

FT1189FQV2

Module Datasheet



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Customer Approval

Company _____

Title _____

Signature _____

Date _____

FTY _____

Version Update Record

Version	Date	Revision Content	Editorial Staff	Approval
V1.0	2018/07/06	The first version		
V2.0	2022/05/26	Size error range update		
V3.0	2022/06/13	RM03-FTV(VQ1) Product name update		

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1 Overview

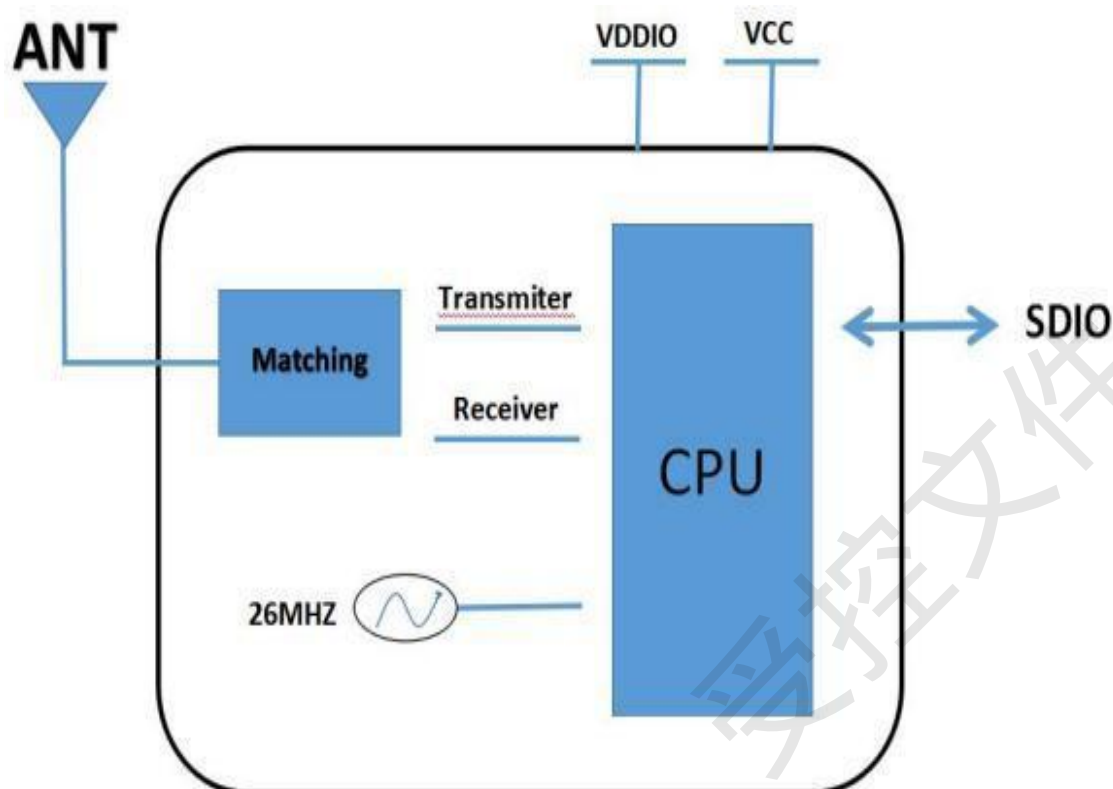
1.1 Introduction

FT1189FQV2 is a highly integrated module, it puts a wireless LAN MAC, a 1T1R capability of the wireless LAN baseband, and wireless LAN RF set together. This module provides a complete solution for integrated WLAN devices with high throughput performance. Supports all IEEE 802.11b/g/n data rates, providing support for traditional data rates, powerful interference detection and suppression offers to prevent interference from Bluetooth, cordless phones and microwave ovens. It has synchronous and asynchronous control loop between antennas, antenna diversity function and adaptive transmission power control function to obtain better performance of the analog part of the transceiver. Provides simple traditional and 20MHz co-existence mechanisms to ensure backward and network compatibility.

