Comchips

KX6572
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	2022/3/22	The first version		

CONTENTS

1 Overview

1.1 Introduction

The KX6572 is a highly integrated single-chip that support 2-stream 802.11ax 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 RTL8852BE provides a complete solution for a high-performance integrated wireless and Bluetooth device.

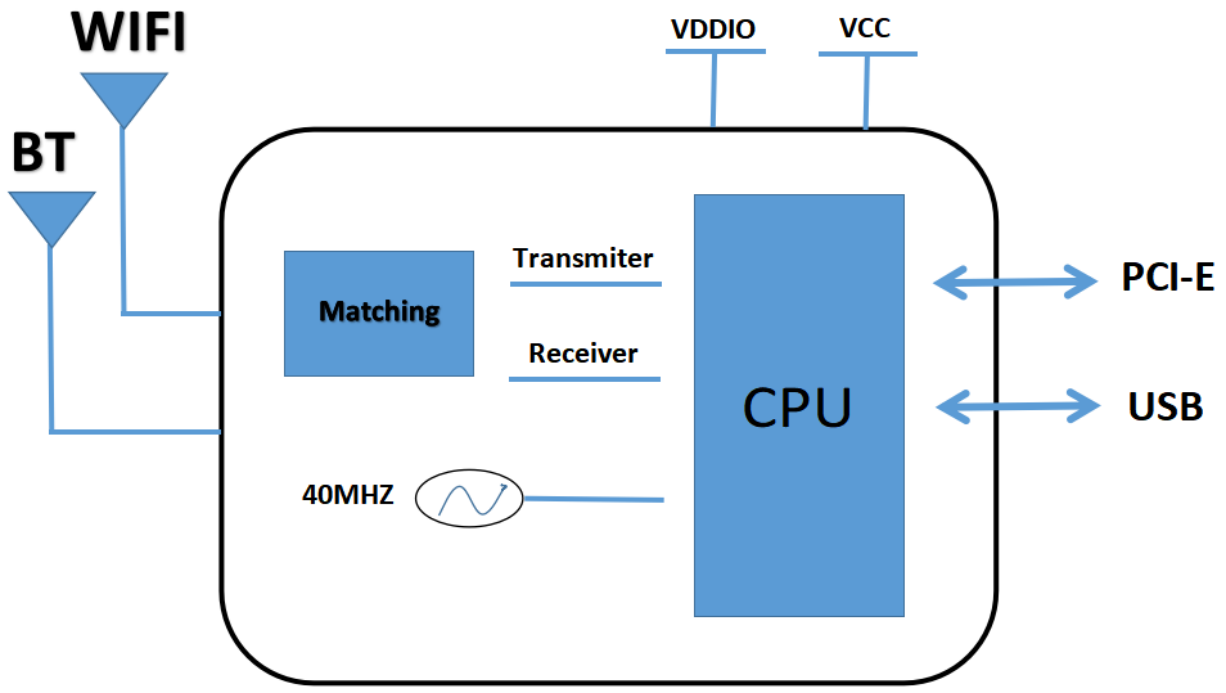
The KX6572 baseband implements Multi-user Multiple Input, Multiple Output (MU-MIMO) Orthogonal Frequency Division Multiplexing (OFDM) with two transmit and two receive paths (2T2R). Features include two spatial stream transmissions, short Guard Interval (GI), spatial spreading, and support for variant channel bandwidth. Moreover, KX6572 provides one spatial stream space-time block code (STBC), Transmit Beamforming (TxBF) and Low Density Parity Check (LDPC) to extend the range of transmission. At the receiver, extended range and good minimum sensitivity is achieved by having receiver diversity up to 2 antennas. As the recipient, the KX6572 also supports explicit sounding packet feedback that helps senders with beamforming capability.

