

FTG800D40LV5

Module Datasheet

ANSIOTECH
深圳市安朔科技有限公司

FTG800D40LV5

Module Datasheet

Company _____

Title _____

Signature _____

Date _____

FTY _____

Version Update Record

Version	Date	Revision Content	Editorial Staff	Approval
V1.0	2024/1/20	First Release	SRX	JQL
V1.0	2024/9/23	Module Image Update	SRX	JQL
V1.1	2025/2/14	Module Image Update	SRX	JQL

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1 Overview

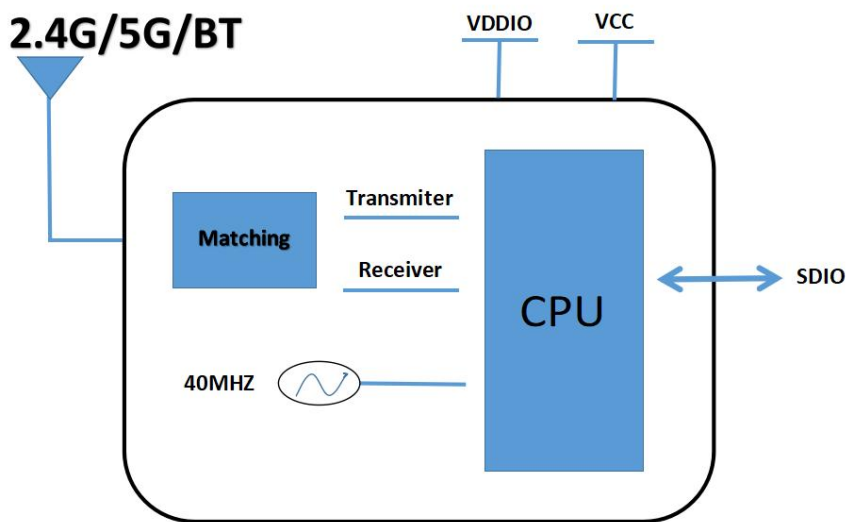
1.1 Introduction

The module is a highly integrated chip with dual band WiFi6, BLE5.4 for wireless application. Its WLAN function supports the SDIO interface.

1.2 Features

- CMOS single-chip fully-integrated RF, Modem and MAC
- Support 2.4GHz/5GHz WiFi6
- Data rates up to 286.8Mbps with 20/40MHz bandwidth
- Support 5MHz/10MHz mode
- Support STA, AP, WiFi Direct modes concurrently
- Support STBC, beamforming
- Support WiFi6 TWT
- Support MU-MIMO, OFDMA
- Support DCM, Mid-ambler, UORA
- Support WEP/WPA/WPA2/WPA3-SAE Personal, MFP
- Supports all the mandatory and optional features of Bluetooth low energy 5.4

1.2 Block Diagram



1.3 General Specification

Model Name	FTG800D40LV5 (single antenna)
Product Description	WIFI6 and Bluetooth SDIO Module
Dimension	L x W x H : 12*12*2.1(±0.3) mm
Wi-Fi Interface	Support SDIO
BT Interface	Support SDIO
Operating Temperature	0℃ to +70℃
Storage Temperature	-20℃ to 80℃

1.4 DC Characteristics

Power Supply Characteristics

Symbol	Min.	Typ.	Max.	Unit
VCC33	3.0	3.3	3.6	V

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2 RF Specifications

2.1 2.4GHz RF Specification

Features	Description		
WLAN Standard	IEEE802.11b/g/n		
Frequency Range	2.412~2.484GHz (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:±10PPM			
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