1.2 Features

- Complete 802.11b/g/n solution for 2.4GHz band
 - 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
 - SDIO interface for configurable endian for WLAN
 - Channel management and co-existence
 - One Transmit and one Receive path (1T1R)
 - DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
 - OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation.
- Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6

1.3 Block Diagram



1.4 General Specification

Model Name	FT1189FQV2
Product Description	WIFI4 SDIO Module
Dimension	L x W x H: 12x12x1.4 (± 0.3) mm
Wi-Fi Interface	Support SDIO
BT Interface	N/C
Operating Temperature	- 0℃ to +70℃
Storage Temperature	-55℃ to 125℃

1.5 DC Characteristics

Power Supply Characteristics

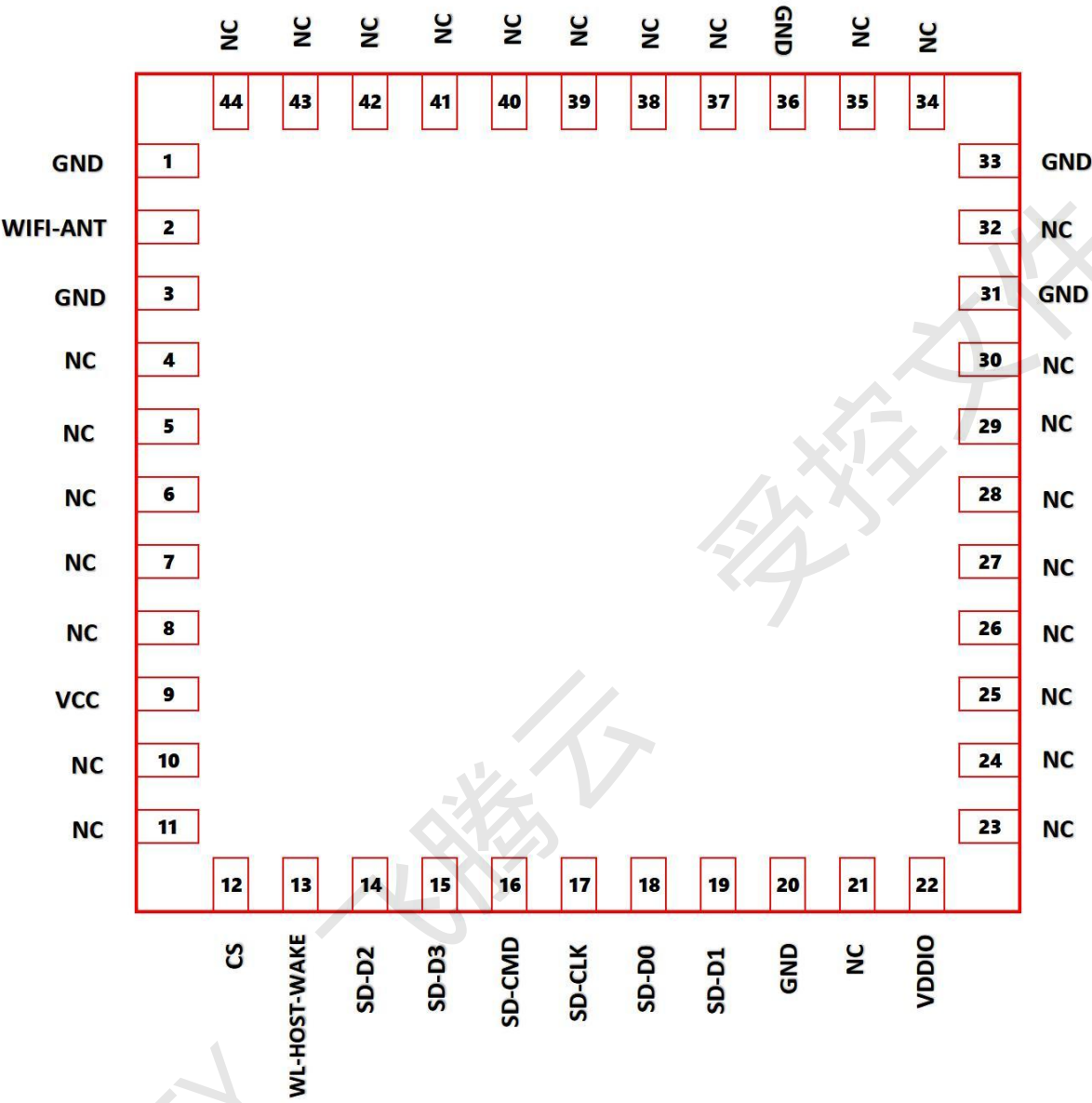
Symbol	Min.	Typ.	Max.	Unit
VCC33	3.15	3.3	3.45	V
VDDIO	1.7	1.8 or 3.3	3.45	V
Power Consumption	VCC33=3.3V(Unit:mA)			
	Wi-Fi on Mode	120		
	TX (2.4G HT20)	210		
	RX (2.4G HT20)	120		

