Comchips

KX6337
Module Data sheet

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Customer Approval

Company ________________________________

Title ________________________________

Signature ________________________________

Date ________________________________

FTY ________________________________

Version Update Record

Version	**Date**	**Revision Content**	**Editorialstaff**	**approval**
V1.0	2022/7/22	The first version		

CONTENTS

1 Overview

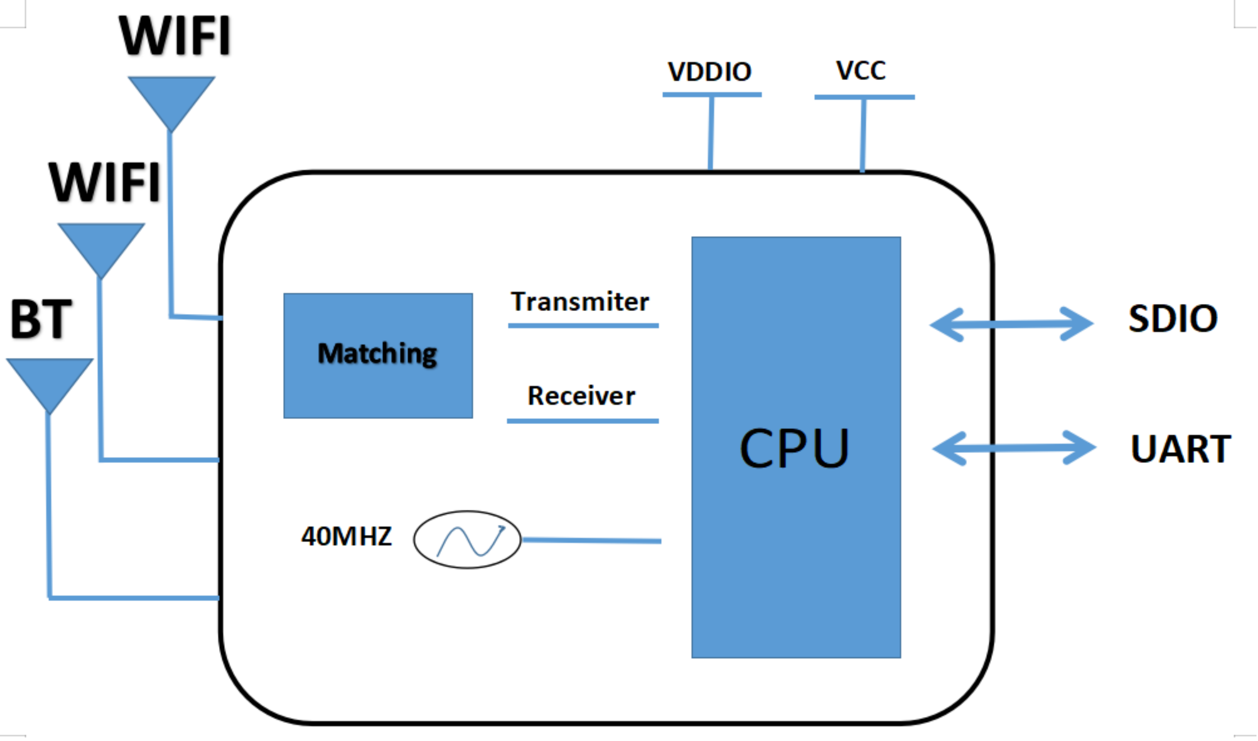
1.1 Introduction

The KX6337 is a highly integrated single-chip that support 802.11ac solutions with Multi-user MIMO (Multiple-Input, Multiple-Output) with integrated Bluetooth 2.1/3.0/4.1/5.0 controller, SDIO (SDIO 1.1/2.0/3.0) interface, and HS-UART mixed interface. It combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in s single chip. The KX6359 provides a complete solution for a high- performance integrated wireless and Bluetooth device.