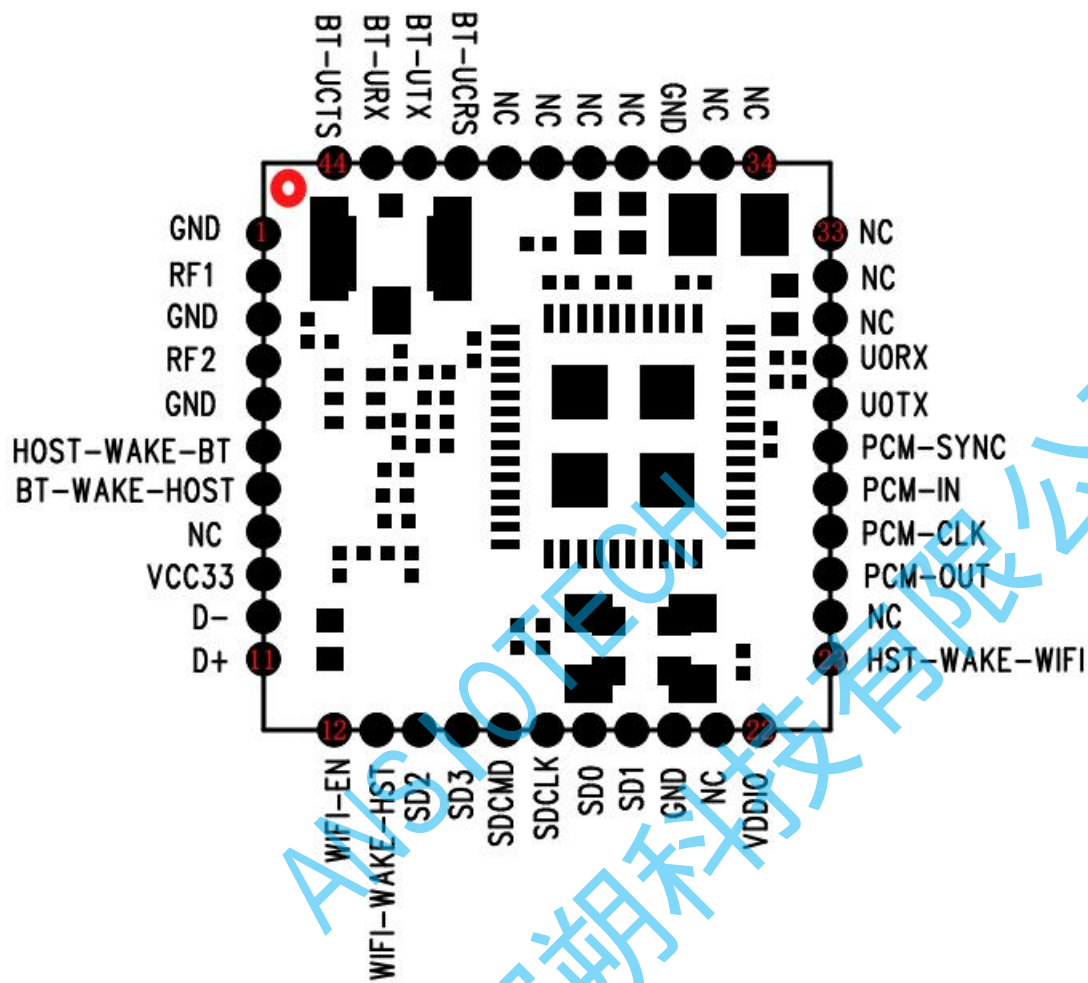
Features	Description		
WLAN Standard	IEEE802.11a/n/ac/ax		
Frequency Range	5.15GHz ~ 5.85GHz (5GHz ISM Band)		
5G Transmitter Specifications			
TX Rate	TX Power	TX Power Tolerance	EVM
802.11a@54 Mbps	13dBm	±2dBm	≤-25dB
802.11n@BW40_MCS7	12dBm	±2dBm	≤-28dB
802.11ac@VHT40_MCS9	10dBm	±2dBm	≤-32dB
802.11ax@HE40_MCS11	10dBm	±2dBm	≤-36dB
5G Receiver Specifications			
RX Rate	Standard Value		PER
802.11a@54Mbps	≤-70dBm		<10%
802.11n@BW40_MCS7	≤-60dBm		< 10%
802.11ac@VHT40_MCS9	≤-55dBm		<10%
802.11ax@HE40_MCS11	≤-50dBm		< 10%