1.2 Features

- CMOS MAC, Baseband PHY and RF in a single chip for IEEE 802.11a/b/g/n/ac/ax compatible WLAN
- Support Bluetooth 5 system (BT 5.2 Logo Compliant)
- Complete 802.11n MIMO solution for 2.4GHz and 5Ghz band
- Maximum PHY data rate up to 286.8 Mbps using 20MHz bandwidth, 573.5Mbps using 40MHz bandwidth, and 1201Mbps using 80MHz bandwidth
- Backward compatible with 802.11a/b/g devices while operating at 802.11n data rates
- Backward compatible with 802.11a/n/ac devices while operating at 802.11ax data rates
- Compliance with Windows operating system host-implemented FIPS 140-2 security requirements
- Support 20/40/80MHz 5GHz
- supports WLAN-Bluetooth coexistence
- supports low power Bluetooth
- Support Bluetooth 5 system (BT 5.2 Logo Compliant)

Compatible with Bluetooth v2.1+EDR

1.3 Block Diagra



1.4 General Specification

Model Name	KX6572
Product Description	WIFI6 and Bluetooth M.2 Module
Dimension	L x W x H: 22x 30 x 2.4 (±0.3) mm
Wi-Fi Interface	Support PCIE M.2
BT interface	Support USB M.2
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	Parameter	Minimum	Typical	Maximum	Units
VDD33	3.3V I/O Supply Voltage	3.1	3.3	3.5	V
VD09	0.9V Core Supply Voltage	0.84	0.9	0.99	V
VD13	1.35V Analog Supply Voltage	1.35	1.4	1.485	V

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 with 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
802.11b@11Mbps	17dBm	±2dBm	≤-13dB
802.11g@54Mbps	14dBm	±2dBm	≤-25dB
802.11n@BW20_MCS7	13dBm	±2dBm	≤-28dB
802.11n@BW40_MCS7	13dBm	±2dBm	≤-28dB

Frequency Error：±12PPM

2.4G Receiver Specifications

RX Rate	Standard Value	PER
802.11b@11Mbps	-85dBm	<8%
802.11g@54Mbps	-68dBm	< 10%
802.11n@BW20_MCS7	-66dBm	< 10%
802.11n@BW40_MCS7	-65dBm	< 10%

2.2 5GHz RF Specification

Features	Description
WLAN Standard	IEEE802.11a/n/ac/ax
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
802.11a@ 54Mbps	13dBm	±2dBm	≤-25dB
802. 11n@BW40_MCS7	12dBm	±2dBm	≤-28dB
802.11ac@BW80_MCS9	10dBm	±2dBm	≤-32dB
802.11ax@BW80_MCS11	10dBm	±2dBm	≤-35dB

