Comchips

KX6339
Module Data sheet

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Website: www.comchips.com

Customer Approval

Company _____

Title _____

Signature _____

Date _____

FTY _____

Version Update Record

Version	Date	Revision Content	Editorialstaff	approval
V1.0	2022/8/22	The first version		

CONTENTS

1 Overview

1.1 Introduction

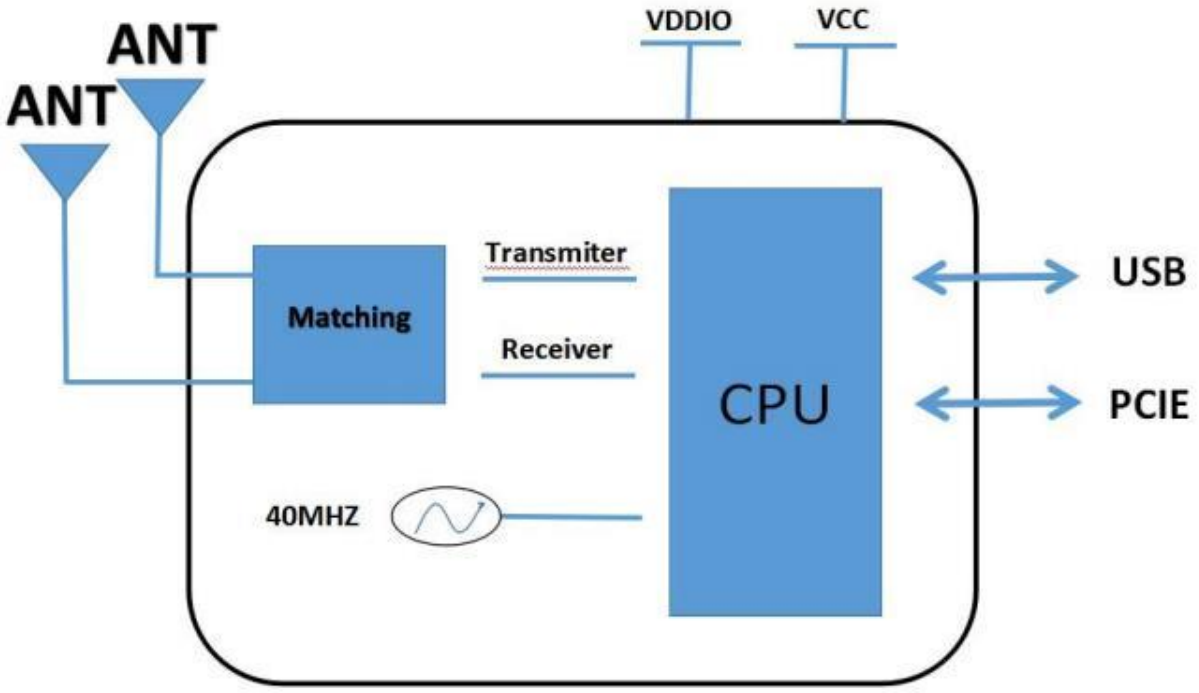
The KX6339 is a highly integrated single-chip that support 2-stream 802.11ac solutions with Multi-user MIMO (Multiple-Input, Multiple-Output) with Wireless LAN (WLAN) PCI Express network interface controller with integrated Bluetooth 5 USB interface controller. It combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in a single chip. The KX6339 provides a complete solution for a high-performance integrated wireless and Bluetooth device.

The KX6339 baseband implements Multi-user Multiple Input, Multiple Output (MU MIMO) Orthogonal Frequency Division Multiplexing (OFDM) with two transmit and two receive paths (2T2R).In addition, the FTY-8822CS-V2.1 also provides a space stream space-time block code (STBC) transmitter beamforming (TxBF) and low density parity (LDPC) to extend the transmission range

1.2 Features

- CMOS MAC, Baseband PHY and RF in a single chip for IEEE 802.11a/b/g/n/ac compatibl 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	KX6339
Product Description	WIFI5 and Bluetooth Module
Dimension	L x W x H: 16 x 12 x 1.6（±0.2）mm
Wi-Fi Interface	Support PCIE
BT interface	Support USB 2.0
Operating temperature	-20° C ~ 70° C
Storage temperature	-40° C ~ 85°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	3.135	3.3	3.465	V
VDDIO	I/O supply voltage	1.71	1.8 or 3.3	3.46	V

