目录 CONTENTS

Comchips

KX6135
Module Data sheet

目录 CONTENTS

KX6135
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Website: www.comchips.com

Customer Approval

Company _____

Title _____

Signature _____

Date _____

FTY _____

Version Update Record

Version	Date	Revision Content	Editorial staff	approval
V1.0	2021/05/12	The first version		

CONTENTS

1 Overview

目录 CONTENTS

1.1 Introduction

KX6135 is a highly integrated 2.4 GHz Wi-Fi module that support the IEEE 802.11b/g/n baseband and RF circuit.It supports 20 MHz standard bandwidth and 5 MHz/10 MHz narrow bandwidth, and provides a physical layer rate up to 72.2 Mbit/s. Wi-Fi baseband supports the orthogonal frequency division multiplexing (OFDM) technology and isbackward compatible with the direct sequence spread spectrum (DSSS) and complementary code keying (CCK) technologies, offering various data rates defined in the IEEE 802.11 b/g/n protocol.

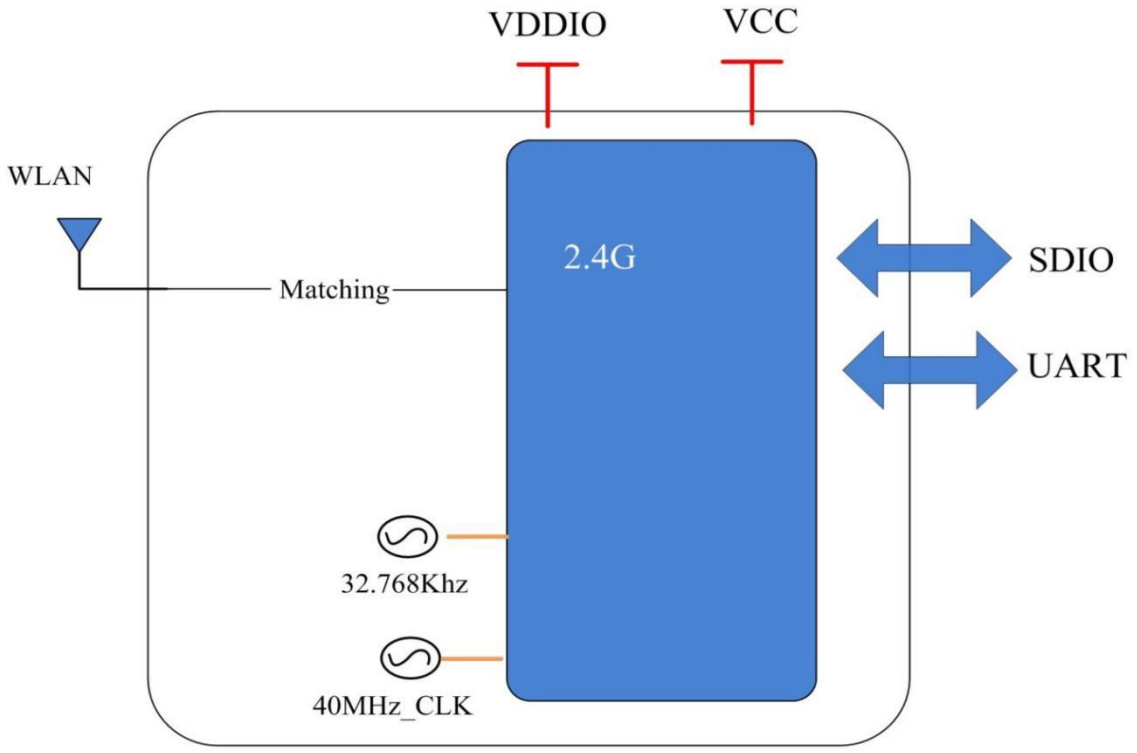
Module chipset integrates a high-performance 32-bit microprocessor, a hardware security engine, and various peripheral interfaces, including the SPI, UART, I2C, PWM, GPIO, and multi-channel ADC. In addition, it provides high-speed SDIO2.0 slave interfaces, with clock frequency up to 50 MHz. Its built-in SRAM and flash can operate independently and even programming is allowed on the flash.

