

FT1731BUV2 Module Datasheet

FTY 飞腾云



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Customer Approval

Company _____

Title _____

Signature _____

Date _____

FTY _____

Version Update Record

Version	Date	Revision Content	Editorial Staff	Approval
V1.0	2022/12/06	The first version		
V1.1	2022/12/06	8731BU-C-IPEX Product name update		
V1.2	2023/6/19	Change of packing quantity	Ruixia Song	Qiangling Jiang

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CONTENTS

1 Overview	5
1.1 Introduction	5
1.2 Features	5
1.3 Block Diagram	6
1.4 General Specification	6
1.5 DC Characteristics	7
2 RF Specifications	8
2.1 2.4GHz RF Specification	8
2.2 5GHz RF Specification	9
3 Pin Assignments	10
3.1 Pin Outline	10
3.2 Pin Definition	11
4 Dimensions	12
4.1 Module Picture	12
4.2 Module Physical Dimensions	12
5 Reference Design	13
6 The Key Material List	14
7 Recommended Reflow Profile	15
8 Package Information	16
8.1 Reel	16
8.2 Carrier Tape Detail	16
8.3 Packaging Detail	17
8.4 Moisture sensitivity	17

1 Overview

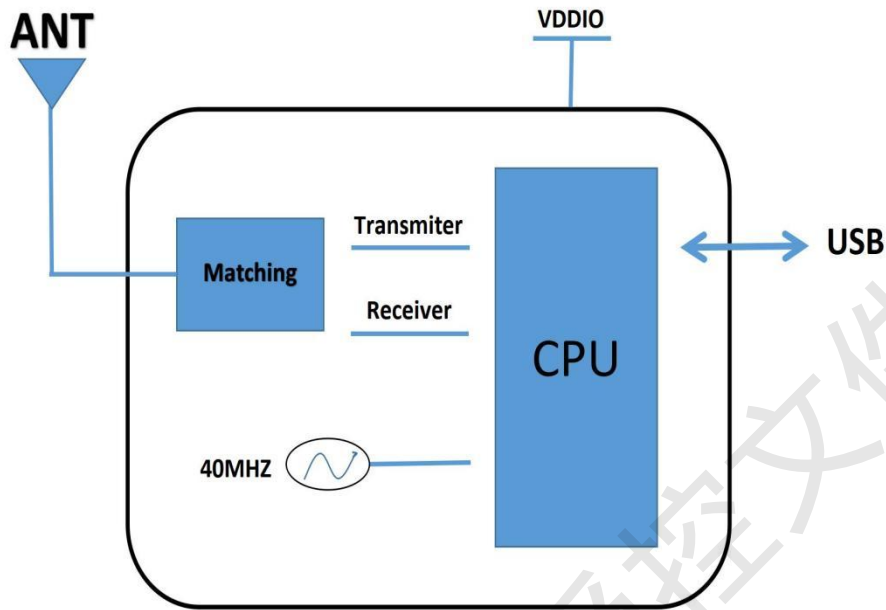
1.1 Introduction

FT1731BUV2 is a highly integrated Module 802.11a/b/g/n 1T1R WLAN with USB 2.0 multi-function. It combines a WLAN MAC, a 1T1R capable WLAN baseband and WLAN RF in a chip. The FT1731BUV2 provides a complete solution for a high-performance integrated wireless LAN controller.

1.2 Features

- Support 2.4GHz and 5GHz band channels
- 802.11a/b/g/n 1T1R WLAN chip
- Complies with USB2.0 for WLAN controller
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- 802.11n OFDM

1.3 Block Diagram



1.4 General Specification

Model Name	FT1731BUV2
Product Description	WIFI4 USB Module
Dimension	L x W x H: 12.3x13x2.4 (± 0.3) mm
Wi-Fi Interface	Support USB2.0
BT Interface	N/C
Operating Temperature	- 0°C to +70°C
Storage Temperature	-55°C to 125°C

1.5 DC Characteristics

Power Supply Characteristics

Symbol	Min.	Typ.	Max.	Unit
VCC33	3.15	3.3	3.45	V
VDDIO	1.7	1.8 or 3.3	3.45	V
Power Consumption	VCC33=3.3V(Unit:mA)			
	Wi-Fi on Mode	168		
	TX (2.4G HT20)	175		
	RX (2.4G HT20)	98		
	TX (2.4G HT40)	186		
	RX (2.4G HT40)	98		