2.3 Bluetooth Section:

Feature	Description
General Specification	
Bluetooth Standard	5.4
Host Interface	SDIO
Frequency Band	2400~2483.5MHz
Number of Channels	79 channels
RF Specification	
Power (LE:GFSK/ 1Mbps)	0dBm~10dBm, Typical 5dBm
Power (LE:GFSK/ 2Mbps)	0dBm~10dBm, Typical 5dBm
Sensitivity@BER=30.8%for(BLE:GFSK/ 1Mbps)	-91 dBm
Sensitivity@BER=30.8%for(BLE:GFSK/ 2Mbps)	-90 dBm
Carrier frequency drift	BLE:GFSK/ 1Mbps:±75KHZ
	BLE:GFSK/ 2Mbps:±75KHZ

3 Pin Assignments

3.1 Pin Outline



3.2 Pin Definition

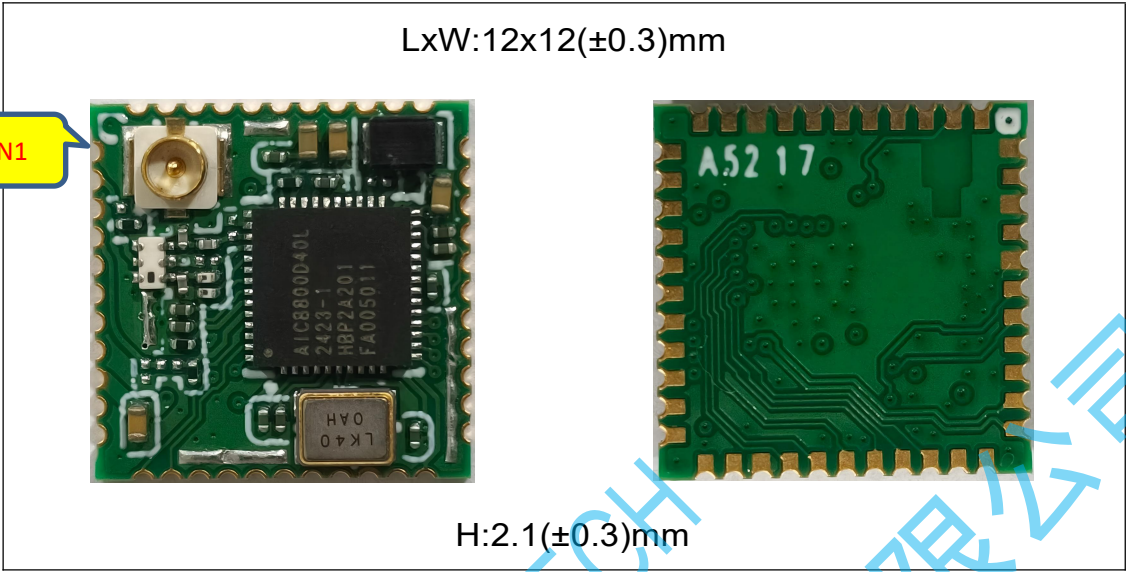
NO	Name	Type	Description	Voltage
1	GND	P	Ground	
2	RF1	-	NC	
3	GND	P	Ground	
4	RF2	-	NC	
5	GND	P	Ground	
6	HOST_WAKE_BT	I/O	HOST wake-up Bluetooth device	
7	BT_WAKE_HOST	I/O	Bluetooth device wake-up HOST	
8	NC	-	NC	
9	VCC33	P	3.3V	
10	D-	-	D- Signal	
11	D+	-	D+ Signal	
12	CHIP_EN	-	CHIP_EN	
13	WL_WAKE_HOST	I/O	Wi-Fi device wake-up HOST	
14	SD_D2	I/O	SDIO Data Line2	
15	SD_D3	I/O	SDIO Data Line3	
16	SD_CMD	I/O	SD_CMD	
17	SD_CLK	I/O	SD_CLK	
18	SD_D0	I/O	SDIO Data Line0 .	
19	SD_D1	I/O	SDIO Data Line1	
20	GND	P	Ground	
21	NC	-	NC	
22	VDD_I0	I/O	Supply voltage for SDIO IO	
23	HOST_WAKE_WiFi	I/O	HOST wake-up Wi-Fi device	
24	NC	-	NC	
25	PCM_OUT	I/O	PCM_OUT	
26	PCM_CLK	I/O	PCM_CLK	
27	PCM_IN	I/O	PCM_IN	
28	PCM_SYNC	I/O	PCM_SYNC	
29	U0TX	-	Debug_UART	
30	U0RX	-	Debug_UART	
31	NC	-	NC	
32	NC	-	NC	