2.RF Specifications

2.1 2.4GHz RF Specification

2.4G Transmitter Specifications			
TX Rate	TX Power	TX Power Tolerance	EVM
802.11b@1~11Mbps	17dBm	±2dBm	≦-13dB
802.11g@6Mbps	14dBm	±2dBm	≦-5dB
802.11g@54Mbps	14dBm	±2dBm	≦-25dB
802.11n@HT20_MCS0	13dBm	±2dBm	≦-5dB
802.11n@HT20_MCS7	13dBm	±2dBm	≦-28dB
802.11n@HT40_MCS0	13dBm	±2dBm	≦-5dB
802.11n@HT40_MCS7	13dBm	±2dBm	≦-28dB

2.4G Receiver Specifications			
RX Rate	Min Input Level(Typ)	Max Input Level(Typ)	PER
802.11b@1Mbps	-85dBm	-10dBm	< 8%
802.11b@11Mbps	-85dBm	-10dBm	< 8%
802.11g@6Mbps	-68dBm	-20dBm	< 10%
802.11g@54Mbps	-68dBm	-20dBm	< 10%
802.11n@HT20_MCS0	-66dBm	-20dBm	< 10%
802.11n@HT20_MCS7	-66dBm	-20dBm	< 10%
802.11n@HT40_MCS0	-65dBm	-20dBm	< 10%
802.11n@HT40_MCS7	-65dBm	-20dBm	< 10%

2.2 5GHz RF Specification

5G Transmitter Specifications			
TX Rate	TX Power	TX Power Tolerance	EVM
802.11a@6Mbps	13dBm	±2dBm	≦-5dB
802.11a@54Mbps	13dBm	±2dBm	≦-25dB
802.11n@HT20_MCS0	12dBm	±2dBm	≦-5dB
802.11n@HT20_MCS7	12dBm	±2dBm	≦-28dB
802.11n@HT40_MCS0	12dBm	±2dBm	≦-5dB
802.11n@HT40_MCS7	12dBm	±2dBm	≦-28dB
802.11n@HT80_MCS0	10dBm	±2dBm	≦-5dB
802.11n@HT80_MCS9	10dBm	±2dBm	≦-32dB
5G Receiver Specification			
RX Rate	Min Input Level(Typ)	Max Input Level(Typ)	PER
802.11a@6Mbps	-70dBm	-20dBm	< 10%
802.11a@54Mbps	-70dBm	-20dBm	< 10%
802.11n@HT20_MCS0	-65dBm	-20dBm	< 10%
802.11n@HT20_MCS7	-65dBm	-20dBm	< 10%
802.11n@HT40_MCS0	-65dBm	-20dBm	< 10%
802.11n@HT40_MCS7	-65dBm	-20dBm	< 10%
802.11n@HT80_MCS0	-56dBm	-20dBm	< 10%
802.11n@HT80_MCS9	-56dBm	-20dBm	< 10%