2 RF Specifications

2.1 2.4GHz RF Specification

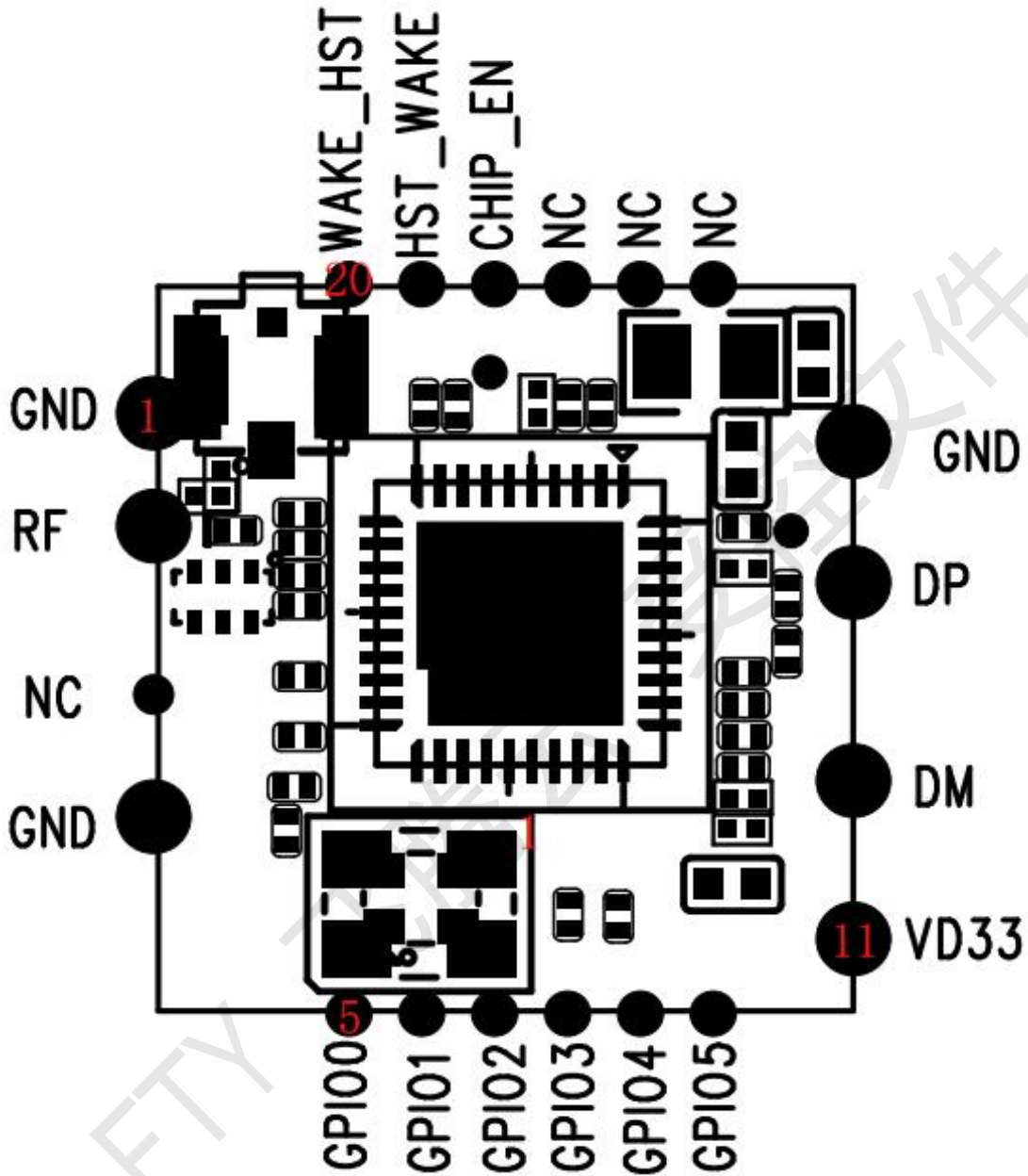
Features	Description		
WLAN Standard	802.11b/g/n		
Frequency Range	2.4~2.4835GHz (2.4GHz ISM Band)		
Number of Channel	WiFi 2.4GHz: 11: (Ch. 1-11) – United States; 13: (Ch. 1-13) –Europe; 14: (Ch. 1-14) – Japan		
2.4G Transmitter Specifications			
TX Rate	TX Power	TX Power Tolerance	EVM
802.11b@11Mbps	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		
Frequency Range	5.15GHz ~ 5.85GHz (5GHz ISM Band)		
5G Transmitter Specifications			
TX Rate	TX Power	TX Power Tolerance	EVM
802.11a@54 Mbps	13dBm	±2dBm	≤-25dB
802.11n@BW40_MCS7	12dBm	±2dBm	≤-28dB
5G Receiver Specifications			
RX Rate	Standard Value		PER
802.11a@54Mbps	≤-70dBm		<10%
802.11n@BW40_MCS7	≤-65dBm		< 10%