33	NC	-	NC	
34	NC	-	NC	
35	NC	-	NC	
36	GND	P	Ground	
37	NC	-	NC	
38	NC	-	NC	
39	NC	-	NC	
40	NC	-	NC	
41	BT-URTS	I/O	UART request to send	
42	BT-UTX	I/O	UART data transmit	
43	BT-URX	I/O	UART data receive	
44	BT-UCTS	I/O	UART clear to send	

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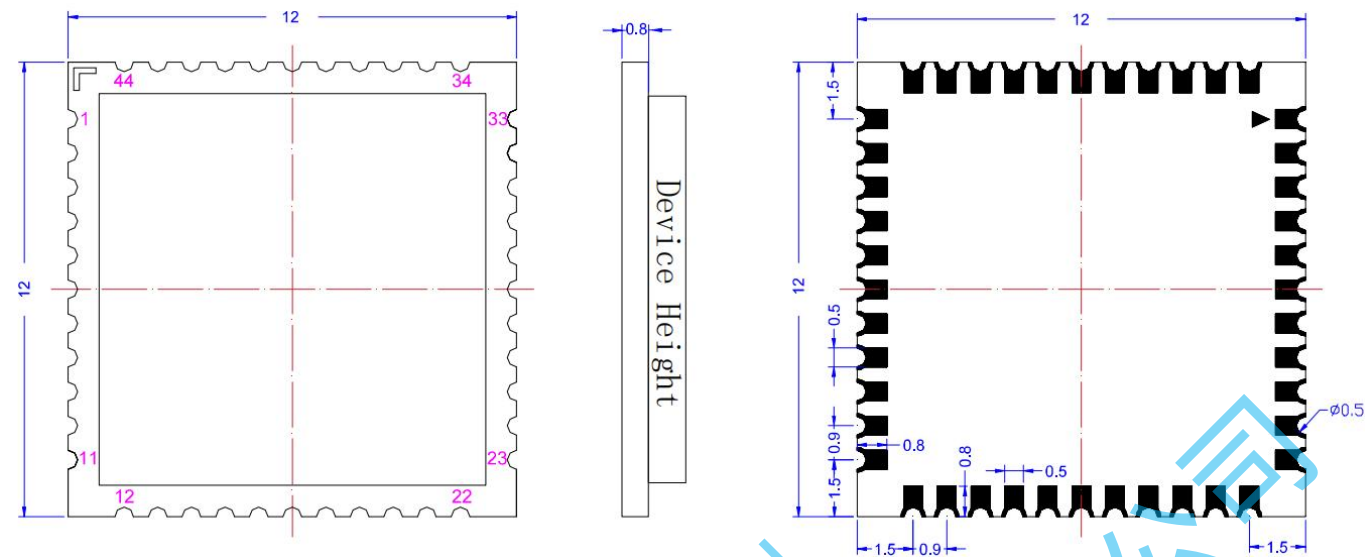
4 Dimensions