5G Receiver Specifications

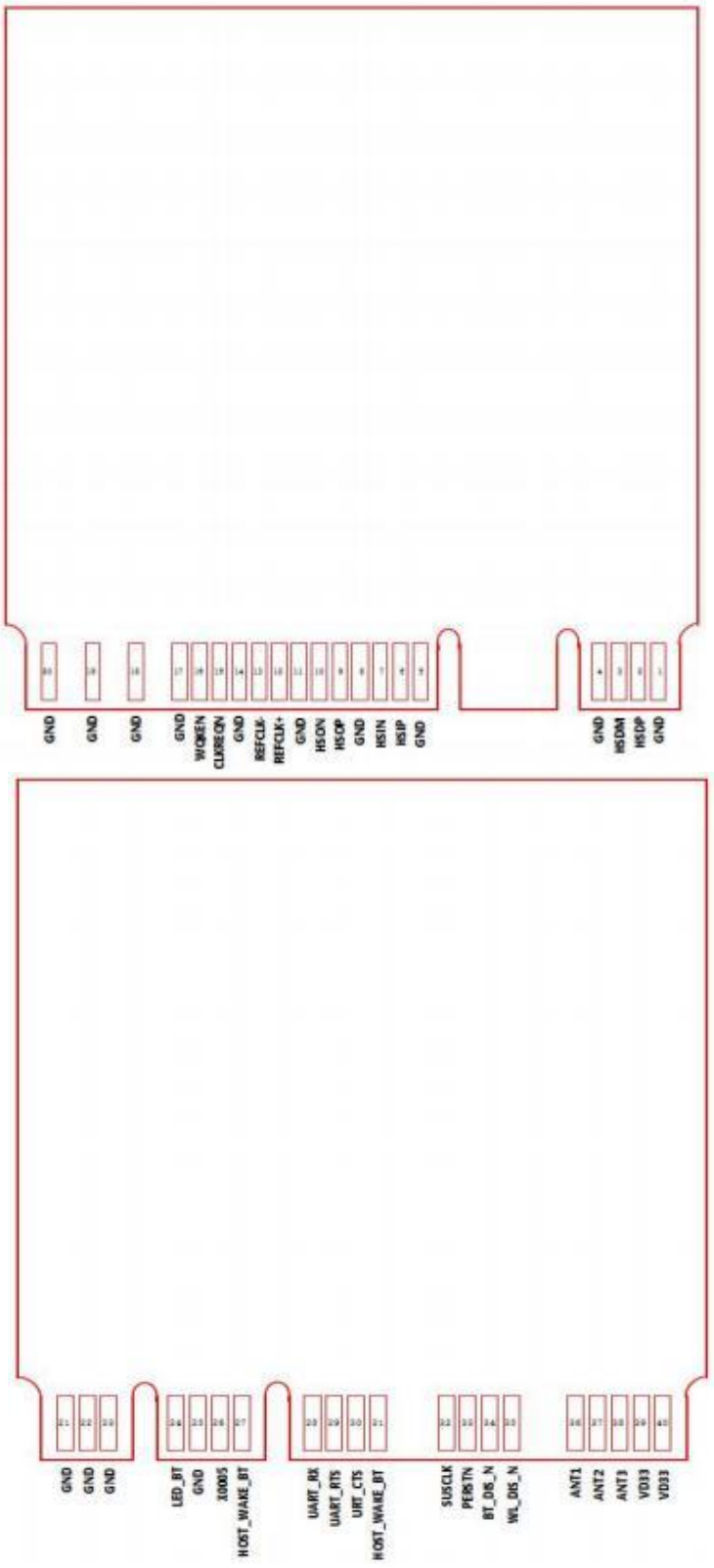
RX Rate	Standard Value	PER
802.11a@54Mbps	-70dBm	<10%
802. 11n@BW40_MCS7	-65dBm	< 10%
802.11ac@BW80_MCS9	-56dBm	< 10%
802.11ax@BW80_MCS11	-57dBm	< 10%

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	——	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

3.1Pin Outline



3.2 Pin Definition

Pin	Definition	Description
1	GND	Ground
2	HSDP	HSDP
3	HSDM	HSDM
4	GND	Ground
5	GND	Ground
6	HSIP	HSIP
7	HSIN	HSIN
8	GND	Ground
9	HSOP	HSOP
10	HSON	HSON
11	GND	Ground
12	REFCLK+	REFCLK+
13	REFCLK-	REFCLK-
14	GND	Ground
15	CLKREQN	CLKREQN
16	WQKEN	WQKEN
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	LED_BT	LED_BT
25	GND	Ground
26	X0005	X0005

27	UART_TX	UART_TX
28	UART_RX	UART_RX
29	UART_RTS	UART_RTS_
30	UART_CTS	UART_CTS
31	HOST_WAKE_BT	HOST_WAKE_BT
32	SUSCLK	SUSCLK
33	PERSTN	PERSTN
34	BT_DIS _N	BT_DIS_N
35	WL_DIS_N	WL_DIS_N
36	ANT1	ANT1
37	ANT2	ANT2
38	ANT3	ANT3
39	VD33	VD33
40	VD33	VD33