3 Pin Assignments

3.1 Pin Outline

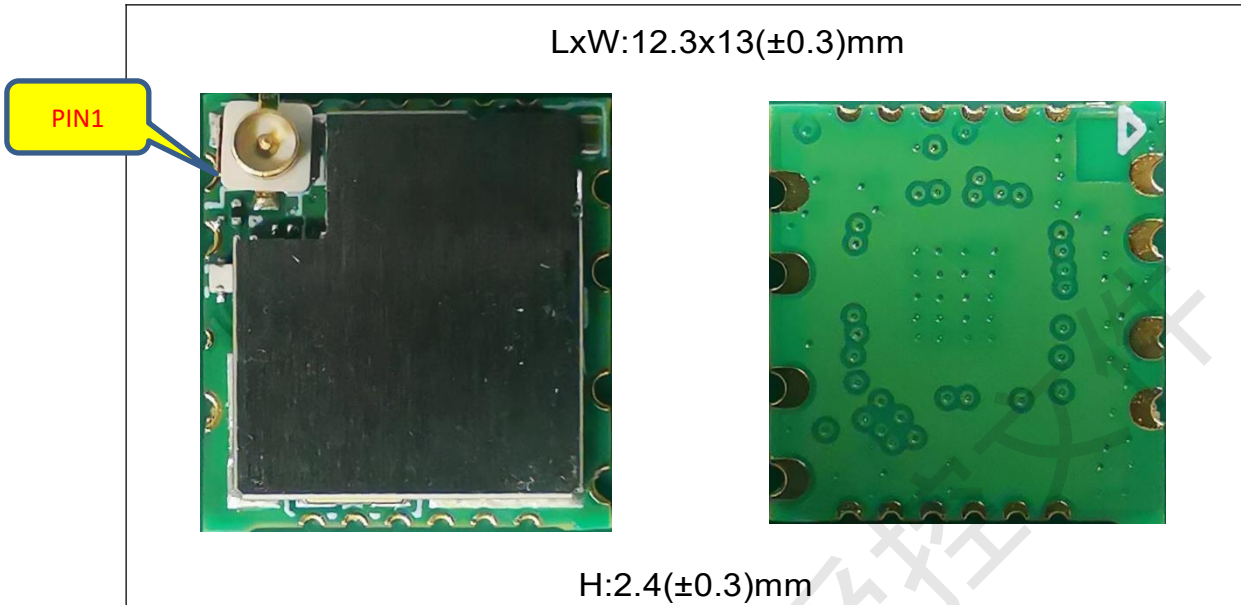


3.2 Pin Definition

NO	Name	Type	Description	Voltage
1	GND	—	Ground	
2	ANT0	I/O	RF I/O port	
3	N/C	—	N/C	
4	GND	—	Ground	
5	GPIO0	I/O	TEST_MODE_SEL	
6	GPIO1	I/O	SPS_LDO_SEL	
7	GPIO2	I/O	EEPROM_SEL	
8	GPIO3	I/O	General Purpose Input/Output Pin	
9	GPIO14	I/O	General Purpose Input/Output Pin	
10	GPIO15	I/O	General Purpose Input/Output Pin	
11	VBAT	P	VCC 3.3V	VCC
12	HSDM	I/O	High-Speed USB D- Signal	
13	HSDP	I/O	High-Speed USB D+ Signal	
14	GND	—	Ground	
15	NC	—	No connection(floating)	
16	NC	—	No connection(floating)	
17	NC	—	No connection(floating)	
18	CHIP_EN	I	This PIN can externally shut down module (active low, internal pull high)	VDDIO
19	HST_WAKE_WL	I/O	GPIO7 (Host wake up WIFI, input signal control by software)	
20	WL_WAKE_HST	I/O	GPIO6 (WIFI to wake up host, output signal control by software)	