2 RF Specifications

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
Frequency Error:±12PPM			
2.4G Receiver Specifications			
RX Rate	Standard Value		PER
802.11b@11Mbps	≤-85dBm		8%
802.11g@54Mbps	≤-70dBm		10%
802.11n@BW20_MCS7	≤-65dBm		10%

3 Pin Assignments

3.1 Pin Outline



3.2 Pin Definition

NO	Name	Type	Description	Voltage
1	GND	-	Ground	
2	RF1	I/O	ANT	
3	GND	-	Ground	
4	NC	-	NC	
5	NC	-	NC	
6	NC	-	NC	
7	NC	-	NC	
8	NC	-	NC	
9	VDD33	P	3.3V	3.3V
10	NC	-	NC	
11	NC	-	NC	
12	CS	I	Chip select , Activity high; Internal pull high to 3.3V at 100K Ω	3.3V
13	WL_HOST_WAKE	O	WLAN to wake-up HOST	VDDIO
14	SD_D2	I/O	SDIO data line 2	
15	SD_D3	I/O	SDIO data line 3	
16	SD_CMD	I/O	SDIO command line	
17	SD_CLK	I	SDIO CLK line	
18	SD_D0	I/O	SDIO data line 0	
19	SD_D1	I/O	SDIO data line 1	
20	GND	-	Ground	
21	NC	-	NC	
22	VDDIO	P	1.8V / 3.3V	VDDIO
23	NC	-	NC	
24	NC	-	NC	
25	NC	-	NC	
26	NC	-	NC	
27	NC	-	NC	
28	NC	-	NC	
29	NC	-	NC	
30	NC	-	NC	
31	GND	-	Ground	

32	NC	-	NC	
33	GND	-	Ground	
34	NC	I	NC	
35	NC	-	NC	
36	GND	-	Ground	
37	NC	-	NC	
38	NC	-	NC	
39	NC	-	NC	
40	NC	-	NC	
41	NC	-	NC	
42	NC	-	NC	
43	NC	-	NC	
44	NC	-	NC	