1.2 Features

- CMOS MAC, Baseband PHY and RF in a single chip for IEEE 802.11a/b/g/n/ac compatible WLAN
- Support 802.11ac 2x2,Wave-2 compliant with MU-MIMO
- Support 20/40MHz at 2.4GHz
- Supports 20/40/80MHz at 5GHz
- Support WLAN-Bluetooth coexistence
- Support low power Bluetooth
- Bluetooth 5.0 Dual Mode Support: Both LE and BR/BDR are supported

1.3 Block Diagra



1.4 General Specification

Model Name	KX6335
Product Description	WIFI5 and Bluetooth Module
Dimension	L x W x H: 15 x 13 x 2.3 (±0.3) mm
Wi-Fi Interface	Support SDIO 3.0
BT interface	Support UART
Operating temperature	0 to +70° C
Storage temperature	-55°C to 125°C
RoHS	All hardware components are fully compliant with EU RoHS directive

1.5 DC Characteristics

Power Supply Characteristics

symbol	Para eter	Minimum	Typical	Maximum	Units
VCC	3.3V supply voltage	3.1	3.3	3.5	V
VCC	3.3V rating current	--	--	1500	mA

2.RF Specifications

2.1 2.4GHz RF Specification

Features	Description
WLAN Standard	IEEE802.11b/g/n
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)
Modulation Method	DSSS,DBPSK, DQPSK, CCK and OFDM (BPSK, QPSK, 16QAM,64QAM)
Number of Channel	2.4GHz: 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan

2.4G Transmitter Specifications

TX Rate	TX Power	TX Power Tolerance	EVM
802.1 1b @ 11Mbps	17dBm	±2dBm	≤-13dB
802.11g@54Mbps	14dBm	±2dBm	≤-25dB
802.11n@BW20_MCS7	13dBrn	±2dBm	≤-28dB
802.11n@BW40_MCS7	13dBrn	±2dBm	≤-28dB

Frequency Error：±12PPM

2.4G Receiver Specifications

RX Rate	Standard Value	PER
802.1 1b @ 11Mbps	⩽-85dBm	8%
802.11g@54Mbps	⩽-70dBm	10%
802.11n@BW20_MCS7	⩽-65dBrn	10%
802.11n@BW40_MCS7	⩽-65dBrn	10%

2.2 5GHz RF Specification

Features	Description
WLAN Standard	IEEE802.11a/n/ac
Frequency Range	4.9GHz ~ 6.0GHz (5GHz ISM Band)
Modulation Method	OFDM(BPSK, QPSK, 16QAM,64QAM and 256-QAM)

5G Transmitter Specifications

TX Rate	**TX Power**	**TX Power Tolerance**	**EVM**
802.1 1a @ 54 Mbps	13dBm	±2dBm	≤-25dB
802.11n@BW20_MCS7	12dBm	±2dBm	≤-28dB
802.11n@BW40_MCS7	12dBrn	±2dBm	≤-28dB
802.11ac@BW80_MCS9	10dBrn	±2dBm	≤-32dB

5G Receiver Specifications

RX Rate	**Standard Value**	**PER**
802.11a@54Mbps	⩽-70dBm	<10%
802.11n@BW20_MCS7	⩽-65dBm	< 10%
802.11n@BW40_MCS7	⩽-60dBrn	< 10%
802.11ac@BW80_MCS9	⩽-57dBrn	< 10%