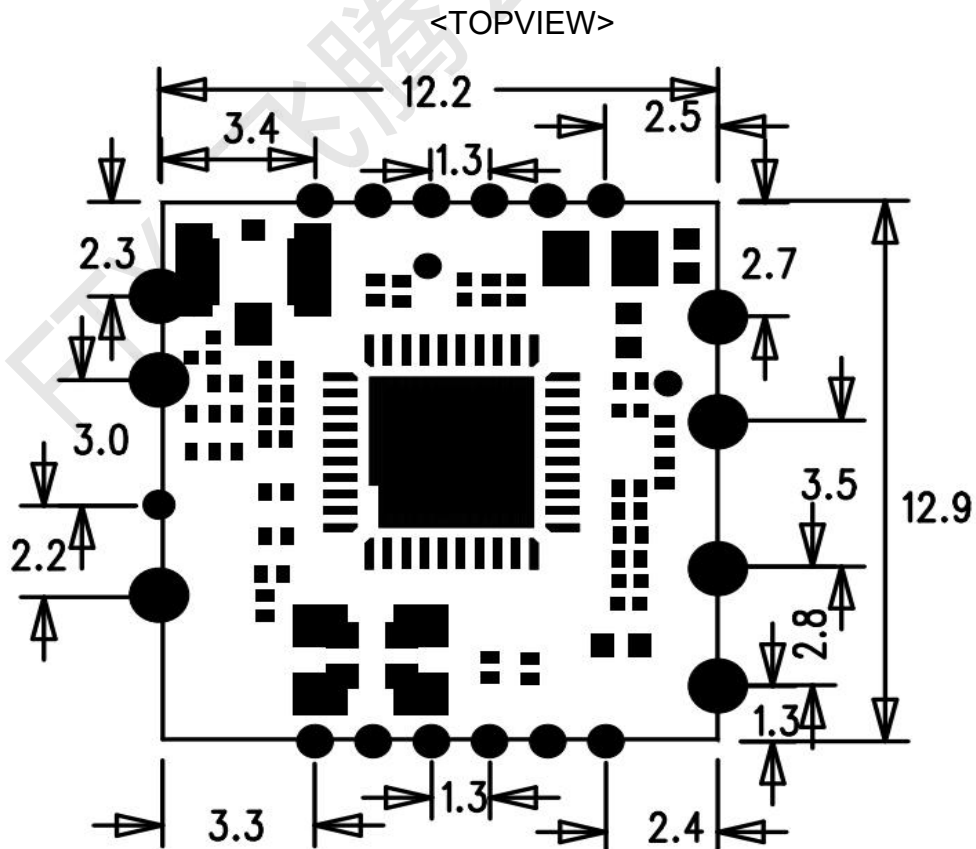
4 Dimensions

4.1 Module Picture

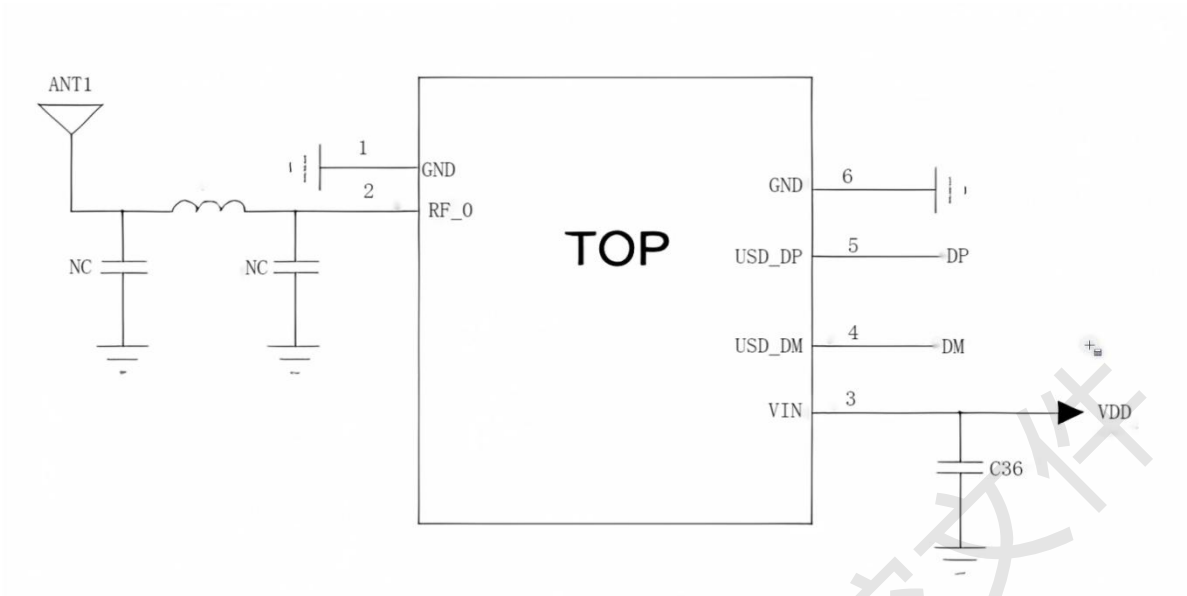


4.2 Module Physical Dimensions

(Unit: mm)



5 Reference Design



6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8731BU-CG	Realtek Semiconductor Corp	
2	PCB	8731BU	Shenzhen Fuzhixiang Electronics Co., Ltd	
3	PCB	8731BU	Shenzhen Kexiang Precision Circuit Technology Co., Ltd	
4	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20~+85°C 晶威特 CF4040M00012T2893001	Hefei Jing Wei Te Electronics Co. Ltd	