1.2 Features

- Operate at ISM frequency bands (2.4GHz)
- Maximum rate of 72.2 Mbit/s@HT20 MCS7
- SDIO interface for Wi-Fi
- Low power dissipation
- High transmitting power
- High receiving sensitivity
- PHY supporting IEEE 802.11b/g/n
- MAC supporting IEEE802.11 d/e/h/i/k/v/w
- Module integrated 32K clock
- WFA WPA, WFA WPA2 personal, and WPS2.0 for Wi-Fi
- Built-in 352 KB SRAM and 288 KB ROM
- Built-in 2 MB flash memory

目录 CONTENTS

1.3 Block Diagram



1.4 General Specification

Model Name	KX6135
Product Description	Support Wi-Fi functionalities
Dimension	L x W x H: 12x 12(±0.2) mm
Wi-Fi Interface	Support SDIO
BT interface	NC
Operating temperature	0 to +80° C
Storage temperature	-55°C to 125°C
RoHS	All hardware components are fully compliant with EU RoHS directive

目录 CONTENTS

1.5 DC Characteristics

Power Supply Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VDD33(pin#l2)	3.3V Power Supply Voltage	3.1	3.3	3.4	V

1.6 Recommended

		Min.	Typ.	Max.	Unit
Operating Temperature		-30	25	70	deg. C
VCC		2.3	3.3	3.6	V
VDDIO		-	1.8V/3.3V	-	
Power Consumption		VDD33 = 3.3V(Unit:mA)			
	Sleep Mode	5uA			
	Sleep Mode (2.4G HT20)	365			
	RX Thraughput Test(2.4GHT20)	53			

Note: Suggested power input range in 3.3V.

2 RF Specifications

目录 CONTENTS

Features	Description
WLAN Standard	IEEE 802.11 b/g/n/d/e/h/i/k/v/w
Frequency Range	2.412~2.472GHz (2.4GHz ISM Band)
Modulation	802.11b: DSSS(1M,2Mbps), CCK(11, 5.5Mbps),802.11 g/n: OFDM
Date Rate	802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 72.2Mbps
Frequency Tolerance	W ± 20ppm
Operating Channel	Wi-Fi 2.4GHz: 11: (Ch. 1-11) – US 13: (Ch. 1-13) – EU
Media Access Control	Wi-Fi: CSMA/CA with ACK
Antenna	External Antenna
Network Architecture	Infrastructure mode Software AP Wi-Fi Direct
Security	WFA WPA, WFA WPA2 personal, and WPS2.0
OS Supported	LiteOS/Linux

2.4G Transmitter Specifications

TX Rate	TX Power	TX Power Tolerance	EVM
802.11b @ 1 Mbps	17dBm	±1.5dBm	≤-10dB
802.11b @ 11 Mbps	17dBm	±1.5dBm	≤-10dB
802.11g@6Mbps	16dBm	±1.5dBm	≤-5dB
802.11g@54Mbps	16dBm	±1.5dBm	≤-25dB
802.11n @65Mbps	16dBrn	±1.5dBm	≤-10dB
802.11n @65Mbps	16dBrn	±1.5dBm	≤-28dB