2.3 5GHz(20MHz) Channel table

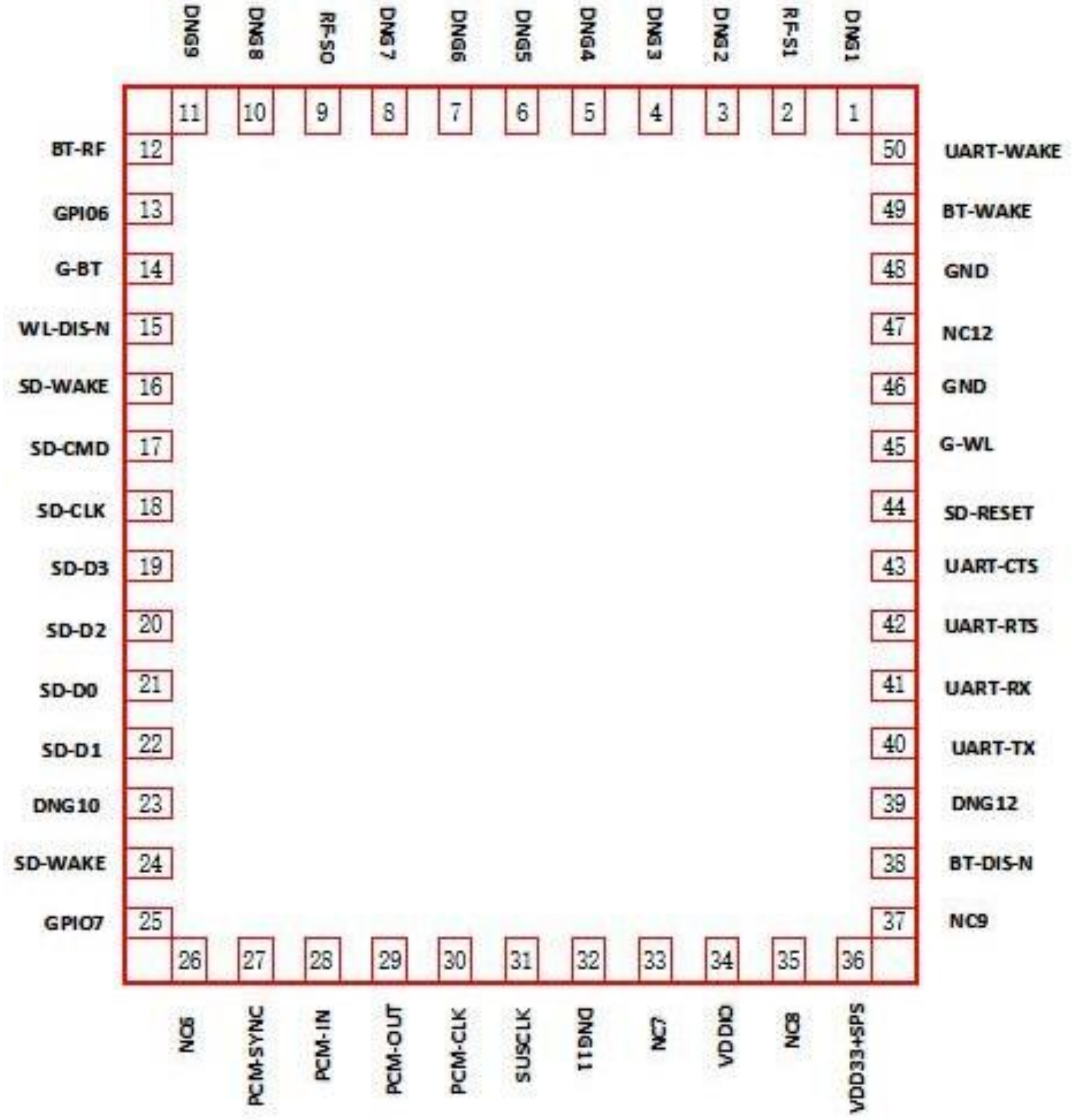
Band (GHz)	Operating Channel Numbers	Channel centr frequencies(MHz)
5.15GHz~5.25GHz	36	5180
	40	5200
	44	5220
	48	5240
5.25GHz~5.35GHz	52	5260
	56	5280
	60	5300
	64	5320
5.5GHz~5.7GHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
5.725GHz~5.825GHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