5	Crystal oscillator	3225 40MHZ 12PF +/-10PPM -20~+85 度	Zhejiang Lanjing Micro electronics Co., Ltd	
6	duplexer	1.6×0.8mm 6P 2.4GHz/5GHz -40_+85° FLT18D254959D-3266C 飞特尔科技	Shenzhen Feiteer Technology Co., Ltd	

7 Recommended Reflow Profile

Constant temperature and reflow soldering

The heating/reflow phase generates liquid phase temperatures above 216-221°C. Sudden temperature increases need to be prevented as they increase the risk of solder paste collapse.

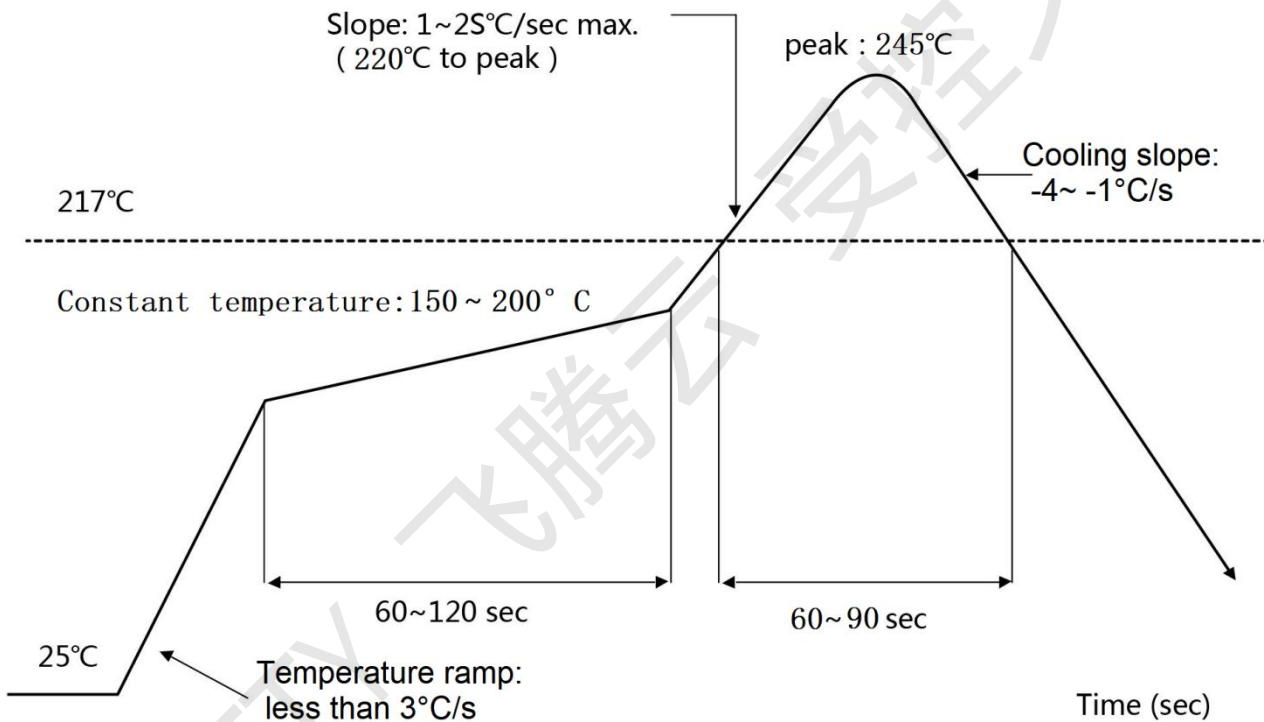
Liquid phase temperature time above 220°C: 60-90 seconds.