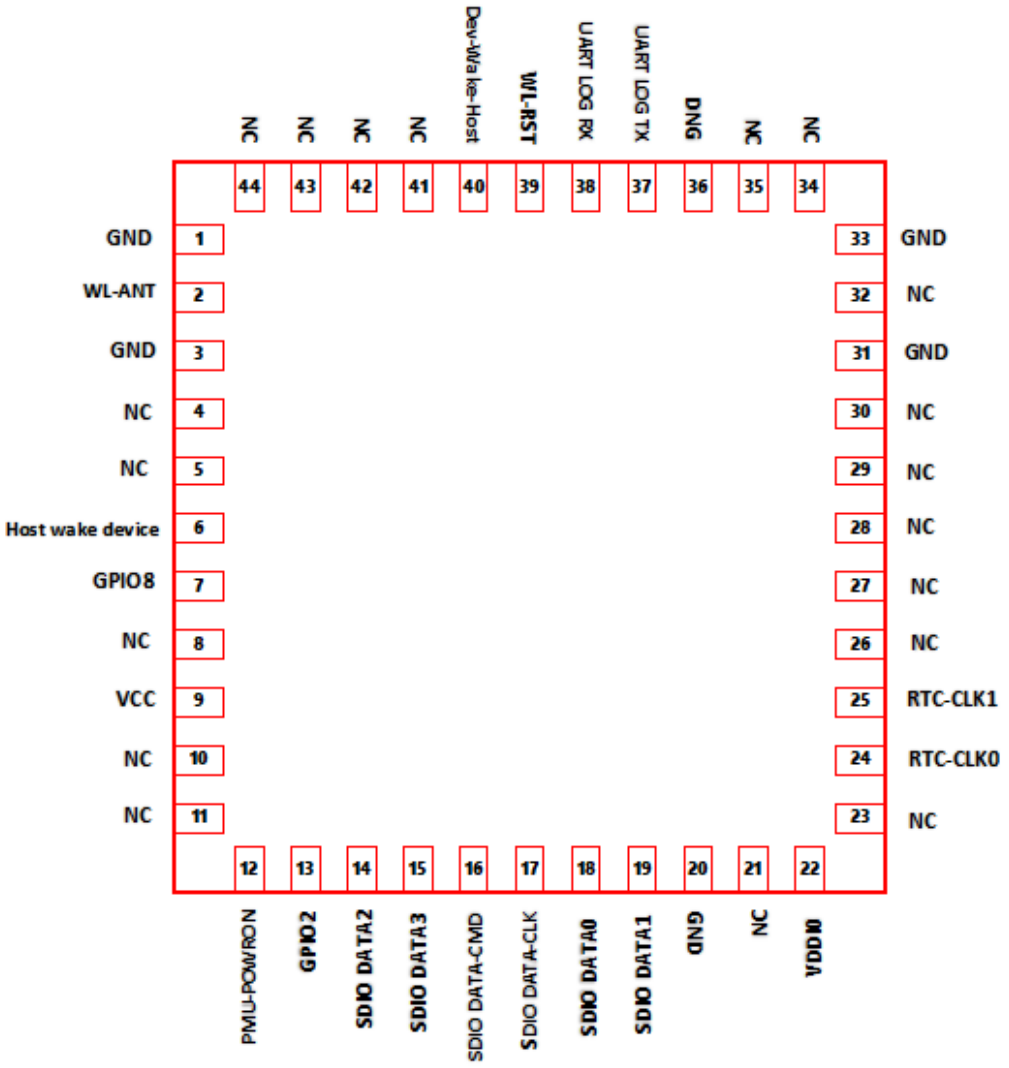
目录 CONTENTS

2.4C Receiver Specifications			
RX Rate	**Min Input Level(Typ)**	**Max Input Level(Typ)**	**PER**
802.11b@ 1Mbps	-92dBm	-8dBm	<8%
802.11b@2Mbps	-88dBm	-8dBm	<8%
802.11b@ 5.5Mbps	-87dBm	-8dBm	<8%
802.11b@ 11Mbps	-84dBm	-8dBm	<8%
802.11g@6Mbps	-88dBm	-20dBm	< 10%
802.11g@9Mbps	-86dBm	-20dBm	< 10%
802.11g@12Mbps	-85dBm	-20dBm	< 10%
802.11g@18Mbps	-83dBm	-20dBm	< 10%
802.11g@24Mbps	-80dBm	-20dBm	< 10%
802.11g@36Mbps	-76dBm	-20dBm	< 10%
802.11g@48Mbps	-72dBm	-20dBm	< 10%
802.11g@54Mbps	-71dBm	-20dBm	< 10%
802.11n@HT20_MCS0	-86dBm	-20dBm	< 10%
802.11n@HT20_MCS1	-83dBm	-20dBm	< 10%
802.11n@HT20_MCS2	-81dBm	-20dBm	< 10%
802.11n@HT20_MCS3	-78dBm	-20dBm	< 10%
802.11n@HT20_MCS4	-75dBm	-20dBm	< 10%
802.11n@HT20_MCS5	-70dBm	-20dBm	< 10%
802.11n@HT20_MCS6	-69dBm	-20dBm	< 10%
802.11n@HT20_MCS7	-68dBm	-20dBm	< 10%