4 Dimensions

4.1 Module Picture

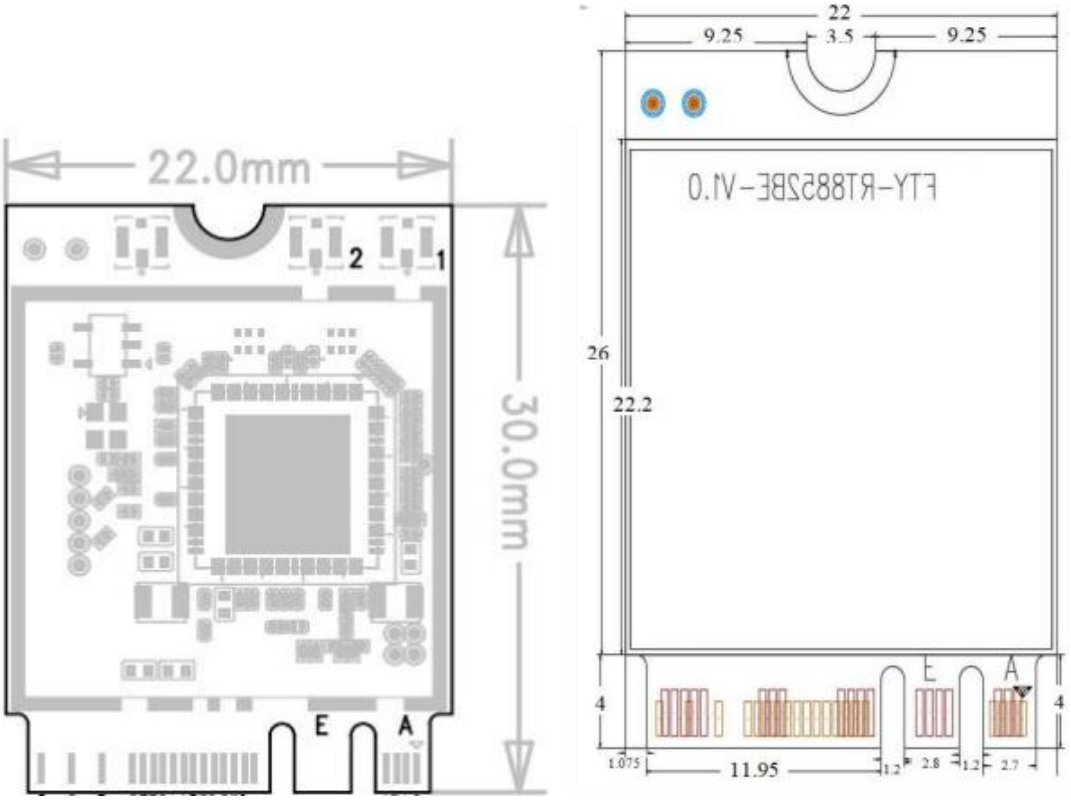
L x W : 22.x 30 (±0.3) mm

H:2.4(±0.2)mm

4.2 Module Physical Dimensions

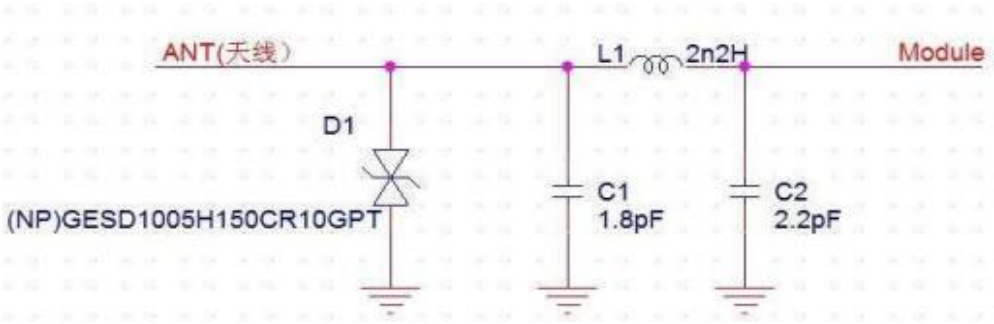
(Unit: mm)

