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KX6330
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	2021/5/23	The first version		

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1 Overview

1.1 Introduction

KX6330 is a highly integrated IEEE 802.11A/ B/G/N/AC MAC/ baseband/RF WLAN and Bluetooth baseband/RF single chip. It combines a WLAN MAC, a WLAN baseband with ITIR capability, and the BT protocol (LM). LL and LE), BT baseband, modem, WLAN/BT RF on one chip. This module provides a complete solution for high performance WLAN and Bluetooth devices. BT controller supports BT 4.2 system, compatible with Bluetooth 2.1+EDR.

1.2 Features

- WLAN Access Point 802.11a/b/g/n/ac/e/i/h
- Supports BT : V2.1+ EDR and V4.2, For BR/EDR,V4.0BLE
- Single stream spatial multiplexing data rate up to 433.3 Mbps
- supports WLAN low power consumption
- supports WLAN 2.4GHz and 5GHz bands
- supports 20/40MHz at 2.4GHz
- Support 20/40/80MHz 5GHz
- supports WLAN-Bluetooth coexistence
- supports low power Bluetooth
- Bluetooth 4.0 dual mode support

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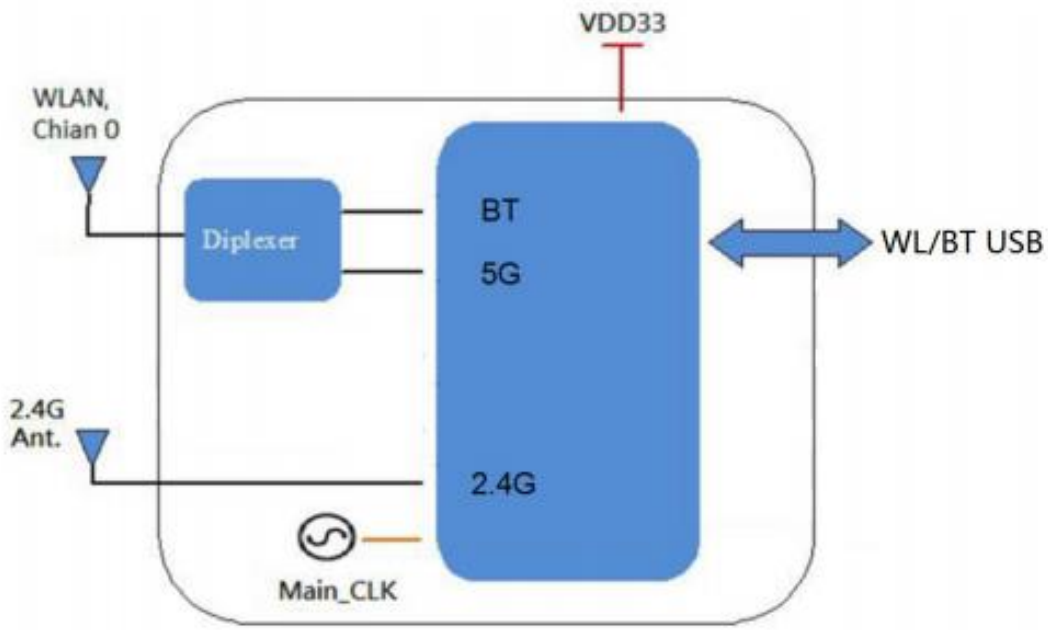
1.3 Block Diagra



1.4 General Specification

Model Name	KX6128
Product Description	Support WLAN-Bluetooth coexistence
Dimension	L x W x H: 12.x 13x 1.6(±0.2) mm
Wi-Fi Interface	Support USB2.0
BT interface	Support USB2.0
Operating temperature	-40°C to 85°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	**Parameter**	**Minimum**	**Typical**	**Maximum**	**Units**
VDD33	3.3V I/O Supply Voltage	3.0	3.3	3.6	V
VD10	1.05V Core Supply Voltage	0.945	1.05	1.155	V