Peak reflow temperature: 235~245°C.

Constant temperature time (170~220°C): 60~120 seconds.

Temperature ramp: less than 3°C/s.

Cooling slope: -4~ -1°C/s.



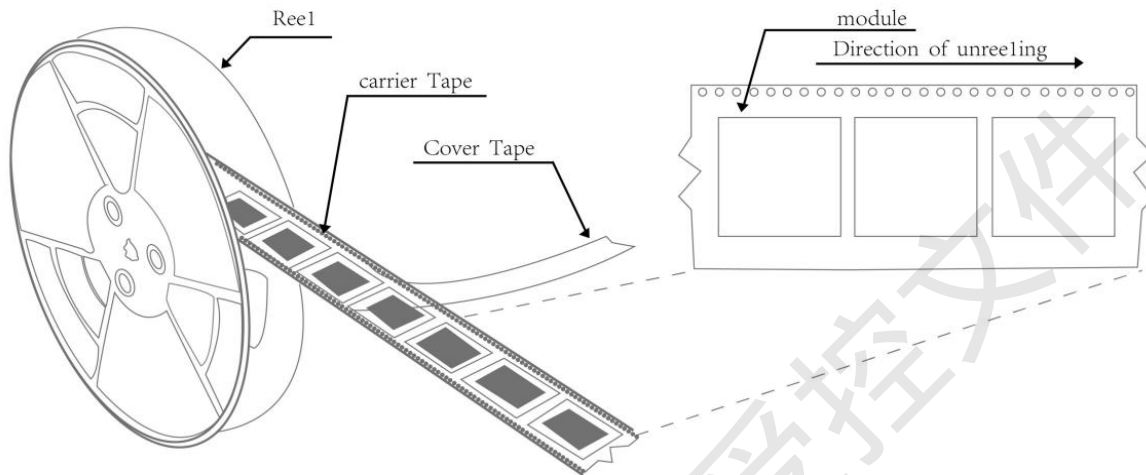
Notes:

The actual soldering temperature depends on other external factors such as the solder paste selected, the size and thickness of the substrate and the board design. If the maximum soldering temperature in the recommended soldering profile is exceeded, there is a risk of permanent damage to the module.