4.1 Module Picture



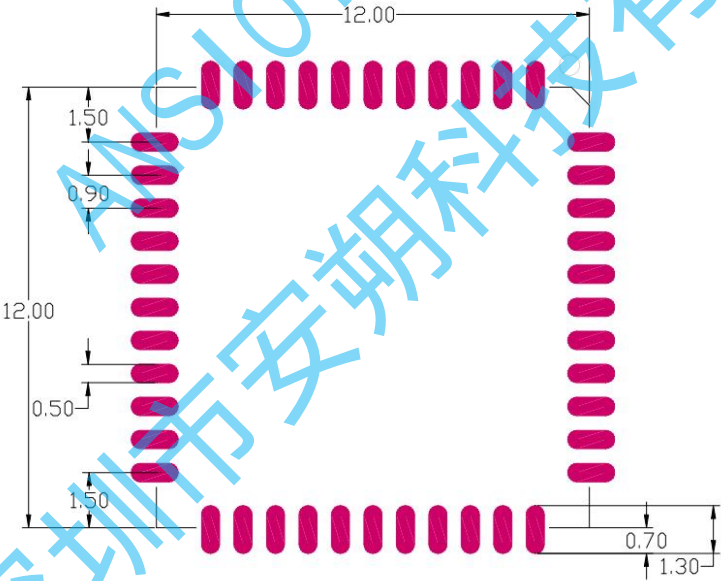
4.2 Module Physical Dimensions

(Unit: mm)