2 RF Specifications

2.1 2.4GHz RF Specification

Features	Description
WLAN Standard	IEEE802.11a/b/g/n/ac/e/i/h
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)
Modulation Method	DSSS,DBPSK, DQPSK, CCK and OFDM (BPSK, QPSK, 16QAM,64QAM and 256-QAM)
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 @ 11 Mbps	17dBm	±2dBm	≤-13dB
802.11g@54Mbps	14dBm	±2dBm	≤-25dB
802.11n@BW20_MCS7	13dBrn	±2dBm	≤-28dB
802.11n@BW40_MCS7	13dBrn	±2dBm	≤-28dB

2.4G Receiver Specifications

RX Rate	Min Input Level(Typ)	Max Input Level(Typ)	PER
802.11b@11Mbps	-85dBm	-85dBm	<8%
802.11g@54Mbps	-70dBm	-70dBm	< 10%
802.11n@BW20_MCS7	-65dBm	-65dBm	< 10%
802.11n@BW40_MCS7	-65dBm	-65dBm	< 10%

2.2 5GHz RF Specification

Features	Description
WLAN Standard	IEEE802.11a/b/g/n/ac/e/i/h
Frequency Range	4.9GHz ~ 6.0GHz (5GHz ISM Band)
Modulation Method	DSSS,DBPSK, DQPSK, CCK and OFDM (BPSK, QPSK, 16QAM,64QAM and 256-QAM)

5G Transmitter Specifications

TX Rate	TX Power	TX Power Tolerance	EVM
802.1 1a@ 54Mbps	13dBm	±2dBm	≤-25dB
802.11n@BW20_MCS7	12dBm	±2dBm	≤-28dB
802.11n@BW40_MCS7	12dBrn	±2dBm	≤-30dB
802.11ac@BW80_MCS9	10dBrn	±2dBm	≤-32dB