2.3 5GHz(20MHz) Channel table

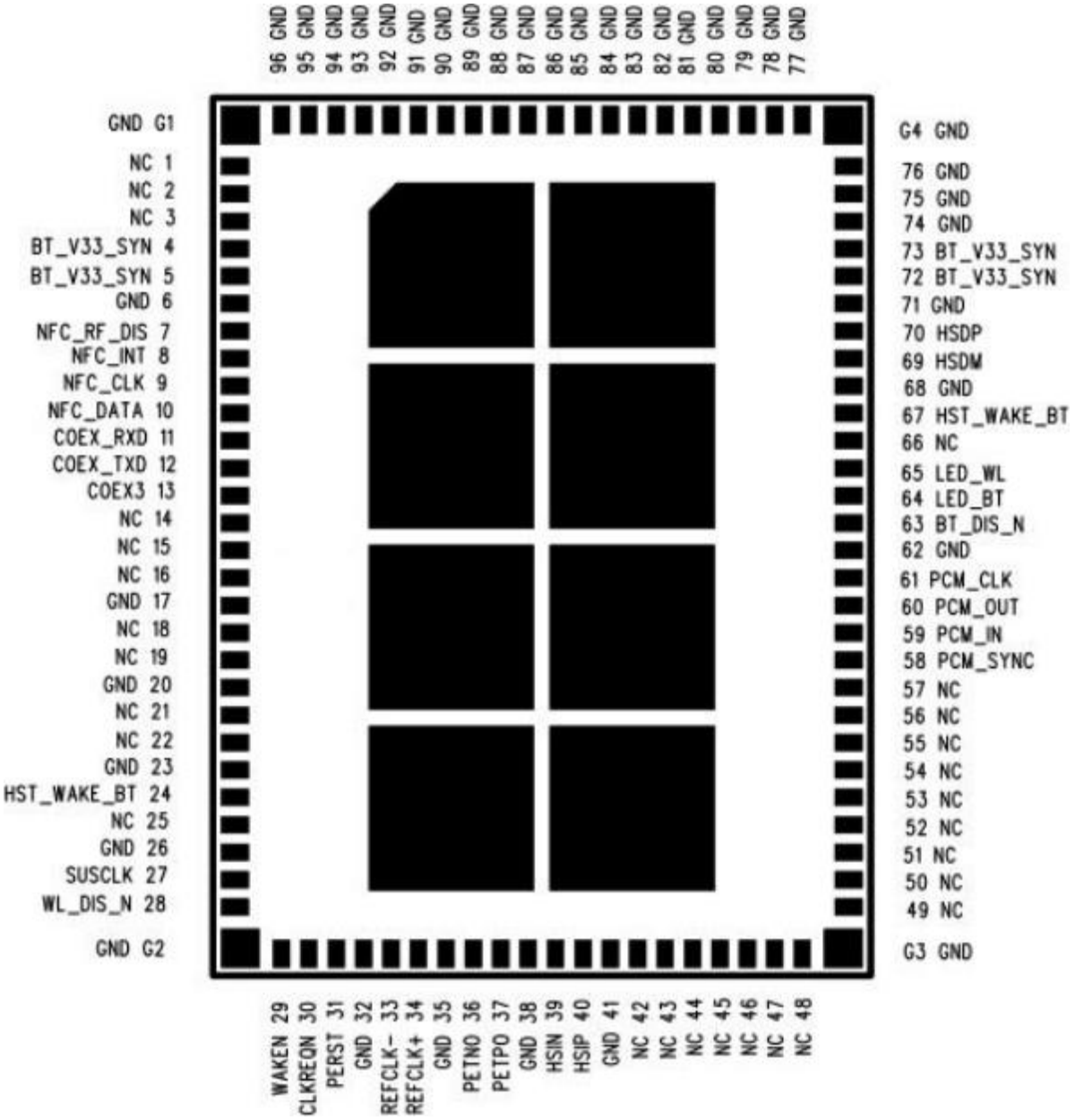
Band (GHz)	Operating Channel Numbers	Channel centr frequencies(MHz)
5.15GHz~5.25GHz	36	5180
	40	5200
	44	5220
	48	5240
5.25GHz~5.35GHz	52	5260
	56	5280
	60	5300
	64	5320
5.5GHz~5.7GHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
5.725GHz~5.825GHz	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	USB2.0		
Antenna Reference	Small antennas with 0~2 dBi peak gain		
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min.	**Typical.**	**Max.**
Output Power (Class 1.5)	0 dBm	6 dBm	10 dBm
Output Power (Class 2)		2 dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-80 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π/4-DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

3 Pin Assignments

3.1Pin Outline



3.2 Pin Definition

Pin	Definition	Description
G1	GND	Ground
1	NC	NC
2~3	NC	NC
4	VDD33	3.3V
5	VDD33	3.3V
6	GND	Ground
7	NFC_RF_DIS	NC
8	NFC_INT	NC
9	NFC_CLK	NC
10	NFC_DATA	NC
11	COEX_RXD	GPIO6
12	COEX_TXD	GPIO12
13	COEX3	GPIO7
14~16	NC	NC
17	GND	Ground
18~19	NC	NC
20	GND	Ground
21~22	NC	NC
23	GND	Ground
24	HST_WAKE_DEV	GPIO13
25	NC	NC
26	GND	GND
27	SUSCLK	Shared with EECS. External 32K or RTC clock input
28	WL_DIS_N	GPIO9
G2	GND	Ground
29	WAKE_N	GND.
30	CLKREQ	GND