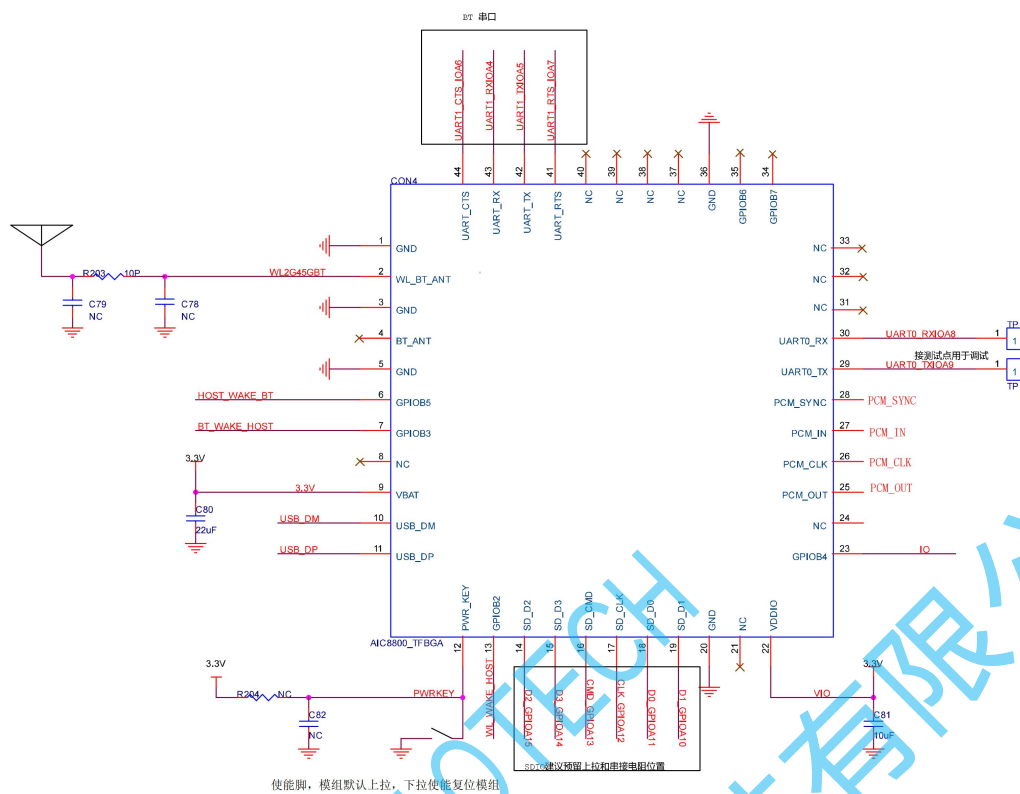


Layout Recommendation

<TopVIEW>



5 Reference Design



6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	AIC8800D40L	aicsemi Semiconductor Corp (Shanghai) Co., Ltd	
2	PCB	FTG800D40L-1212D1	Shenzhen Kexiang Precision Circuit Technology Co., Ltd	
3	PCB	FTG800D40L-1212D1	JIANGXI SHIN TECH ENGINEERING CO.,LTD	
4	Crystal oscillator	3225 40MHz ± 10 ppm 10pF -40~85° C SMD	Hefei Jing Wei Te Electronics Co. Ltd	
5	Crystal oscillator	3225 40MHz ± 10 ppm 10pF -40~85° C SMD	Zhejiang Lanjing Micro electronics Co., Ltd	
6	Crystal oscillator	3225 40MHz ± 10 ppm 10pF -40~85° C SMD	Guangdong jing pin Technology Development Co., LTD	
7	duplexer	双工器 1.6×0.8mm 6P 2400-2500MHz / 4900-5950MHz -40_+85° 飞特尔 FLT18D254959D-3206A	Shenzhen Feiteer Technology Co., Ltd	
8	duplexer	1.6×0.8mm 6P 2.4GHz/5GHz -40_+85° RFDIP160806BLM6T68 WALSIN	Walsin Technology Corporation	

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.

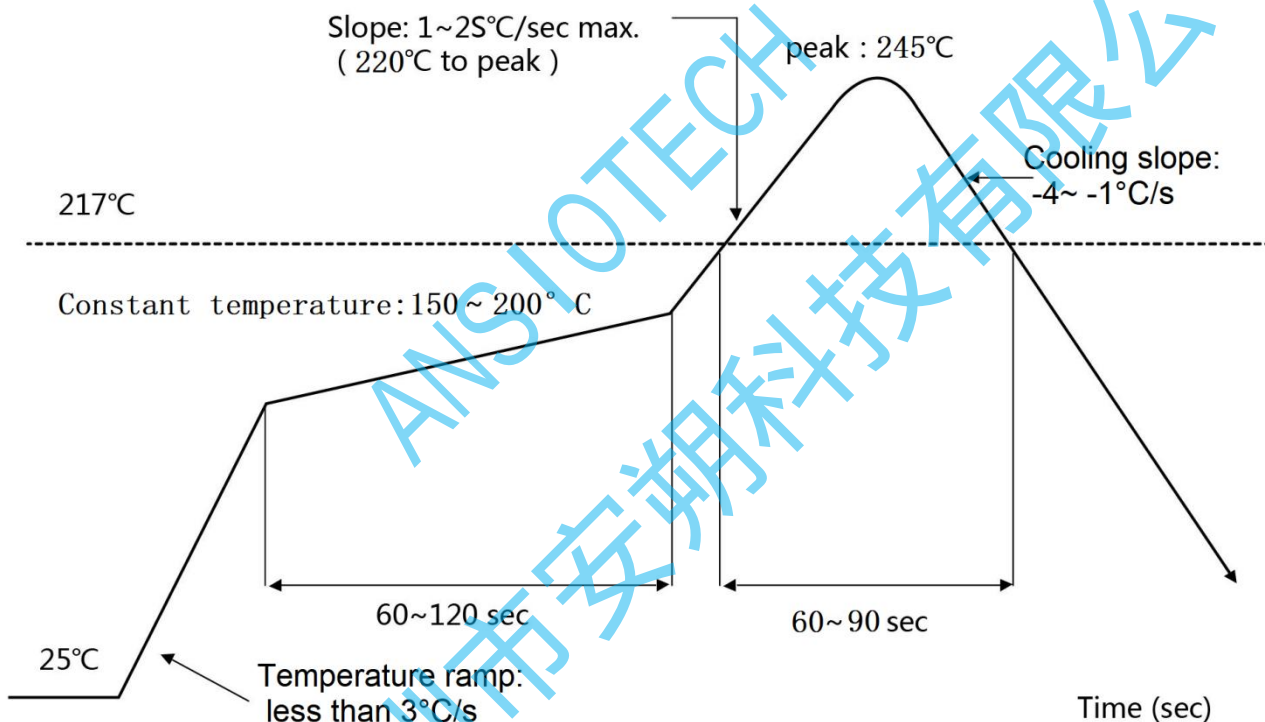
Liquid phase temperature time above 220°C: 60-90 seconds.