5G Receiver Specifications

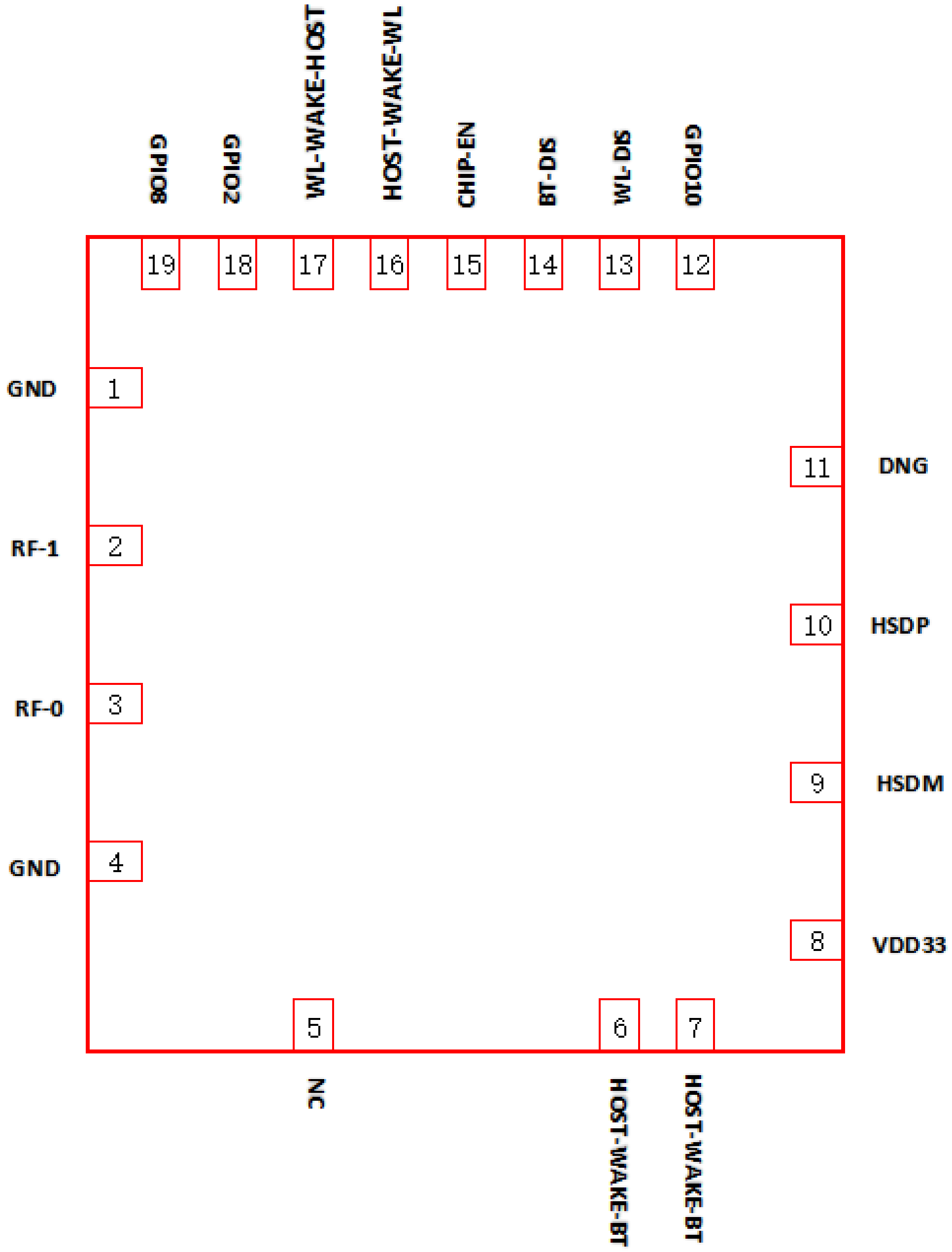
RX Rate	Min Input Level(Typ)	Max Input Level(Typ)	PER
802.11a@54Mbps	-70dBm	-70dBm	<10%
802.11n@BW20_MCS7	-65dBm	-65dBm	< 10%
802.11n@BW40_MCS7	-60dBm	-60dBm	< 10%
802.11ac@BW80_MCS9	-57dBm	-57dBm	< 10%

2.3 Bluetooth Specification

Feature	**Description**		
General Specification			
Bluetooth Standard	Bluetooth V3.3 of 1, 2 and 3 Mbps.		
Host Interface	USB 2.0		
Antenna Reference	Small antennas with 0~2 dBi peak gain		
Frequency Band	2.400 GHz ~ 2483.5 GHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
Power (BDR：GFSK/1Mbps)	0dBm	5 dBm	10dBm
Power(EDF：π /4-DQPSK/2Mbps)	0dBm	5 dBm	10dBm
Power (BLE：GFSK/1Mbps)	0dBm	5 dBm	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



