tape Detail

ITEM	W	A0	B0	D	E	F	F1	K0	P0	P2	P	T
DIM	32	12.50	16.60	1.5	1.75	14.20	28.4	2.15	4.0	2.0	20.0	0.30
TOLE	+0.3 -0.3	±0.18	±0.18	+0.1 -0.0	±0.1	±0.15	±0.10	±0.10	±0.1	±0.15	±0.1	±0.05

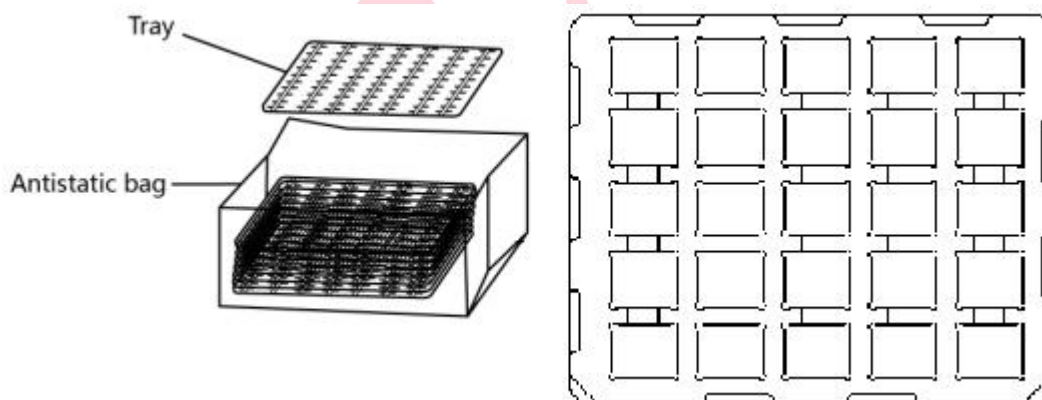


13.3 Packaging Detail



13.4 Tray

Use pallet packaging for less than 300 pieces



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