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.



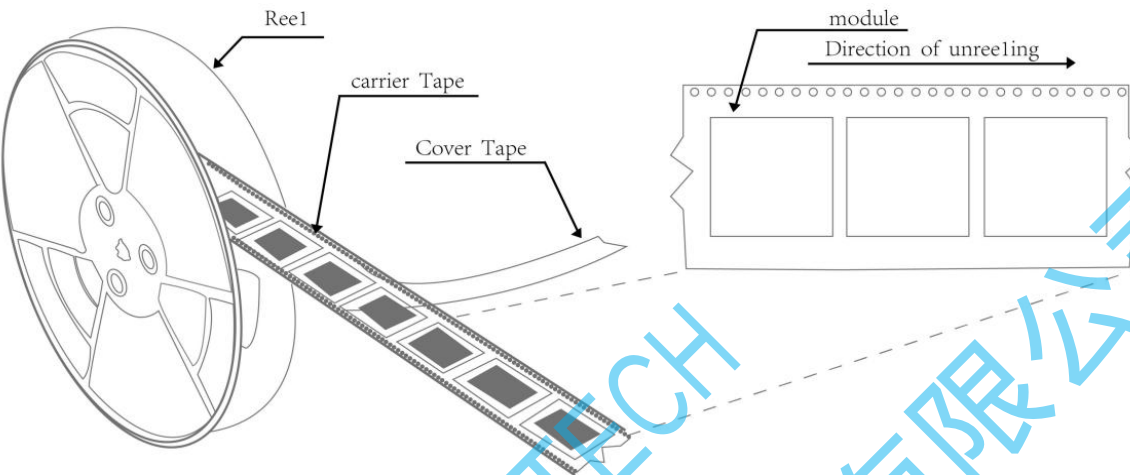
Notes:

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.