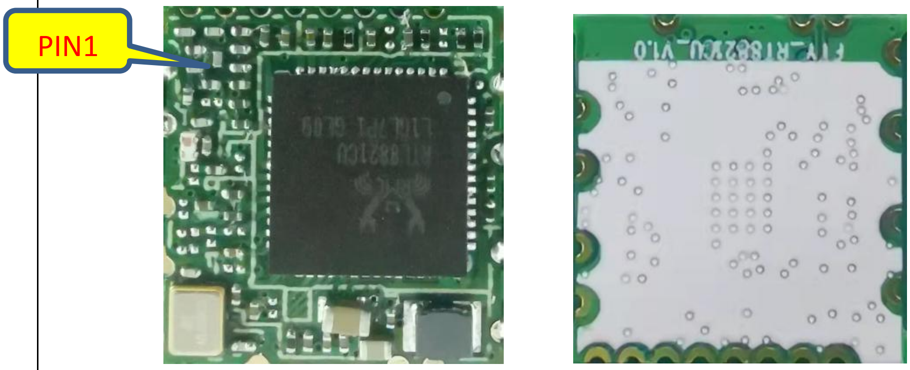
3.2 Pin Definition

Pin	Definition	Description
1	GND	GND
2	RF1	WIFI 5G& BT ANT
3	RF0	WIFI 2.4G ANT
4	GND	GND
5	NC	NC
6	BT_WAKE_HOST	GPIO14
7	HOST_WAKE_BT	GPIO13
8	VDD33	3.3V
9	HSDM	High-Speed USB D- Signal
10	HSDP	High-Speed USB D+ Signal
11	GND	GND
12	GPIO1	PCM data Out, shared with GPIO1
13	WL_DIS	Shared with GPIO9. This pin can externally shut down the RTL8821CU-CG WLAN function when WL_DIS# is pulled low. When this pin is pulled low, USB interface will be disabled. This pin can also be configured as the WLAN Radio-offfunction with host interface remaining connected.
14	BT_DIS	Shared with GPIO11. This pin can externally shut down the RTL8821CU-CG BT function when BT_DIS# is pulled Low. When this pin is pulled low, USB interface will be also disabled. This pin can be also defined as the BT Radio-off function with host interface remaining connected.
15	CHIP_EN	This Pin Can externally shut down the RTL8821CU-CG (No Extra Power Switch Required). When this function is not required, external pull high is required
16	HOST_WAKE_WL	GPIO7
17	WL_WAKE_HOST	GPIO6
18	GPIO2	PCM Synchronization control, shared with GPIO2
19	GPIO8	GPIO8