2.4 Bluetooth Section:

Feature	**Description**		
General Specification			
Bluetooth Standard	Bluetooth V5.0 of 1, 2 and 3 Mbps.		
Host Interface	UART		
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
Power (BDR：GFSK/1Mbps)	0dBm	——	10dBm
Power(EDF：π /4-DQPSK/2Mbps)	0dBm	——	10dBm
Power (BLE：GFSK/1Mbps)	0dBm	——	10dBm
Sensitivity @ BER=0.1% for (BDR：GFSK/1Mbps)		-85 dBm	
Sensitivity @ BER=0.1% for(EDF：π /4-DQPSK/2Mbps)		-85 dBm	
Sensitivity @ BER=0.1% for (BLE：GFSK/1Mbps)		-85 dBm	
Initial Freq Error	BDR：GFSK/1Mbps:±75KHZ		
	EDF：π /4-DQPSK/2Mbps :±75KHZ		
	BLE：GFSK/1Mbps :±75KHZ		

3 Pin Assignments

3.1 Pin Outline



3.2 Pin Definition

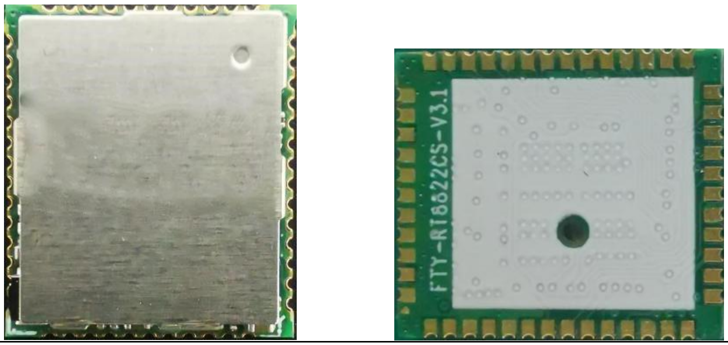
NO.	Name	Type	Descripti n
1	GND	—	Ground connections
2	RF_S1	I/O	ANT1
3	GND	—	Ground connections
4	GND	—	Ground connections
5	GND	—	Ground connections
6	GND	—	Ground connections
7	GND	—	Ground connections
8	GND	—	Ground connections
9	RT_S0	I/O	ANT0
10	GND	—	Ground connections
11	GND	—	Ground connections
12	BT RF	I/O	BT ANT
13	GPIO6	—	General Purpose Input/ Output Pin
14	G_BT	—	General Purpose Input/ Output Pin
15	WL_DIS_N	I	RF on-off
16	SD_WAKE	O	WLAN to wake-up HOST
17	SD_CMD	I/O	SDIO command line
18	SD_CLK	I/O	SDIO CLK
19	SD_D3	I/O	SDIO Data Line 3
20	SD_D2	I/O	SDIO Data Line 2
21	SD_D0	I/O	SDIO Data Line 0
22	SD_D1	I/O	SDIO Data Line 1
23	GND	—	Ground connections
24	SD_WAKE	O	WLAN to wake-up HOST
25	GPIO7	—	General Purpose Input/ Output Pin
26	NC	—	No connect
27	PCM_SYNC	I/O	PCM sync signal
28	PCM_IN	I	PCM DATA INPUT

29	PCM_OUT	I	PCM DATA OUTPUT
30	PCM_CLK	I/O	PCM CLK
31	SUSCLK	—	External Low Power Clock input(32.768KHz)
32	GND	—	Ground connections
33	NC	—	No connect
34	VDDIO	P	I/O Voltage supply input 1.8V or 3.3V
35	NC	—	No connect
36	VD33_SPS	P	3.3V
37	NC	—	No connect
38	BT_DIS_N	—	Enable pin for Bluetooth device ON: pull high ; OFF: pull low
39	GND	—	Ground connections
40	UART_TX	O	High-Speed UART Data Out
41	UART_RX	I	High-Speed UART Data In
42	UART_RTS	O	High-Speed UART RTS
43	UART_CTS	I	High-Speed UART CTS
44	SD_RESET	—	SDIO BUS REST
45	G_WL	—	General Purpose Input/ Output Pin
46	GND	—	Ground connections
47	NC	—	No connect
48	GND	—	Ground connections
49	BT_WAKE	—	Host wake-up Bluetooth device
50	UART_WAKE	O	Bluetooth device to wake-Host