< TOP VIEW >



5 Reference Design

5.1 WIFI RF Circuit reference pictures

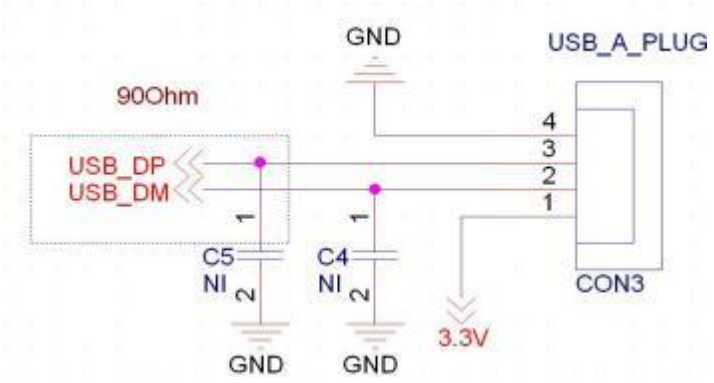


1. Above the dotted box part of the antenna matching is needed, the actual antenna matching electronic parameters shallprevail.

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

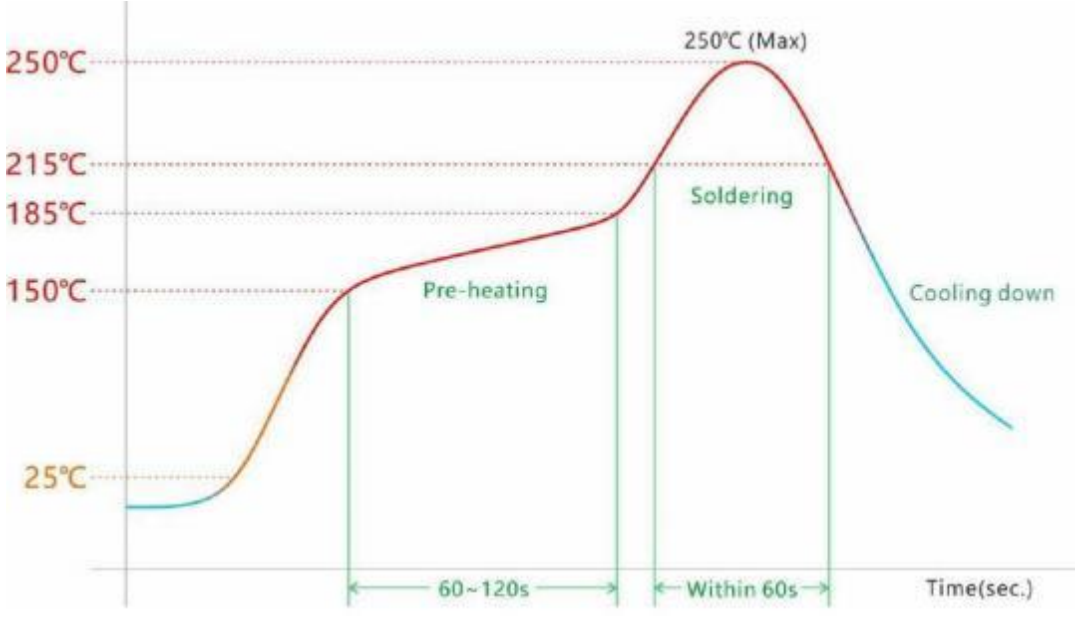
2.It is recommended to keep a power switch at the input end of the power supply. Each time the card is opened or closed, it can be used for power on and power off. WIFI can be reset, so that there will be no error phenomenon of not opening WIFI.