4 Dimensions

4.1 Module Picture

L x W : 12 x 13 (±0.2) mm

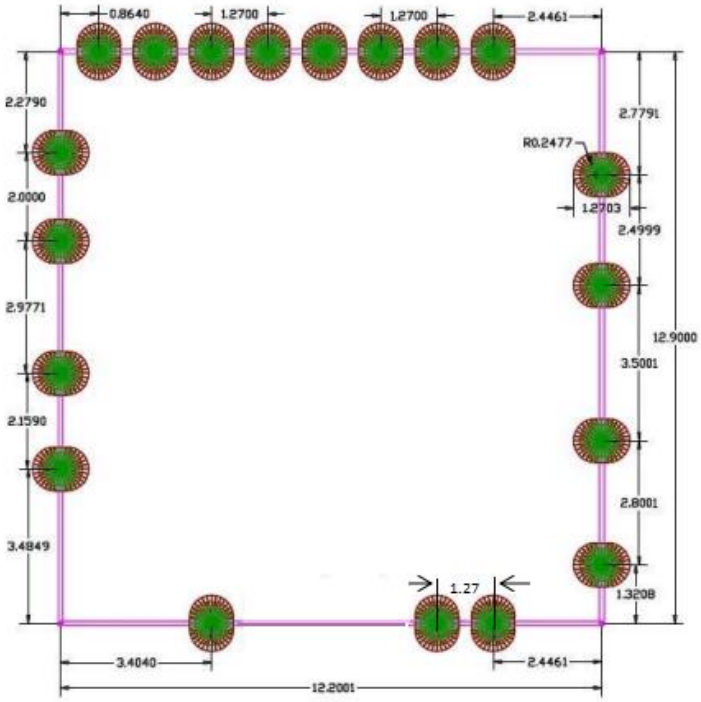


H:1.6(±0.2)mm

4.2 Module Physical Dimensions

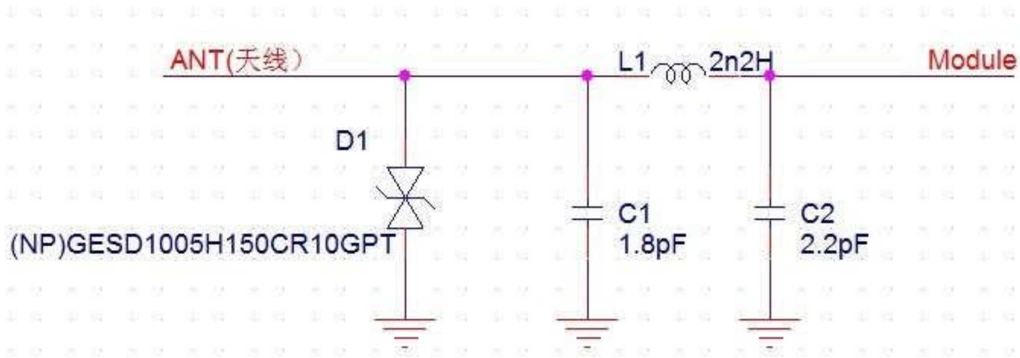
(Unit: mm)

< TOP VIEW >



5 Reference Design

5.1 WIFI RF Circuit reference pictures

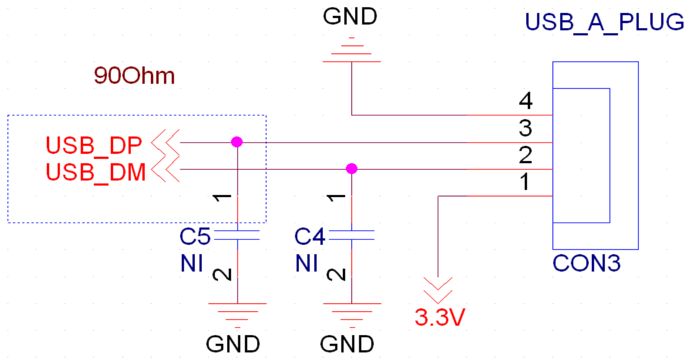


1. Above the dotted box part of the antenna matching is needed, the actual antenna matching electronic parameters shall prevail.

2.For RF part layout to do 50 ohm impedance. can't go on 90°of layout .The line length can't more than 20 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

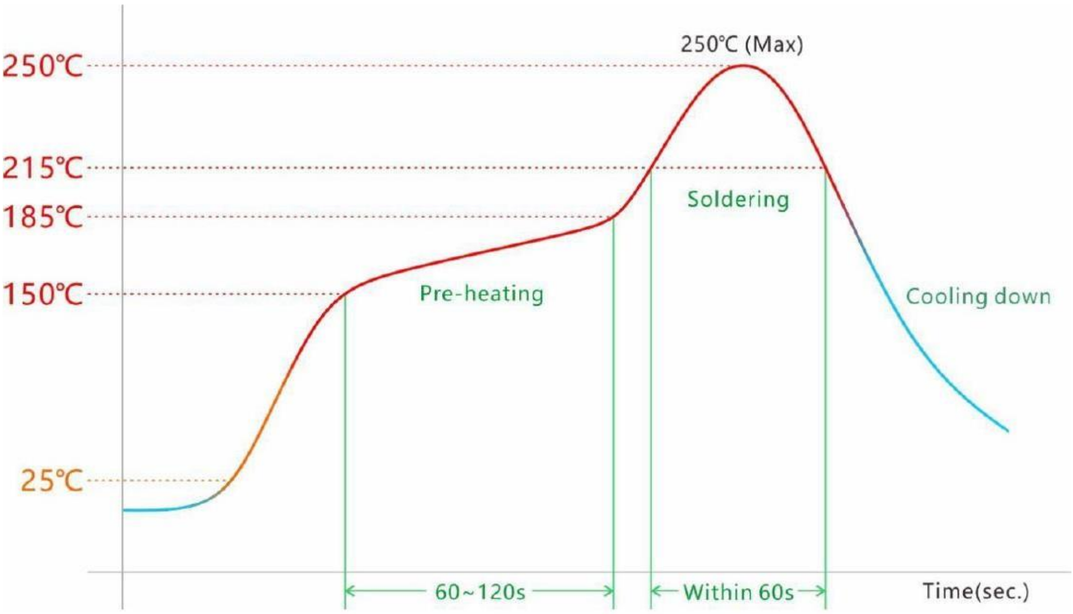
2.It is recommended to keep a power switch at the input end of the power supply. Each time the card is opened or closed, it can be used for power on and power off. WIFI can be reset, so that there will be no error phenomenon of not opening WIFI