3 Pin Assignments

目录 CONTENTS

3.1 Pin Outline



3.2 Pin Definition

目录 CONTENTS

NO	Name	Type	Description	Voltage
1	GND	—	Ground connections	
2	WL_ANT	I/O	RF I/O port	
3	GND	-	Ground connections	
4	NC	—	Floating (Don't connected to ground)	
5	NC	—	Floating (Don't connected to ground)	
6	Host wake device	I	Host Wake up Wi-Fi, rising edge trigger IC GPIO06.	VDDIO
7	GPIO8	I/O	Floating (If not used)	VDDIO
8	NC	—	Floating (Dont connected to ground)	
9	VCC	p	Main power voltage source input 2.3V-3.6V	3.3V
10	NC	—	Floating (Don't connected to ground)	
11	NC	—	Floating (Dont connected to ground)	
12	PMU_POWRON	I	Enable pin for WLAN device Defiialt ON: pull high ;OFF: pull low	VDDIO
13	GPIO2	I/O	SDIO data interrupt	VDDIO
14	SDIO DATA 2	I/O	SDIOdataline2, GPIO09	VDDIO
15	SDIO_DAT 心	I/O	SDIO data line 3, GPIO10	VDDIO
16	SDIO DATA CMD	I/O	SDIO command line. GPIO11	VDDIO
17	SDIO DATA CLK	I	SDIO clock line. GPIO12	VDDIO
18	SDIO DATA 0	I/O	SDIO data line 0, GPIO13	VDDIO
19	SDIO DATA 1	I/O	SDIO data line 1, GPIO14	VDDIO
20	GND	—	Ground connections	
21	NC	—	Floating (Dont connected to ground)	
22	VDDIO	p	I/O Voltage supply input 1.8V/3.3V	VDDIO

目录 CONTENTS

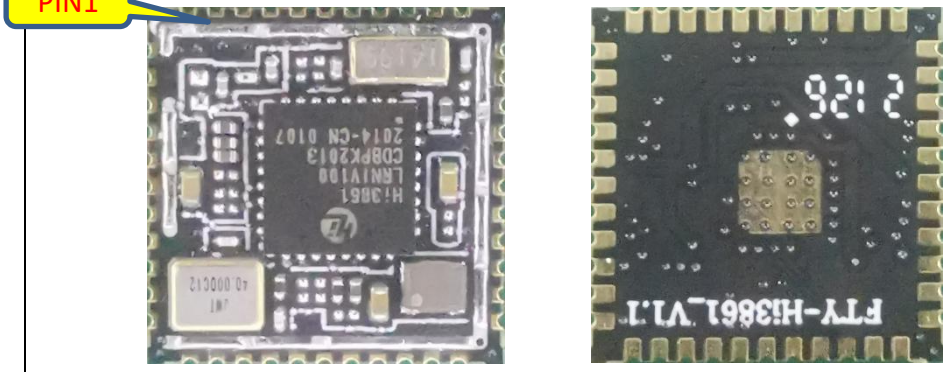
23	NC	—	Floating (Don't connected to ground)	
24	RTC CLK0	I/O	Floating(module have 32K clock), GPIOOO	VDDIO
25	RTC CLKI	I	Floating(modulehave 32K clock), GPIO01	VDDIO
26	NC		Floating (Don't connected to ground)	
27	NC		Floating (Dont connected to ground)	
28	NC		Floating (Dont connected to ground)	
29	NC		Floating (Dont connected to ground)	
30	NC		Floating (Dont connected to ground)	
31	GND		Ground connections	
32	NC		Floating (Don't connected to ground)	
33	GND		Ground connections	
34	NC		Floating (Don't connected to ground)	
35	NC		Floating (Dont connected to ground)	
36	GND		Ground connections	
37	UART LOG TX	—	U ARTO LOG TX, GPIO03	VDDIO
38	UART LOG RX	—	UART0 LOG RX,GPIO04	VDDIO
39	WL RST	I	Wi-Fi reset pin.Low: reset enable, Defualt High: reset disable,GPI007	VDDIO
40	Dev_Wake_Host	O	Wi-Fi wake up host, rising edge trigger for host.GPIO05	VDDIO
41	NC	—	Floating (Don't connected to ground)	
42	NC	—	Floating (Don't connected to ground)	
43	NC	—	Floating (Don't connected to ground)	
44	NC	—	Floating (Don't connected to ground)	