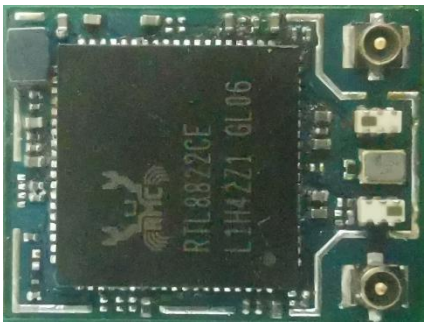
31	PERSTB	PCI Express Reset Signal: active low. When the PERST# is asserted at power-on state, the RTL8821CE returns to a pre-defined reset state and is ready for initialization and configuration after the de-assertion of the PERST#.
32	GND	Ground
33	REFCLK_N	PCI Express Differential Reference Clock Source: 100MHz±300ppm
34	REFCLK_P	PCI Express Differential Reference Clock Source: 100MHz±300ppm
35	GND	Ground
36	HSON	PCI Express Transmit Differential Pair
37	HSOP	PCI Express Transmit Differential Pair
38	GND	Ground
39	HSIN	PCI Express Receive Differential Pair
40	HSIP	PCI Express Receive Differential Pair
41	GND	Ground
42~48	NC	NC
G3	GND	Ground
49~56	NC	NC
57	GND	Ground
58	PCM_SYNC	GPIO2
59	PCM_IN	GPIO0
60	PCM_OUT	GPIO1
61	PCM_CLK	GPIO3
62	GND	Ground
63	BT_DIS	GPIO11
64	BT_LED	LED1
65	WL_LED	LED2

66	NC	NC
67	HOST_WAKE_BT	GPIO13
68	GND	Ground
69	HSDM	High-Speed USB D- Signal
70	HSDP	High-Speed USB D+ Signal
71	GND	GND
72	VDD33	3.3V
73	VDD33	3.3V
74~76	GND	Ground
G4	GND	Ground
77~96	GND	Ground