4 Dimensions

4.1 Module Picture

L x W : 15 x 13 (±0.3) mm

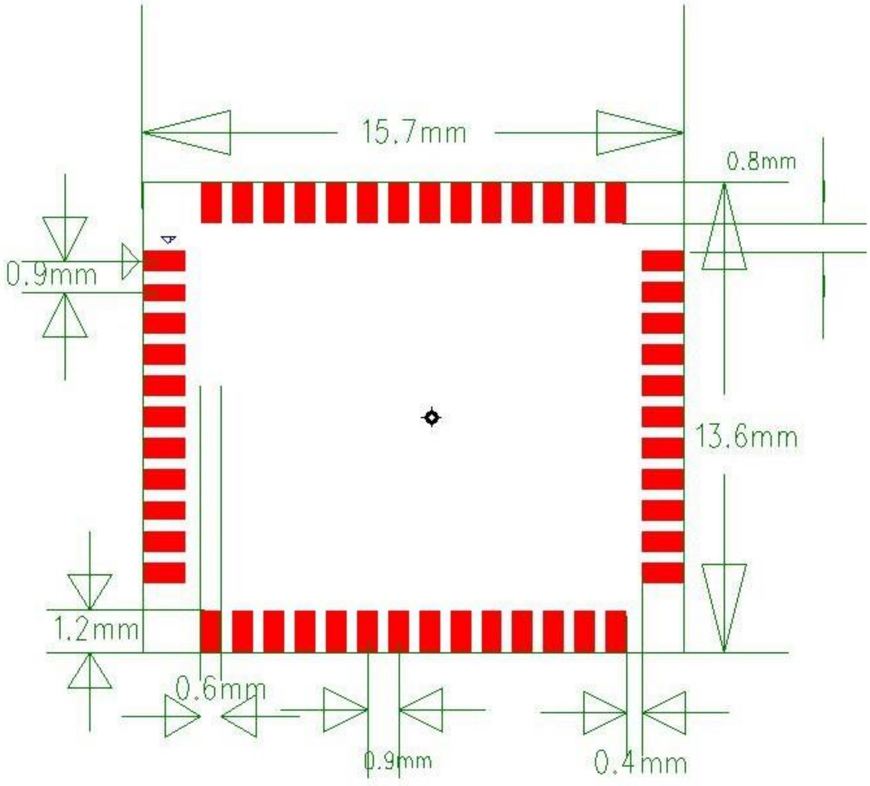


H:2.3(±0.3)mm

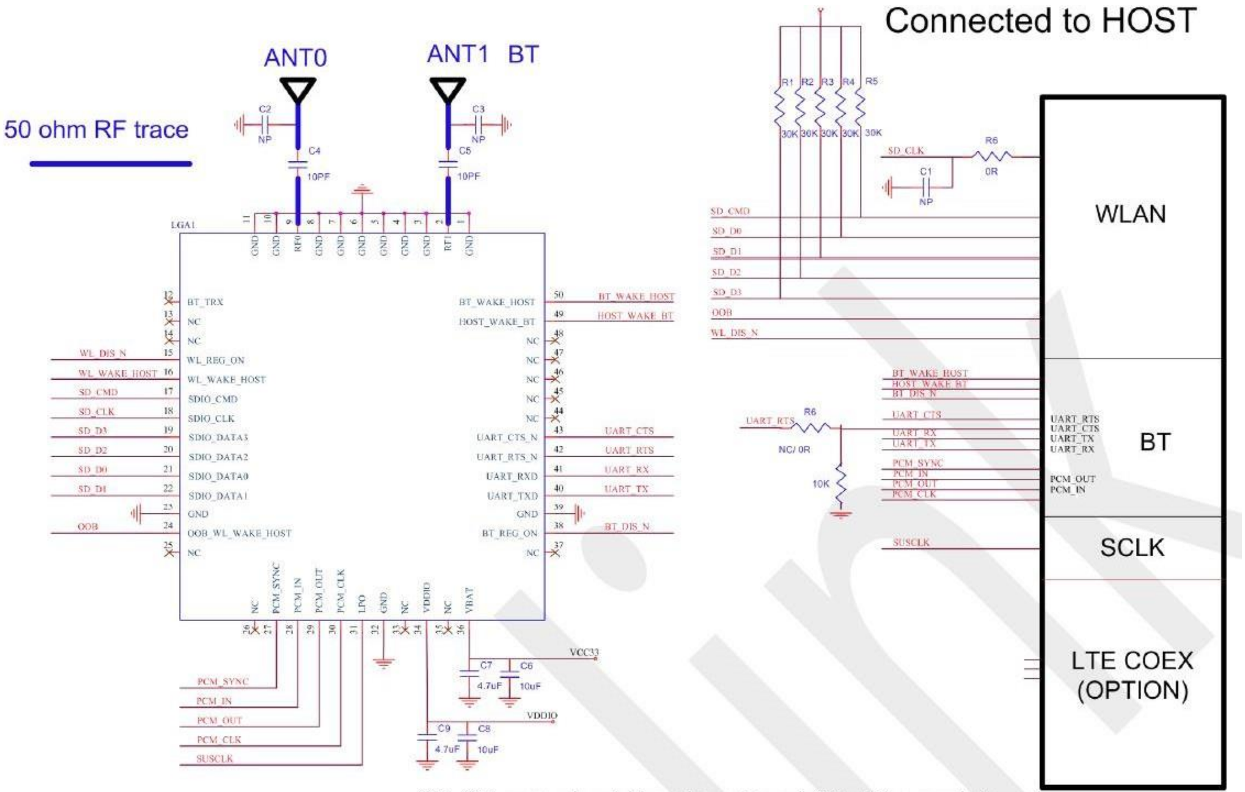
4.2 Module Physical Dimensions

(Unit: mm)

< TOP VIEW >



5 Reference Design



C6, C7 caps should be closed to pin36 of the module