4 Dimensions

目录 CONTENTS

4.1Module Picture

L x W : 12.1 x 12.2 (±0.2) mm

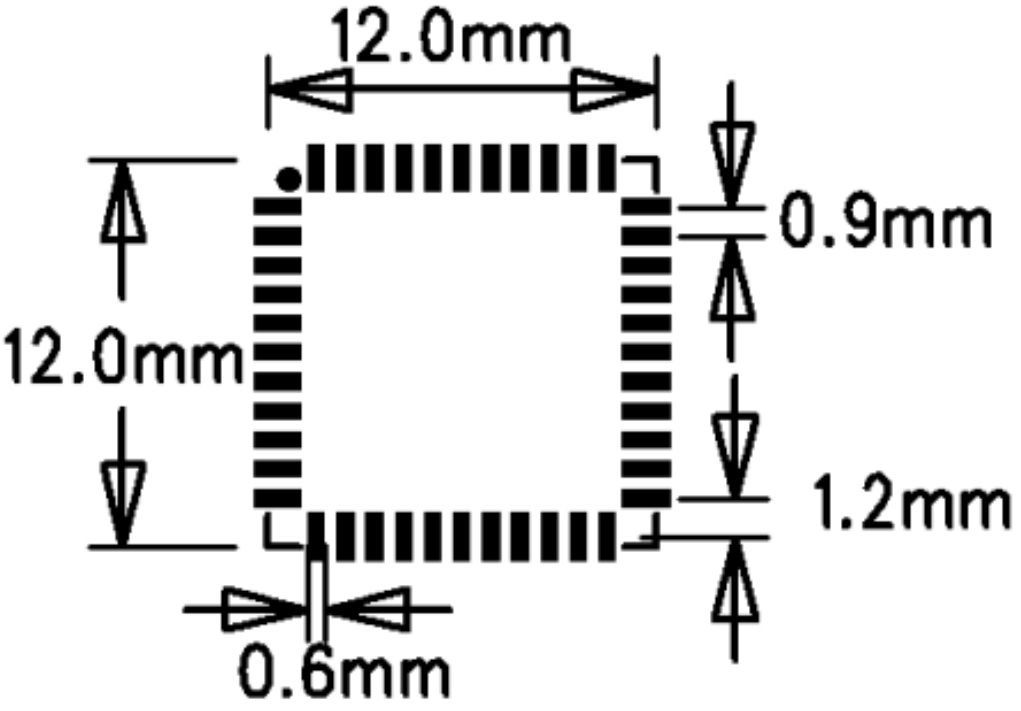


H:1.5(±0.2)mm

4.2 Module Physical Dimensions

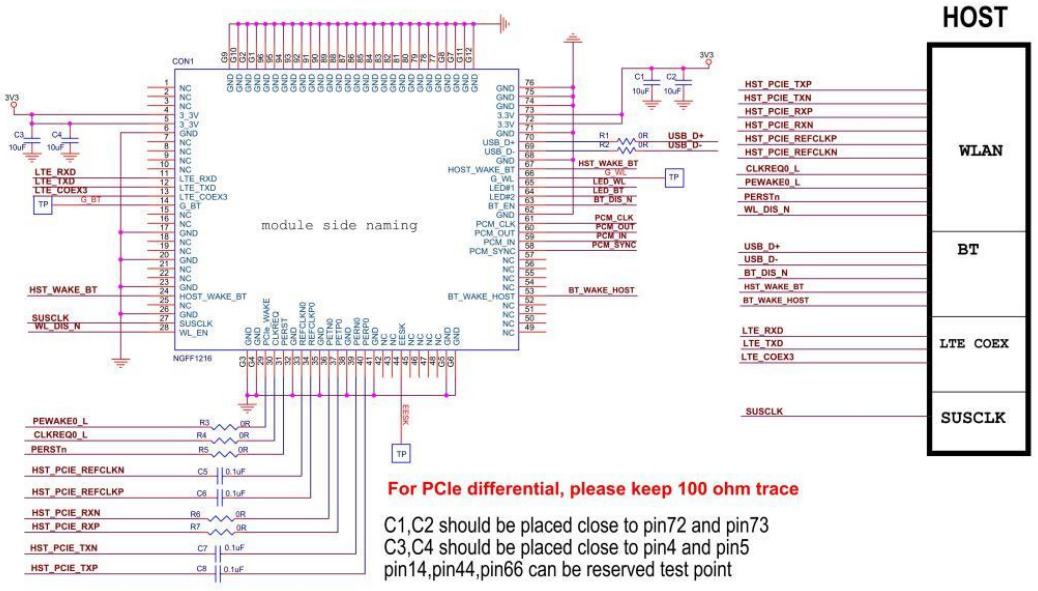
(Unit: mm)

<TOPVIEW >



5 Reference Design

目录 CONTENTS



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 ≥ 1000mA and ripple less than 150mV;
3. Do not share power with amplifier, camera, etc.