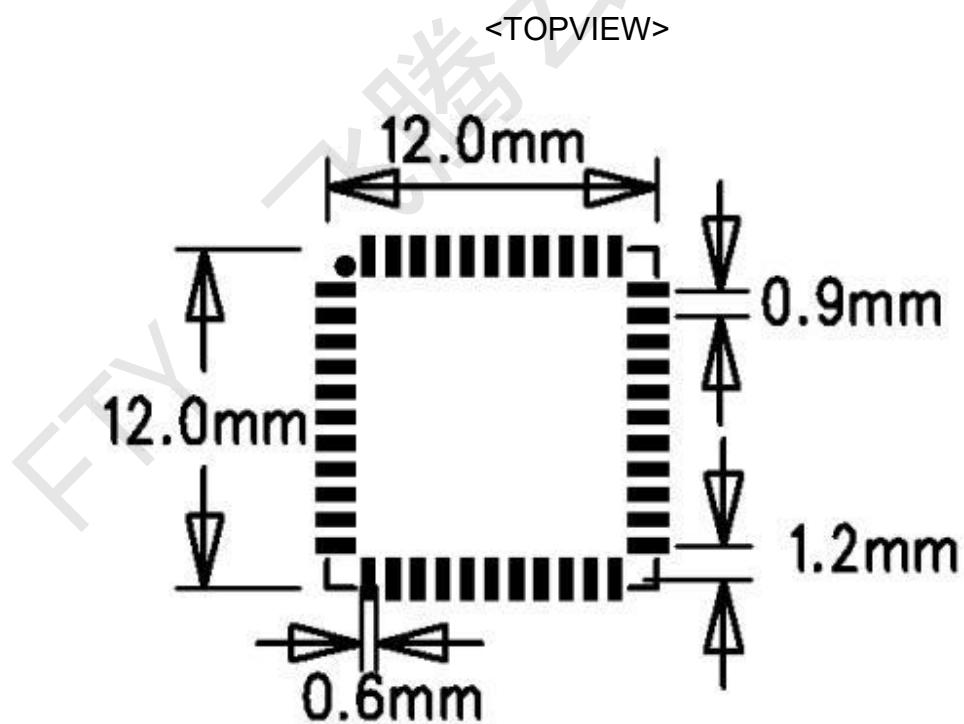
4 Dimensions

4.1 Module Picture

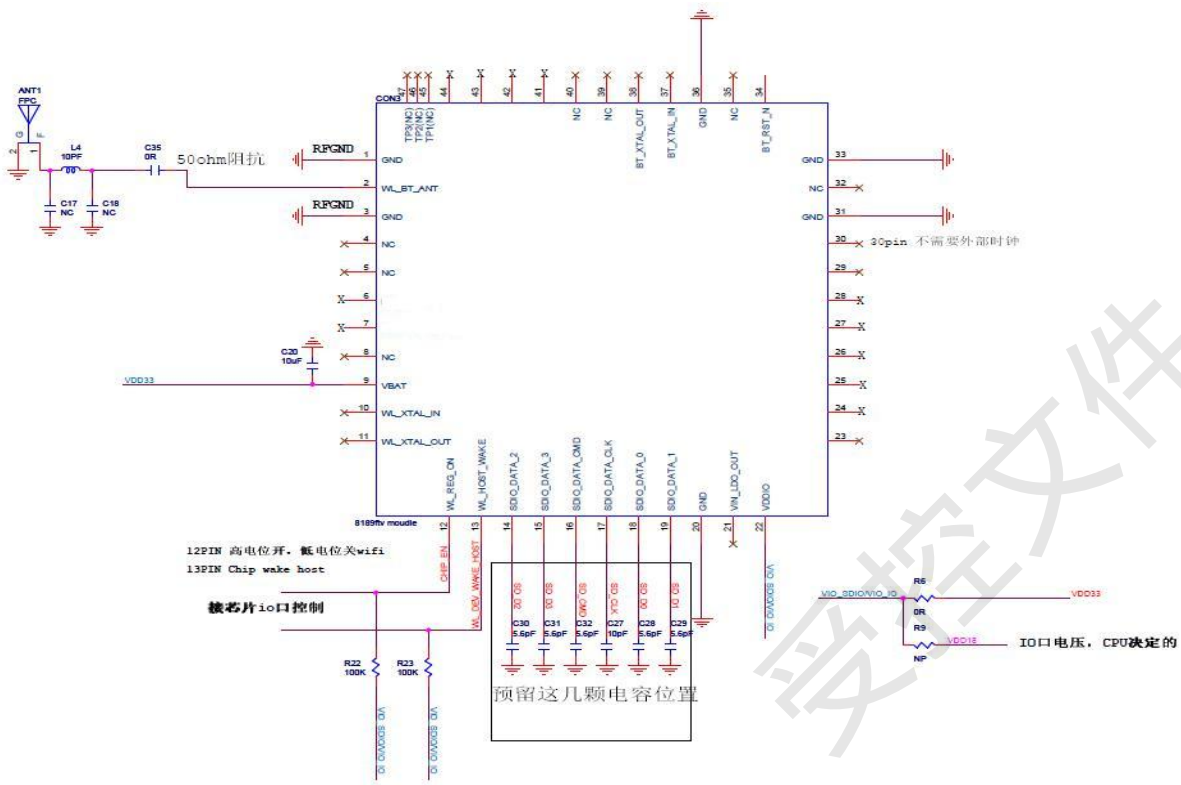


4.2 Module Physical Dimensions

(Unit: mm)