6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8821CU-CG QFN56	Realtek Semiconductor Corp	
2	PCB	FTY_RT8821CU_V1.0	Shenzhen xiangyu circuit co., LTD	
3	PCB	FTY_RT8821CU_V1.0	Shenzhen Kexiang Precision Circuit Technology Co., LTD	
4	Crystal oscillator	2520 40MHZ 10PPM 12PF (-20to+85 度)	hefei jing wei Electronics Co. Ltd.	
5	Crystal oscillator	2520 40MHZ 12PF ± 10PPM -20+70 度	Zhejiang Lanjingxin Microelectronics Co., LTD	

7 Recommended Reflow Profile

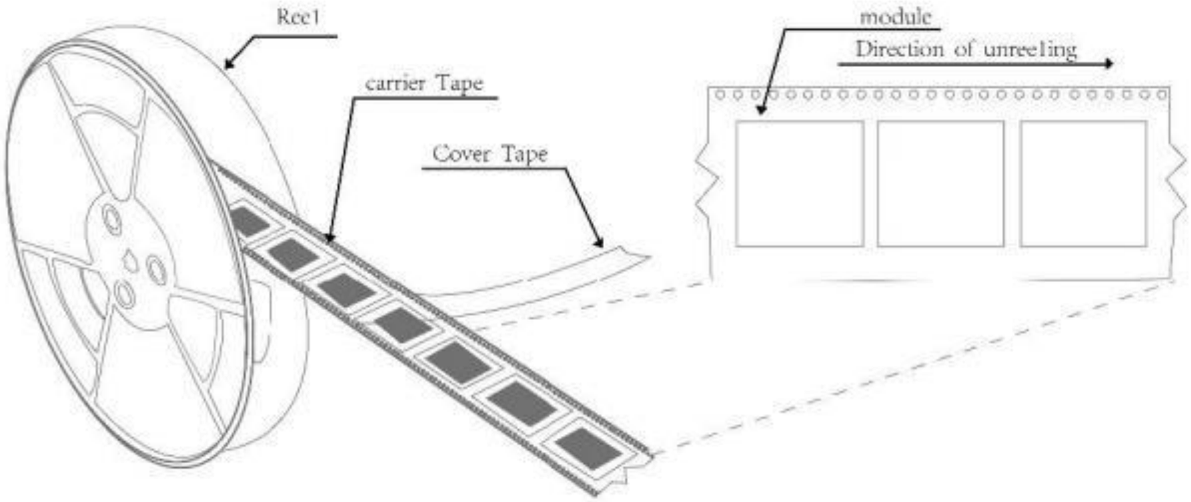
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ⩽2 times