8 Package Information

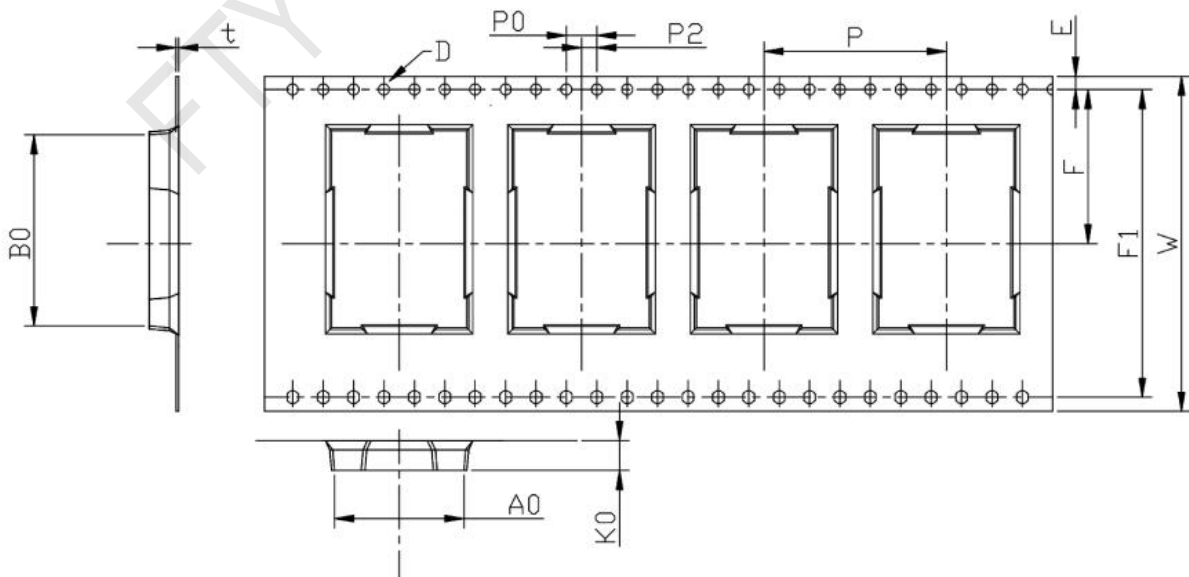
8.1 Reel

A roll of 1500pcs

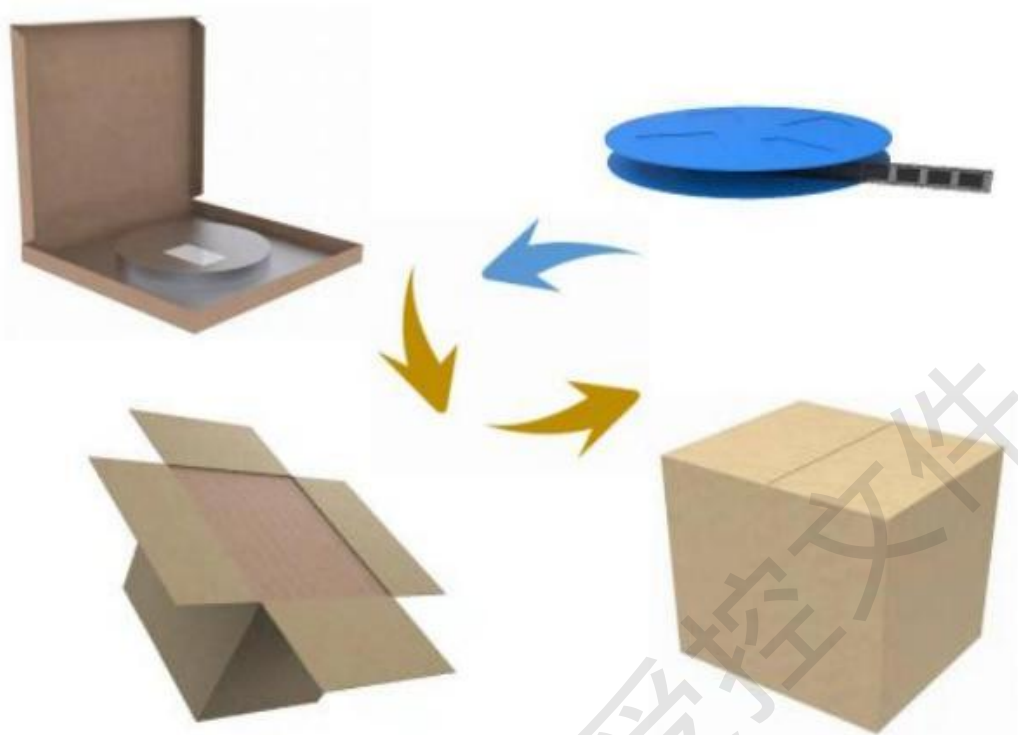


8.2 Carrier Tape Detail

ITEM	W	A0	B0	D	E	F	K0	P0	P2	P	T
DIM	24.00	12.45	13.55	1.5	1.75	11.5	2.70	4.0	2.0	16.0	0.30
TOLE	±0.3	±0.1	±0.1	±0.1	±0.1	±0.15	±0.1	±0.1	±0.15	±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-020B, 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 $<40^{\circ}\text{C}$ 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

d) "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