5 Reference Design



6 The Key Material List

No.	Parts	Specification	Manufacturer	Note
1	Chipset	RTL8189FTV-VQ1-CG	Realtek Semiconductor Corp	
2	PCB	8189FTV-M-V1.0	Xinfeng Fuchangfa Electronics Co., Ltd	
3	PCB	8189FTV-M-V1.0	Shenzhen Kexiang Precision Circuit Technology Co., Ltd	
4	Crystal oscillator	3225 26MHZ 10PPM 9PF (晶威特/精标) -20 to +85℃	Hefei Jing Wei Te Electronics Co. Ltd	
5	Crystal oscillator	26MHZ 晶振 10PPM/9PF/3225(精标)-20 to +85℃	Zhejiang Lanjing Micro electronics 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.

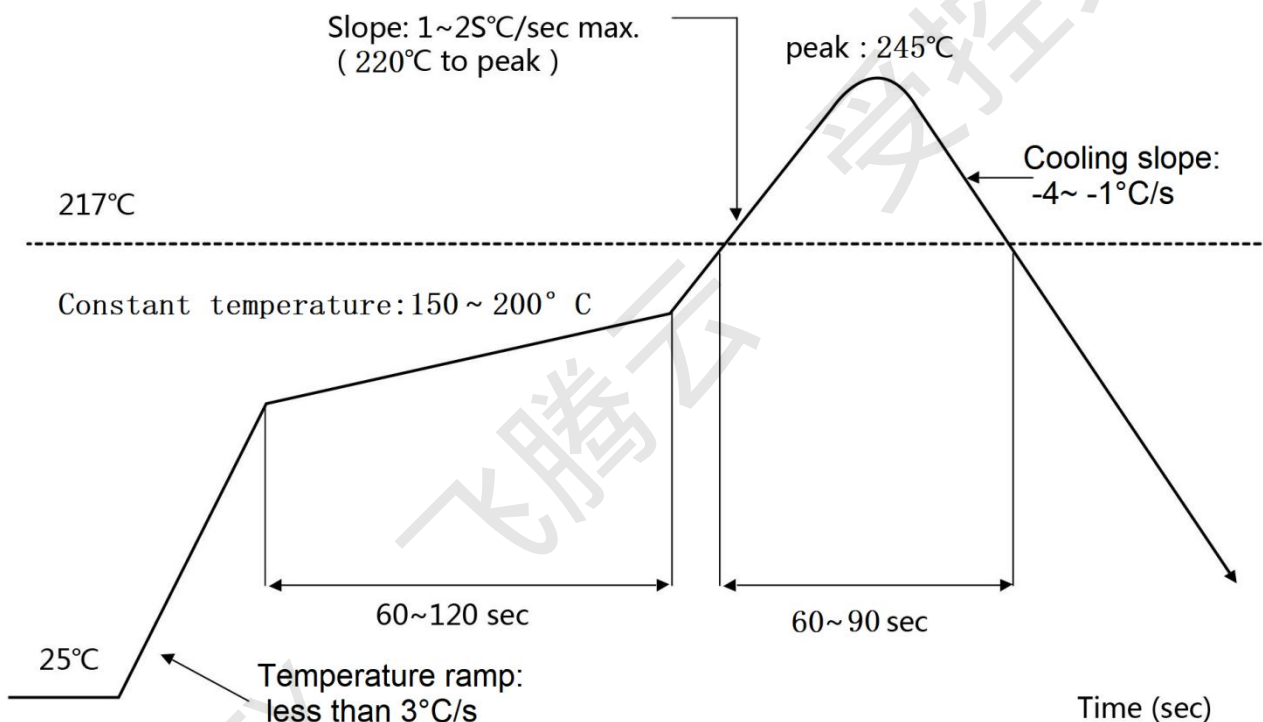
Liquid phase temperature time above 220°C: 60-90 seconds.