4 Dimensions

4.1 Module Picture

L x W : 16 x 12 (±0.2) mm

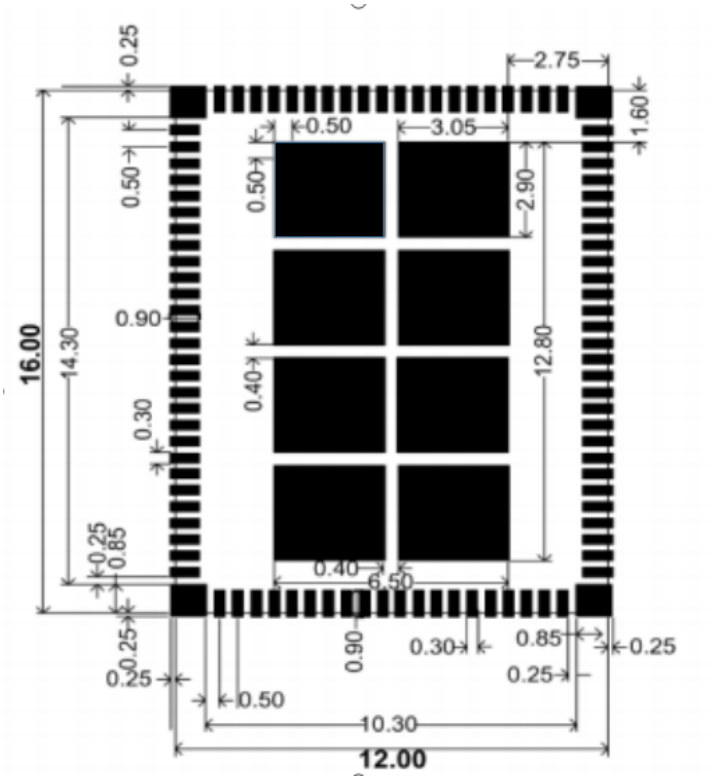


H:1.6(±0.2)mm

4.2 Module Physical Dimensions

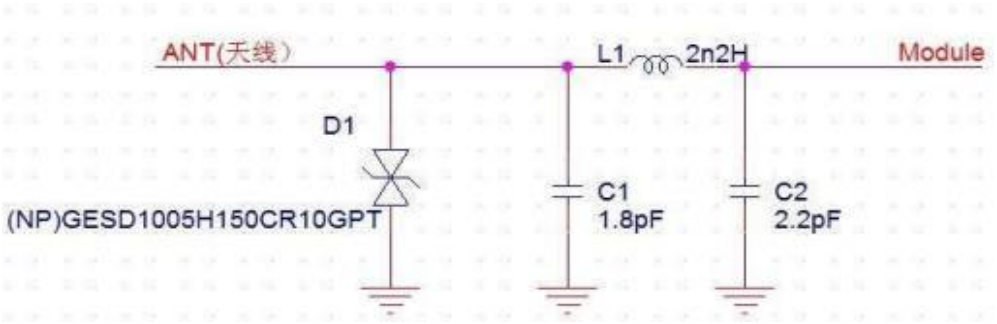
(Unit: mm)

< TOP VIEW >



5 Reference Design

5.1 WIFI RF Circuit reference pictures

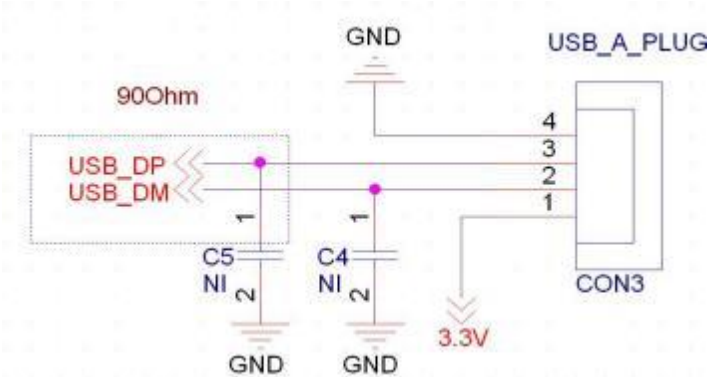


1. Above the dotted box part of the antenna matching is needed, the actual antenna matching electronic parameters shallprevail.

2.For RF part layout to do 50 ohm impedance. can't go on 90°of layout .The line length can't more than20 mm.

Note: Please be sure to add a TVS tube at the end of the welding antenna to prevent ESD static electricity from damaging the WIFI module (as shown in the reference circuit above).

5.2 USB interface electrical characteristics



Note:

1.USB data cable need to do 90Ohm impedance

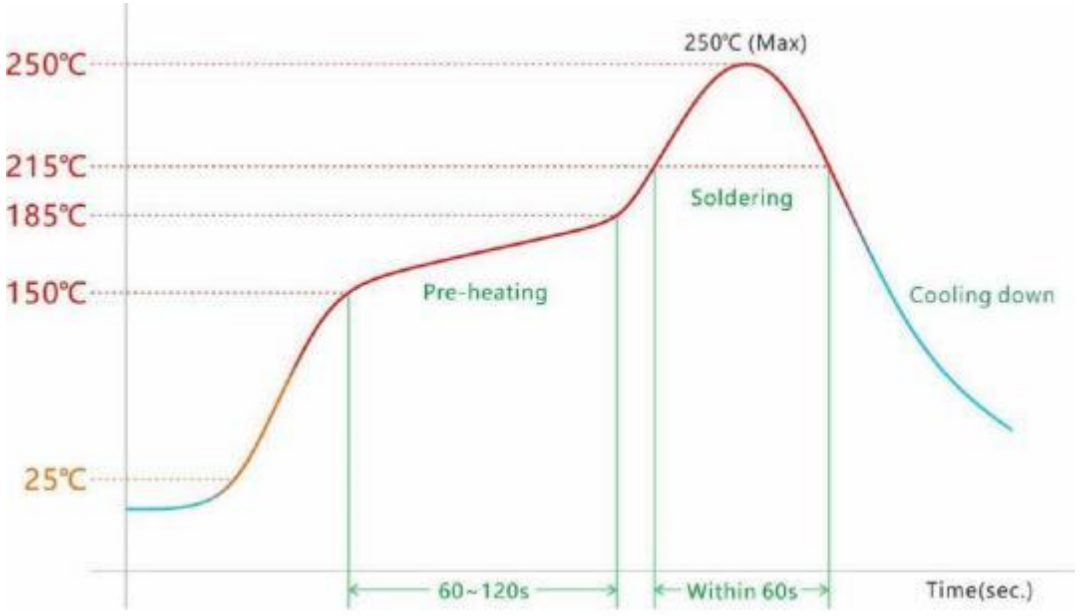
2.It is recommended to keep a power switch at the input end of the power supply. Each time the card is opened or closed, it can be used for power on and power off. WIFI can be reset, so that there will be no error phenomenon of not opening WIFI.