8 Package Information

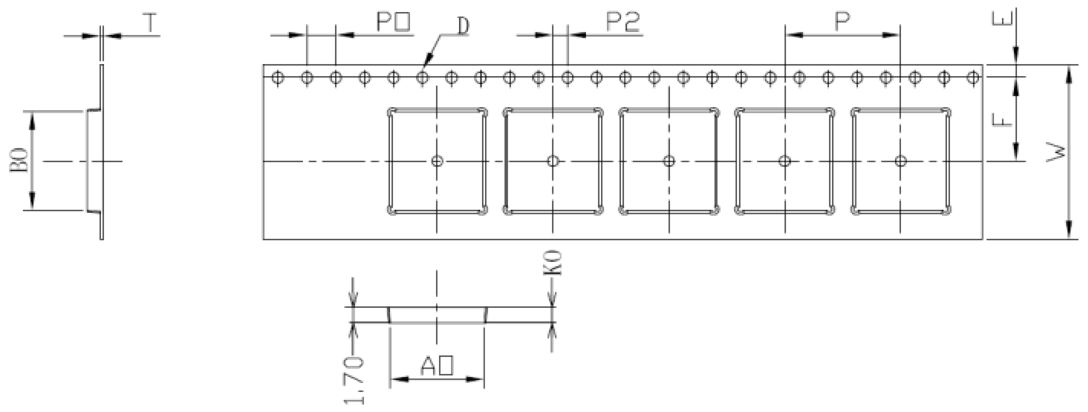
8.1Reel

A roll of 2000pcs

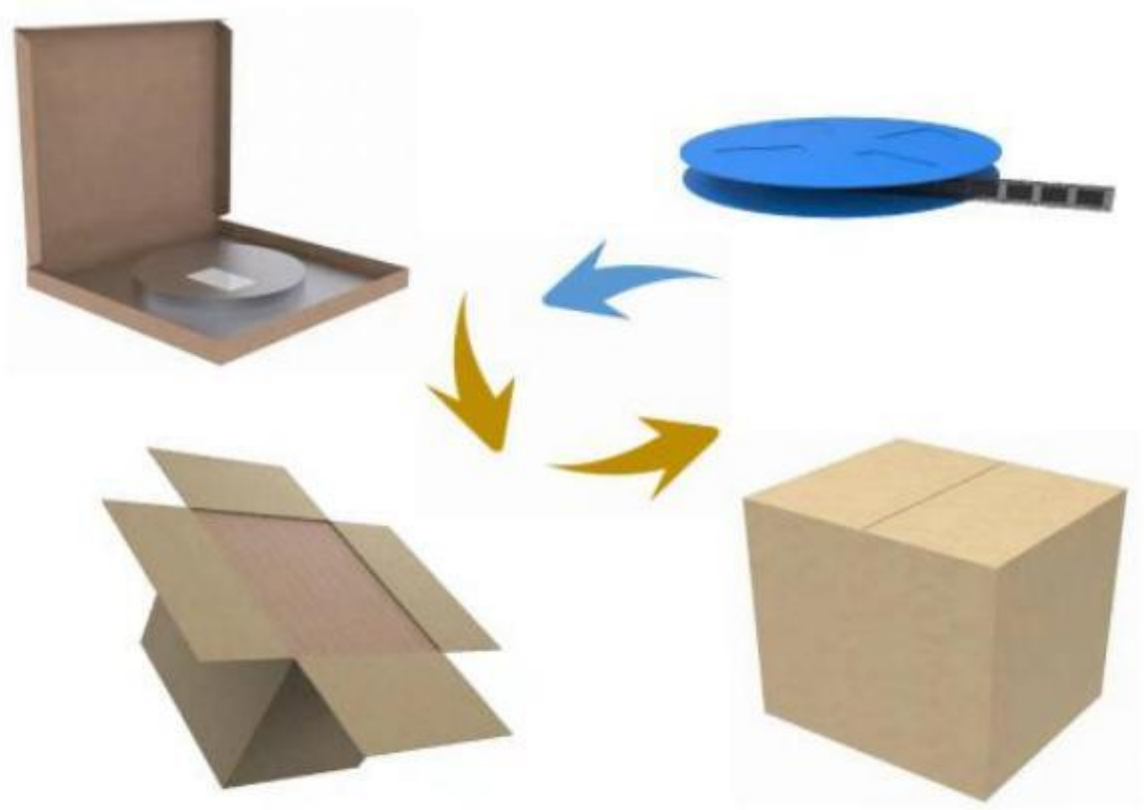


8.2 Carrier Tape Detail

ITEM	W	AO	BO	D	F	E	KO	PO	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