C8, C9 caps should be closed to pin34 of the module

Note:

1.ANT_A, ANT_B are all support 2.4G/5G function,ANT_B is support Bluetooth also;

2.The module requires independent power supply, supply capacity ≥ 1000mAand ripple less than 150mV;

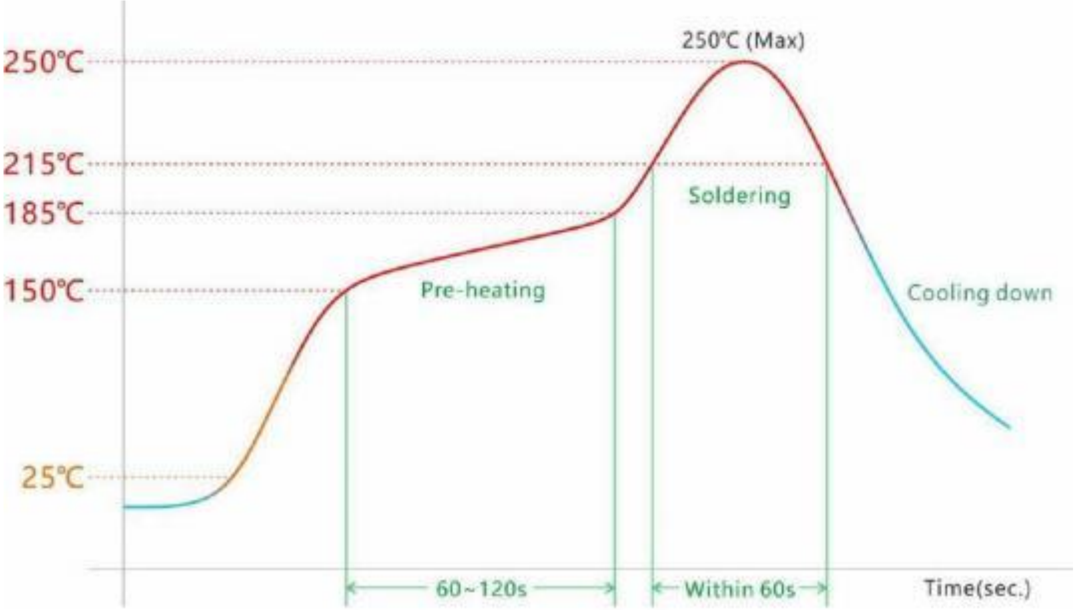
3.Do not share power with amplifier, camera, etc.