6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8822CE-VC-CG	Realtek Semiconductor Corp	
2	PCB	FTY-RTL8822CE-V1.0	Shenzhen xiangyu circuit co., LTD	
3	PCB	FTY-RTL8822CE-V1.0	Shenzhen Kexiang Precision Circuit Technology Co., LTD	
4	Crystal oscillator	1612/40MHz/±10ppm/12pF(-20~85°C) CO4040M00012T2893039	hefei jing wei Electronics Co. Ltd.	
5	Crystal oscillator	1612/40MHz/±10ppm/12pF(-20~85°C) CO4040M00012T2893039	ZhejiangLanjingxin Microelectronics Co., LTD.	

7 Recommended Reflow Profile

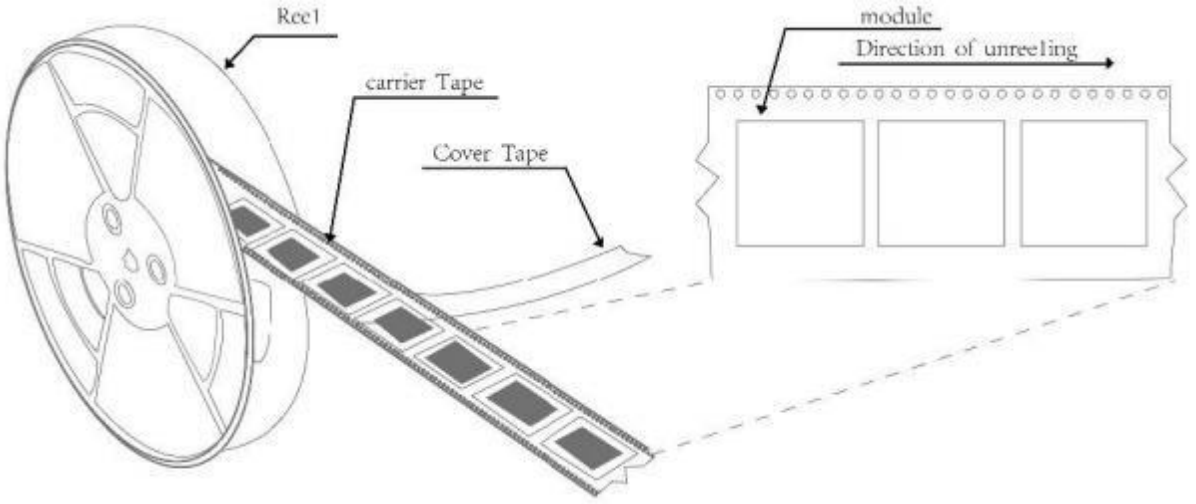
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ≤2 times