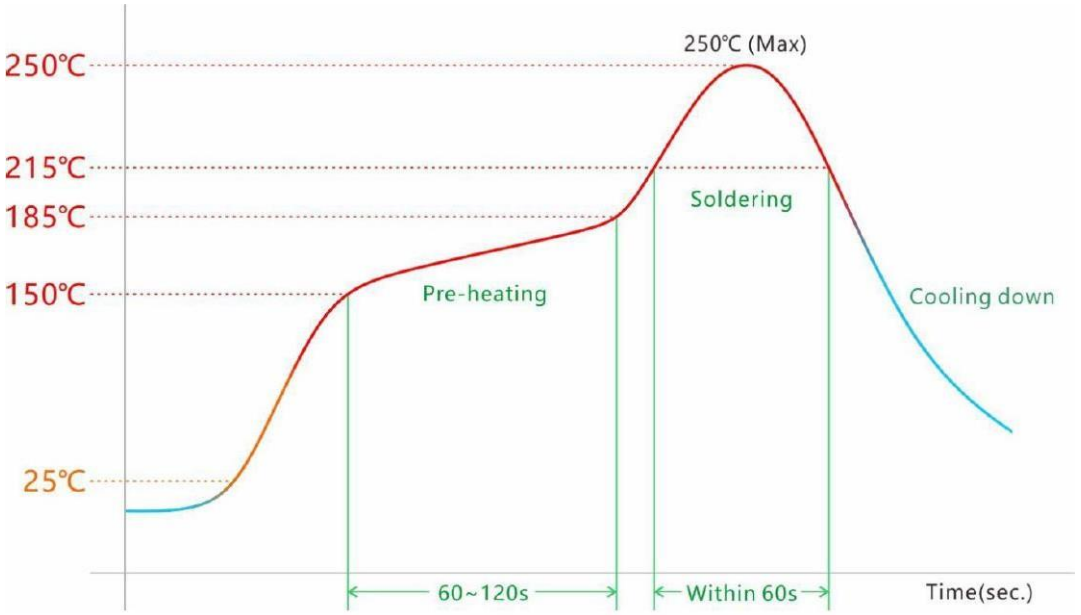
6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	Hi3861LRNIV100-QFN32	HISILICON	
2	PCB	FTY-Hi3861_V1.1	Shenzhen xiangyu circuit co., LTD	
3	PCB	FTY-Hi3861_V1.1	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	3215/32.768KHZ/±20ppm/12.5pF/(-40~85°C)	ZhejiangLanjingxin Microelectronics Co., LTD..	

7 Recommended Reflow Profile

目录 CONTENTS

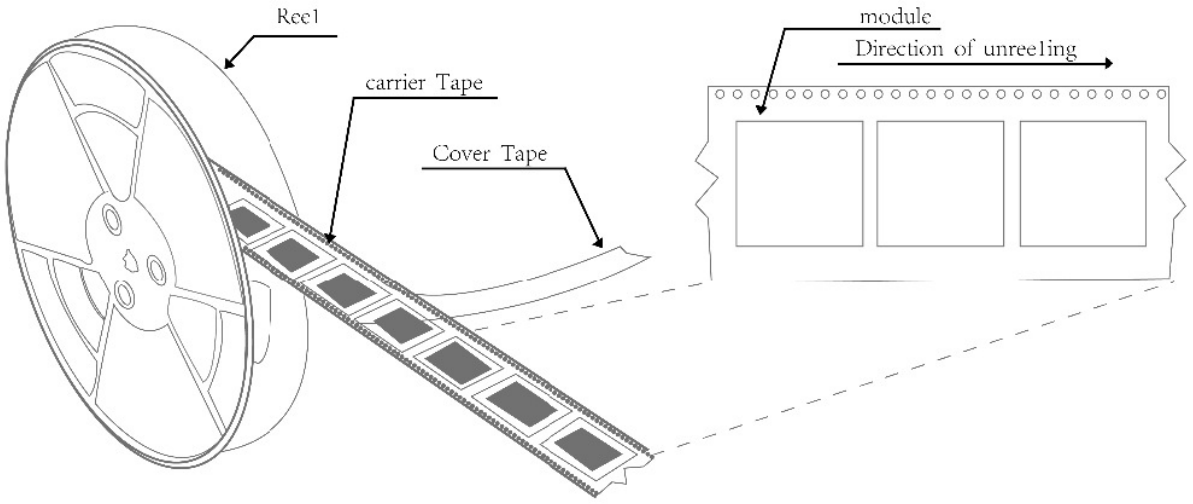
Referred to IPC/JEDEC standard.
Peak Temperature : <250° C
Number of Times : ≤2 times