6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8822CS-VE-CG	Realtek Semiconductor Corp	
2	PCB	FTY_RT8822CS-V3.1	Shenzhen xiangyu circuit co., LTD	
3	PCB	FTY_RT8822CS-V3.1	Shenzhen Kexiang Precision Circuit Technology Co., LTD	
4	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20+85℃	hefei jing wei Electronics Co. Ltd	
5	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20+85℃	ZhejiangLanjingxin Microelectronics Co., LTD	
6	duplexor	双工器 1.6×0.8mm 6P 2.4GHz/5GHz RFDIP160806BLM6T25 华新科	Shenzhen gangxinda Electronic Technology Co., LTD	
7	duplexor	双工器 1.6×0.8mm 6P 2.4GHz/5GHz DPX1608R24554K85 （HEK）	Dongguan Hekang Electronics Co., LTD	

7 Recommended Reflow Profile

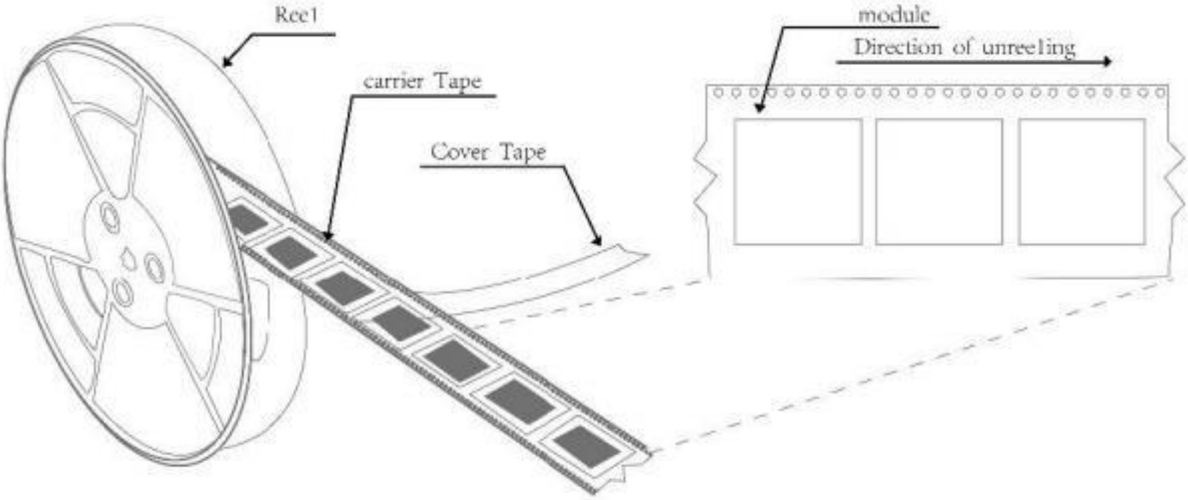
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ≤2 times