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.



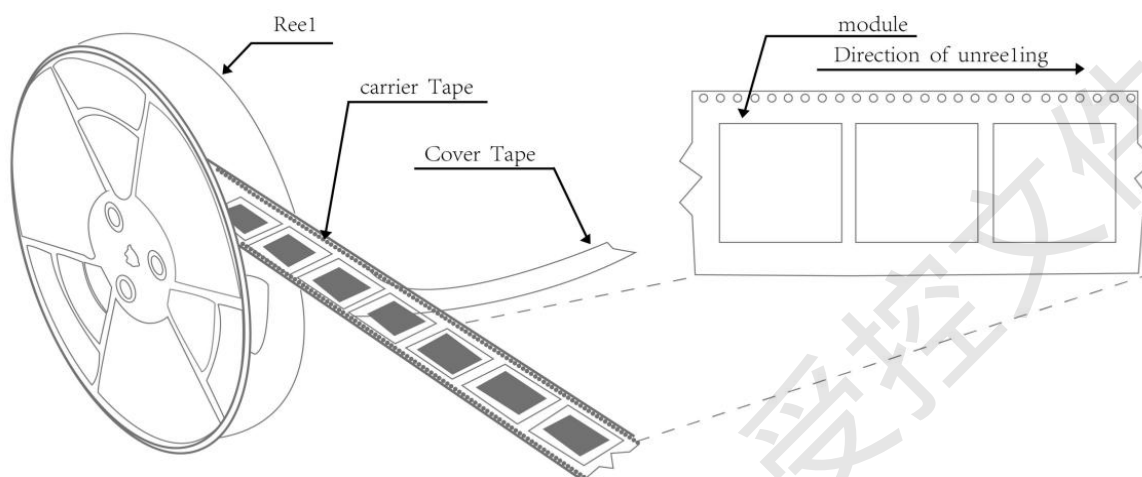
Notes:

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.