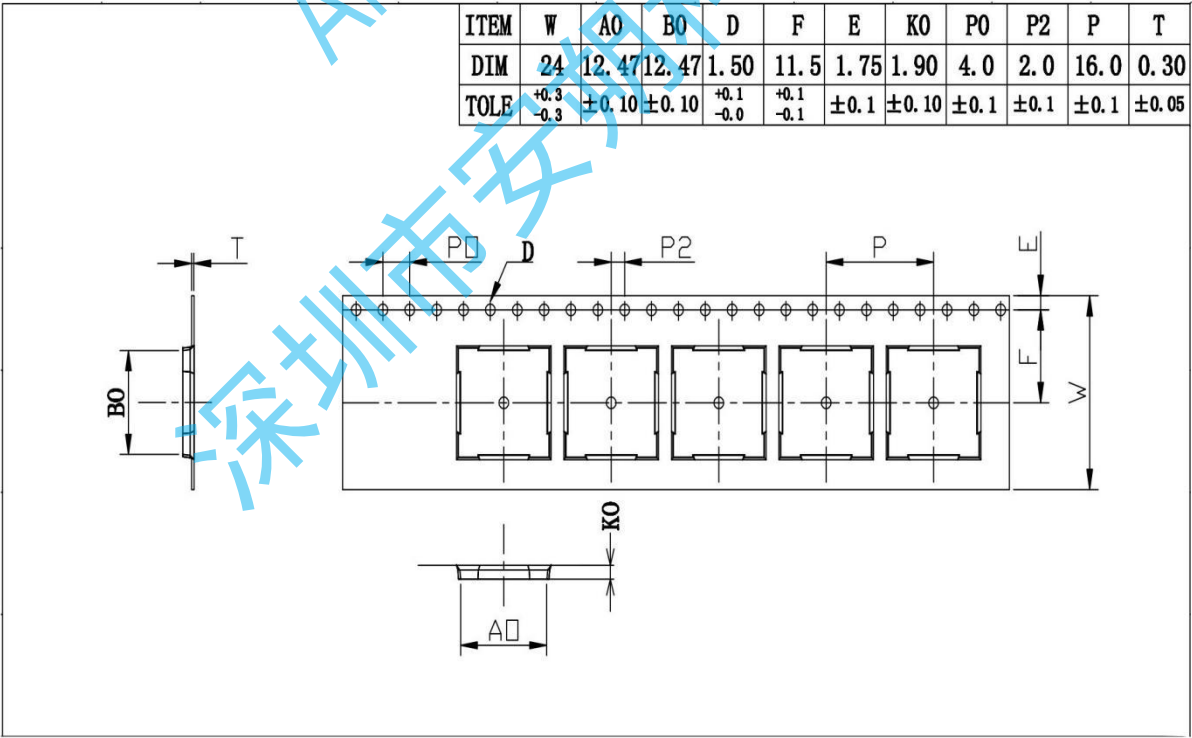
8 Package Information

8.1 Reel

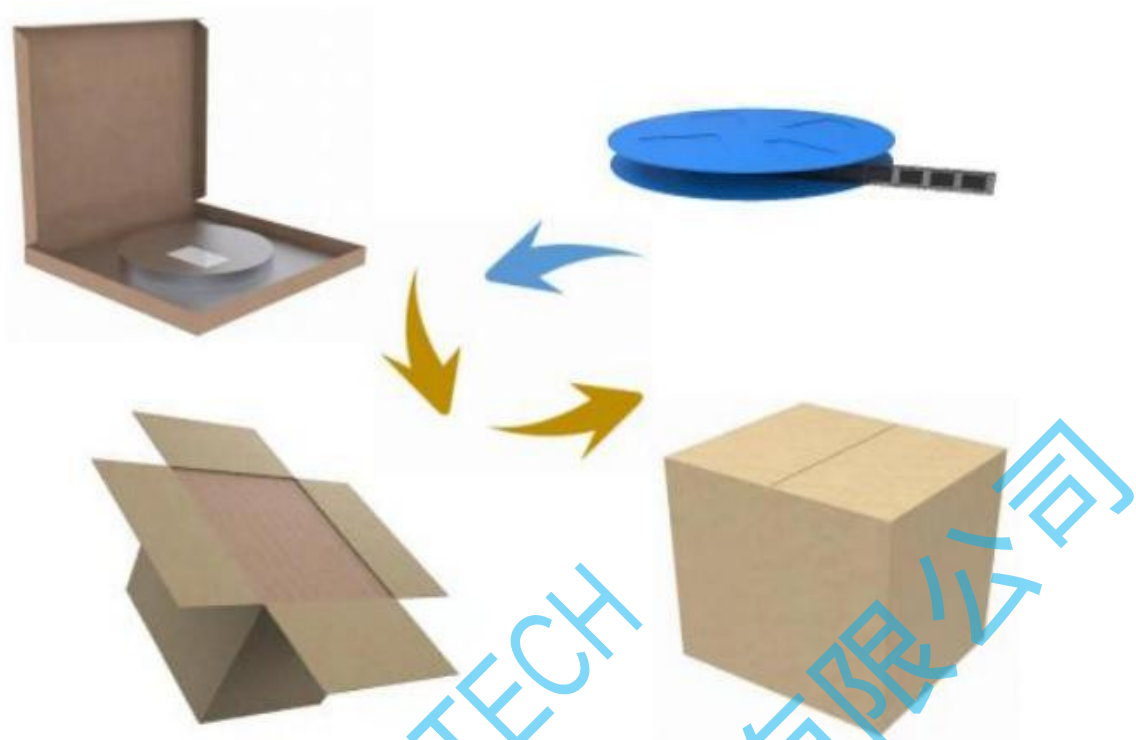
A roll of 1500pcs



8.2 Carrier Tape Detail



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