8 Package Information

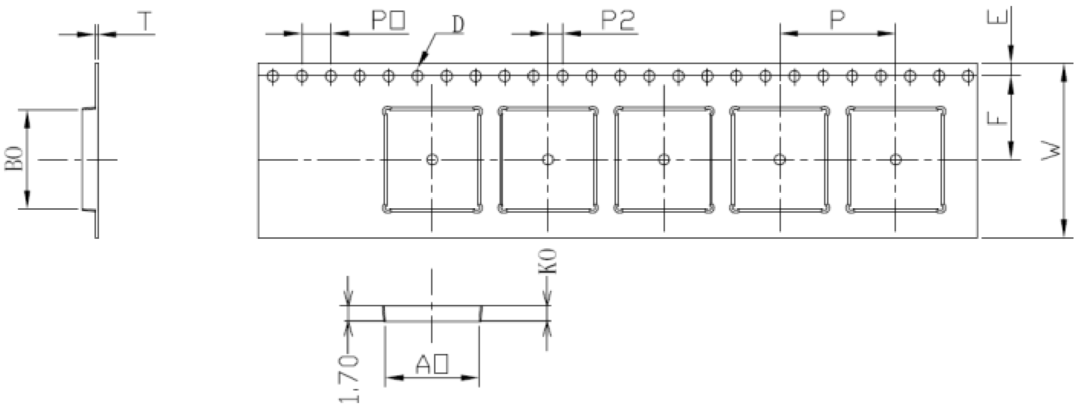
8.1Reel

A roll of 2000pcs

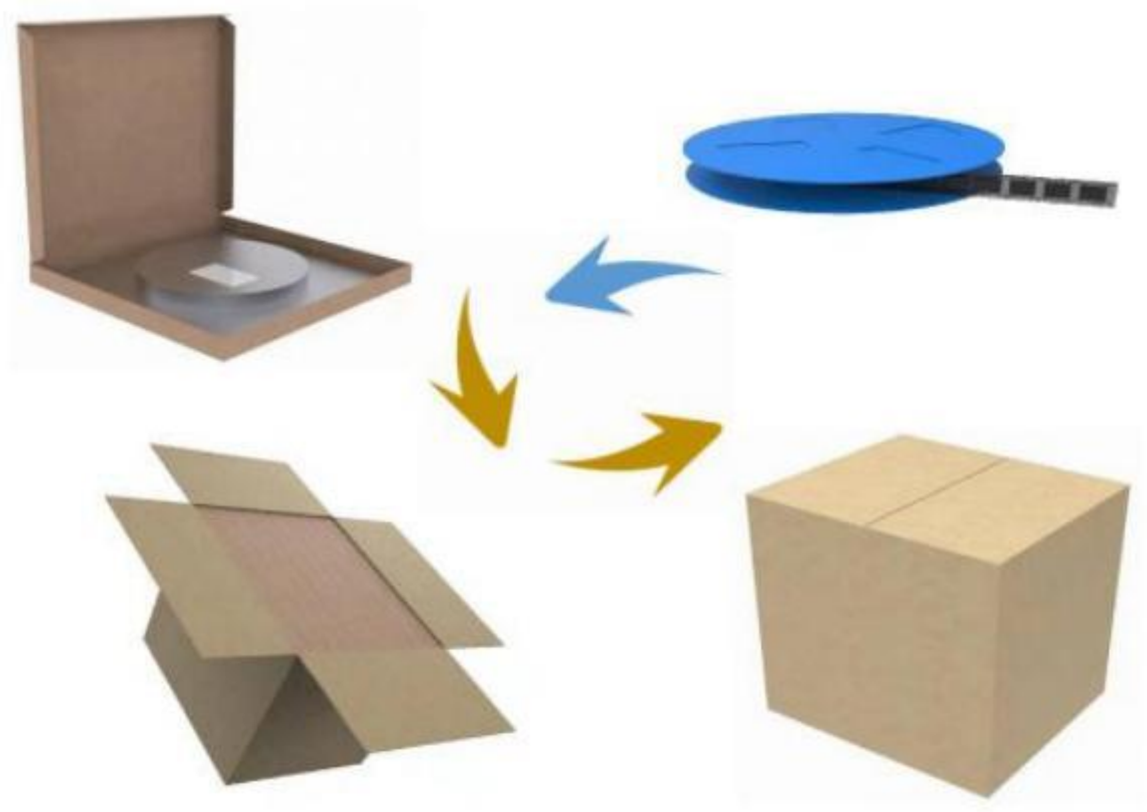


8.2 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.61	13.62	1.50	11.5	1.75	1.70	4.0	2.0	16.0	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



8.3 Packaging Detail



8.4 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

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

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