8 Package Information

8.1 Reel

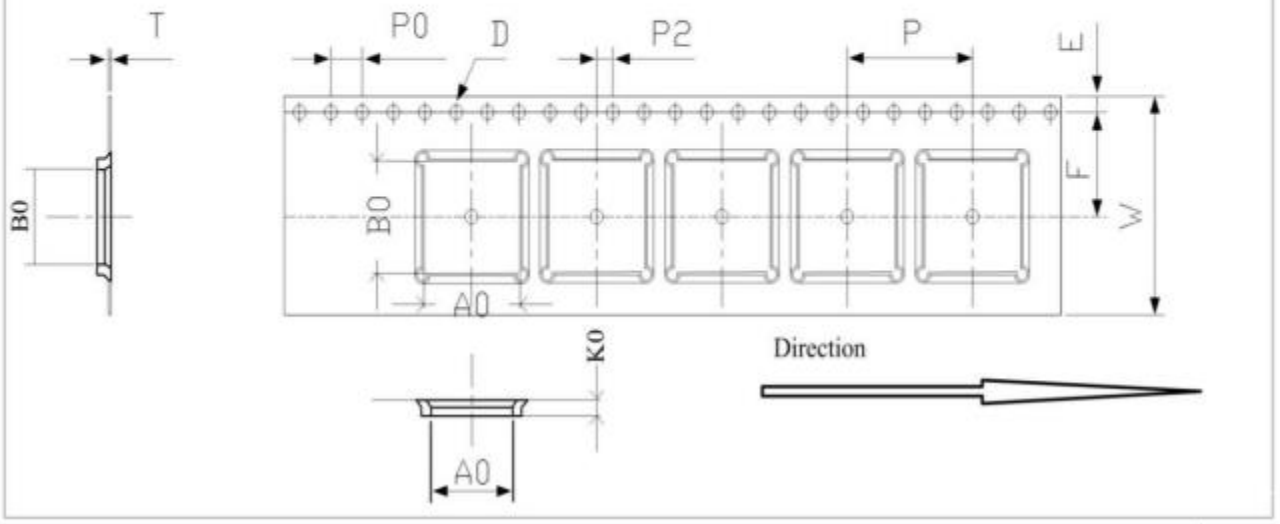
A roll of 2000pcs



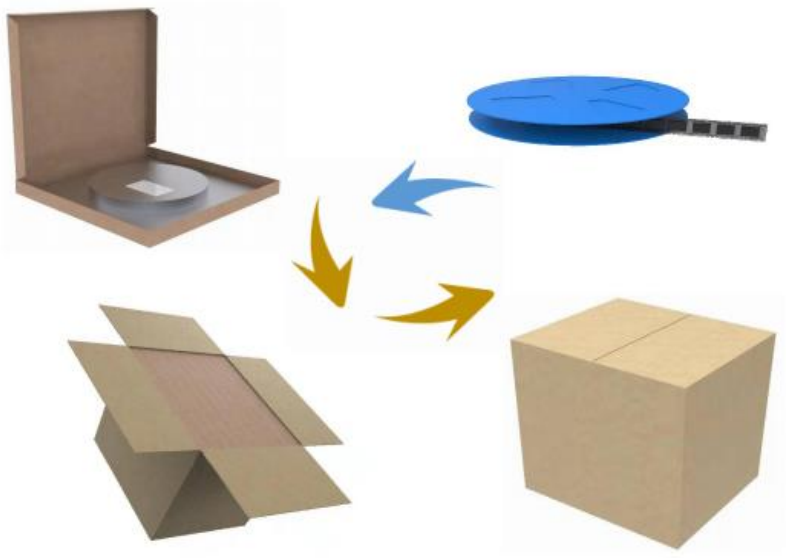
8.2 Carrier Tape Detail

目录 CONTENTS

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	12.40	12.40	1.50	11.5	1.75	1.70	4.0	2.0	16.0	0.30
TOLE	+0.3 -0.3	±0.10	±0.10	+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

目录 CONTENTS

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