8 Package Information

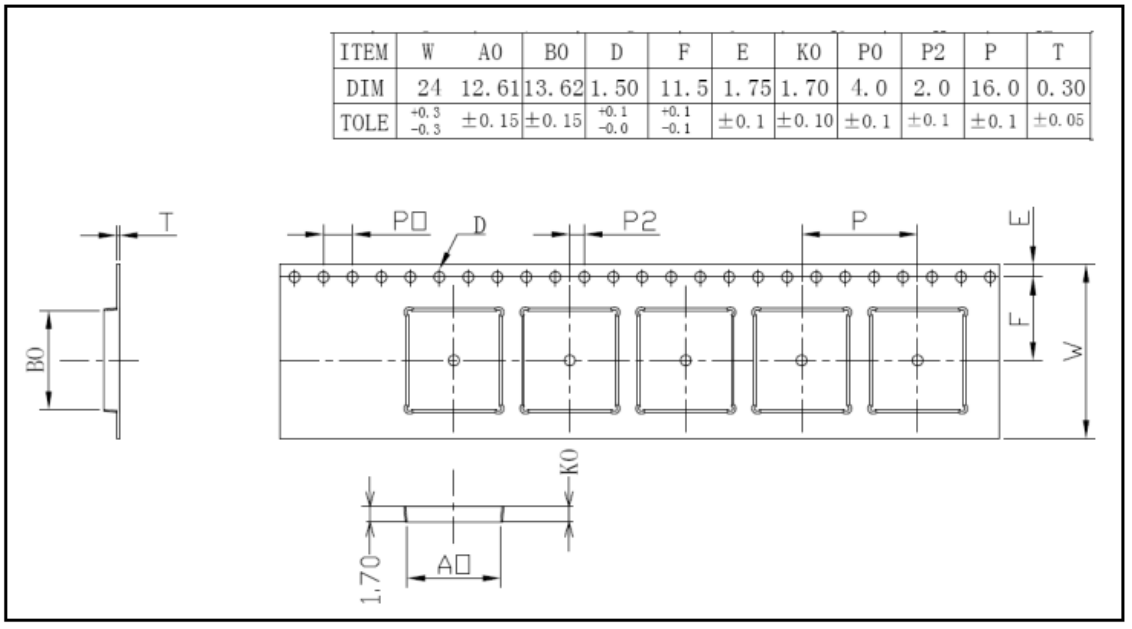
8.1Reel

A roll of 2000pcs

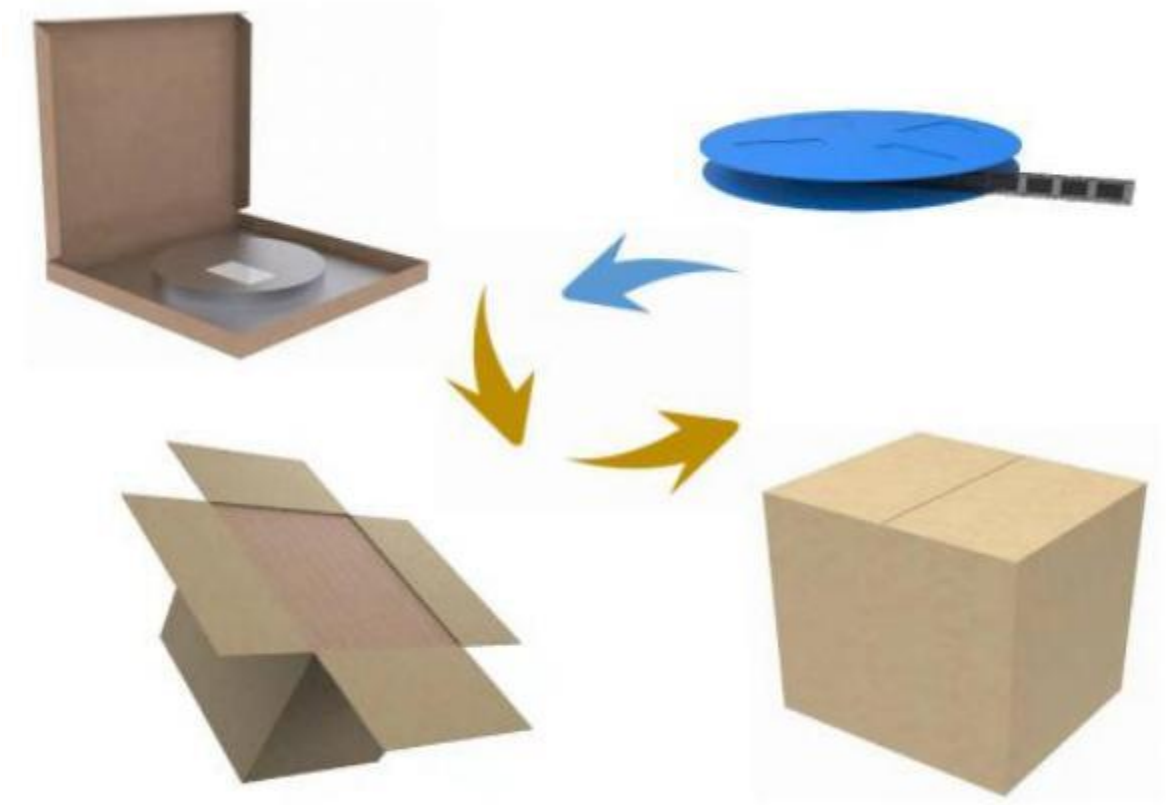


8.2 Carrier Tape Detail

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