6.The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8852BE-CG	Realtek Semiconductor Corp	
2	PCB	FTY-RT8852BE-V1.0	Shenzhen xiangyu circuit co., LTD	
3	PCB	FTY-RT8852BE-V1.0	Shenzhen Kexiang Precision Circuit Technology Co., LTD	
4	Crystal oscillator	2016 40MHz ±8ppm 12pF (-30~85° C)	hefei jing wei te Electronics Co. Ltd.	
5	Crystal oscillator	2016 40MHz ±8ppm 12pF (-30~85° C)	ZhejiangLanjing Microelectronics Co., LTD.	
6	duplexor	双工器 1.6×0.8mm 6P 2.4G-5.95G -40_+85°	Shenzhen Flytel Technology Co., LTD	
7	duplexor	双工器 1.6×0.8mm 6P 2.4G-5.95G -40_+85°	Shenzhen Microgate Technology Co., Ltd	

7 Recommended Reflow Profile

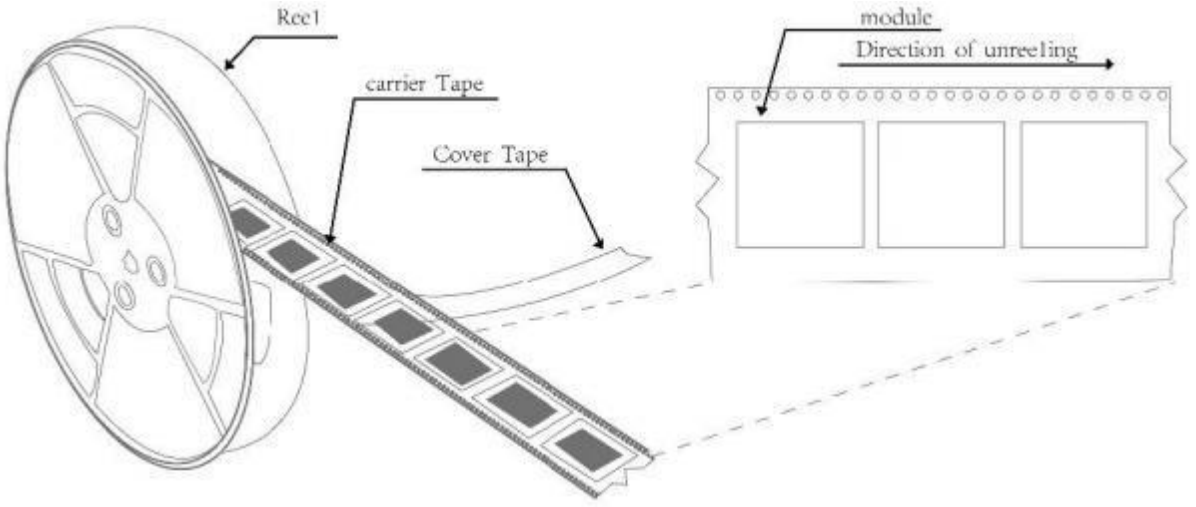
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ≤2 times