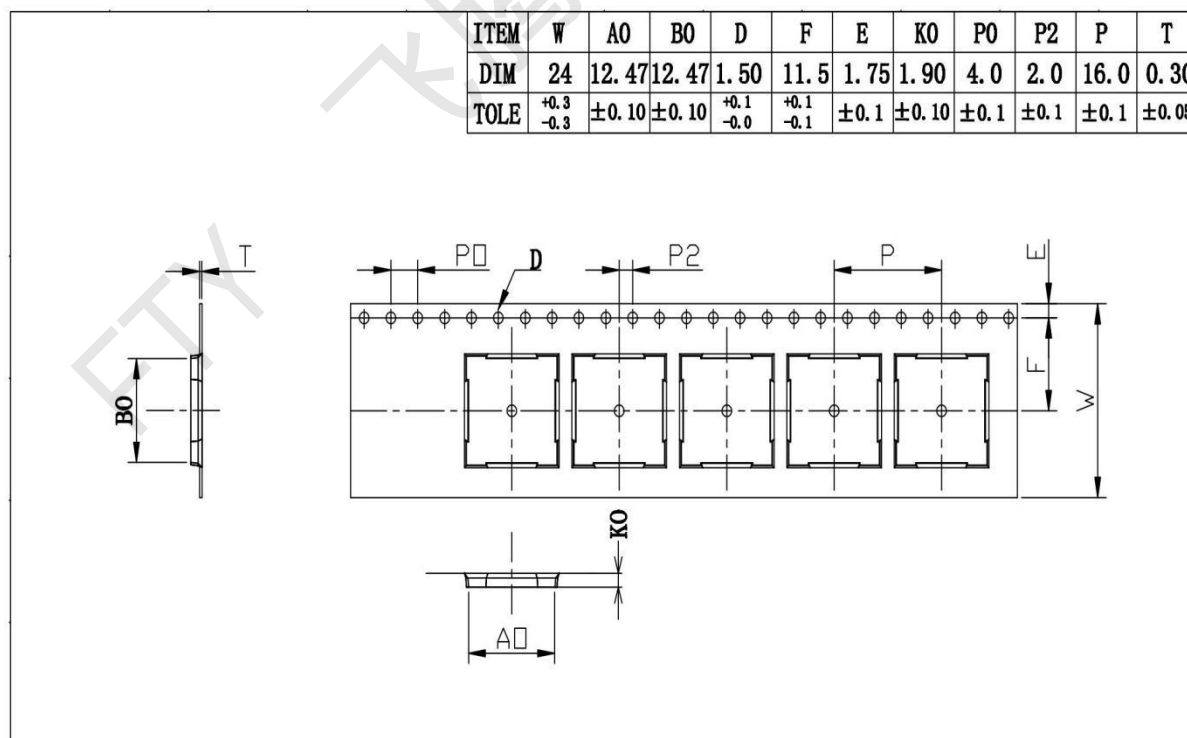
8 Package Information

8.1 Reel

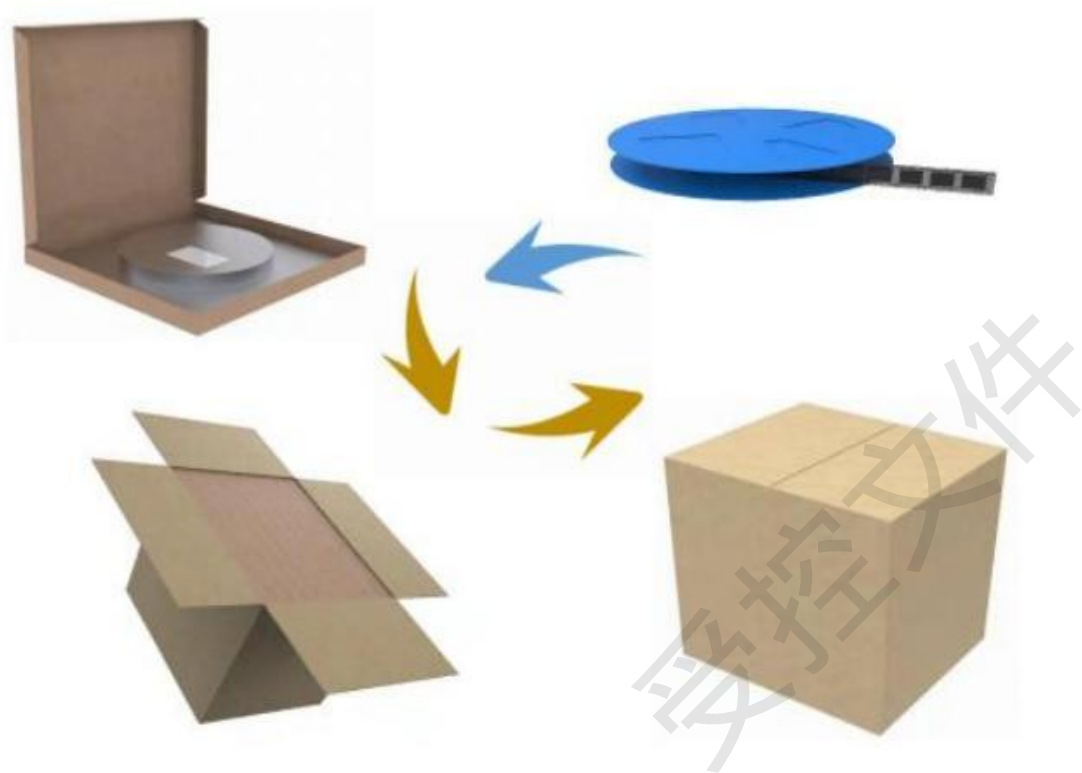
A roll of 2000pcs



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-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 $<40^{\circ}\text{C}$ 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