8 Package Information

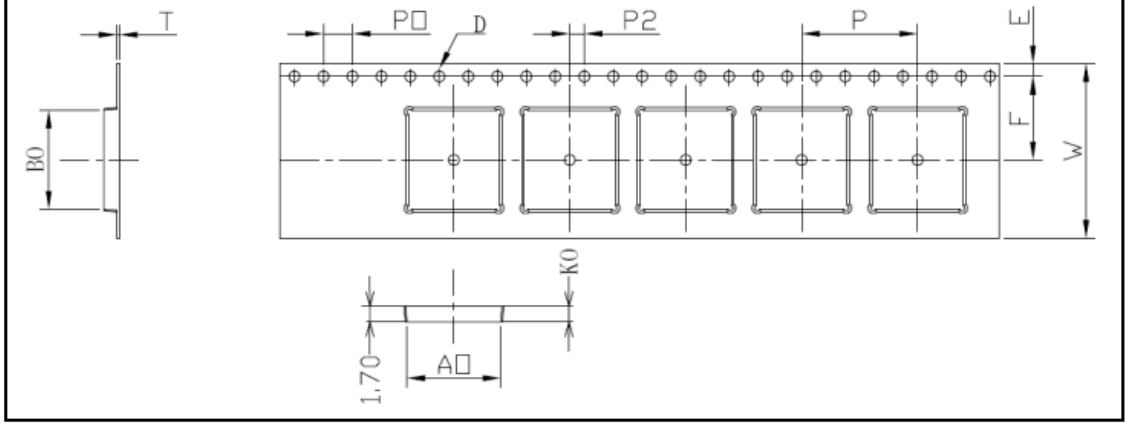
8.1Reel

A roll of 2000pcs

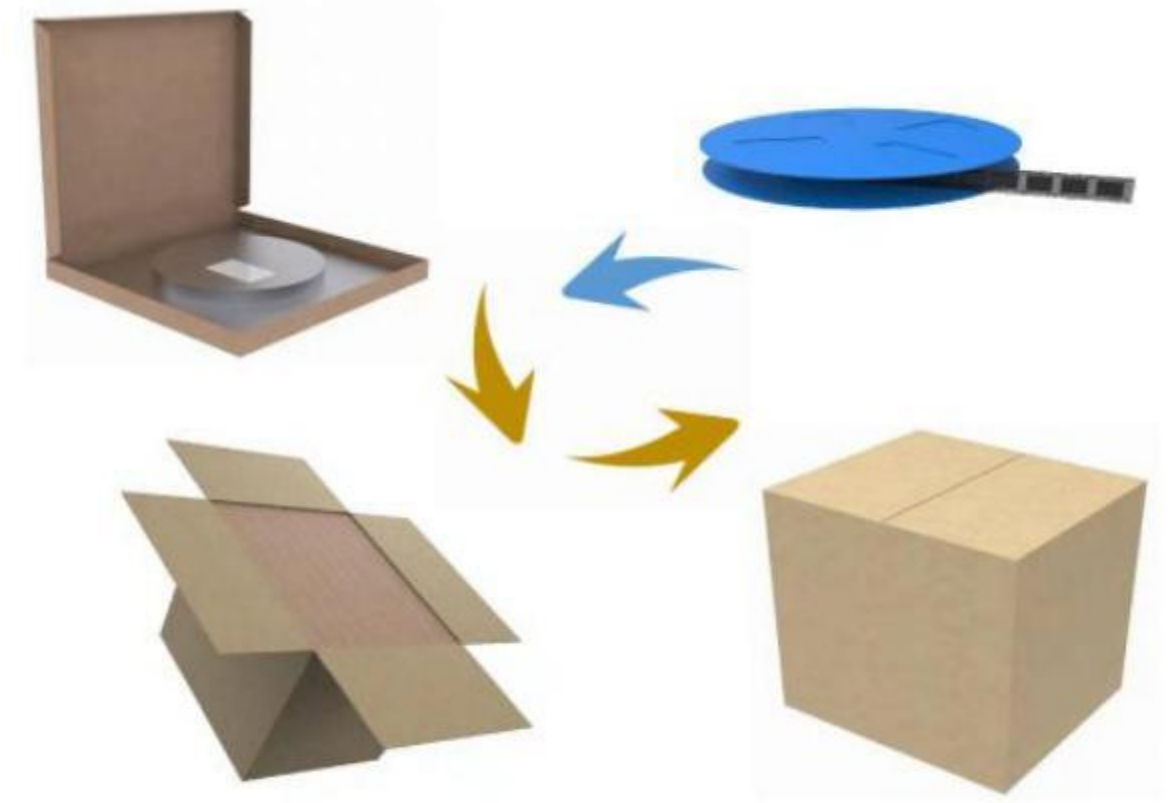


8.2 Carrier Tape Detail

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