FN-LINK TECHNOLOGY LIMITED
A Building,HuiXin industrial park,No 31,
YongHe road, Fuyong town, Bao'an
District,Shenzhen City, CHINA
TEL: 86-0755-29558186
FAX: 86-0755-29558196
Website: www.fn-link.com

Product Specification

IEEE 802.11 b/g/n 2.4GHz 1T1R SDIO LGA Module

Project Name	Realtek RTL8189FTV 11n WIFI LGA Module
Model NO	F89FTSM13-W4 12.0X12.0X1.6, 3.3V SDIO Interface
Customer	
Customer's Part NO	

Approved: Jacky	Check: Jim Hu	Prepared: lzm

Feedback of customer's Confirmation

We accept the specification after Confirmed.

Customer	**Customer signature**	**Approved Date**

CONTENTS

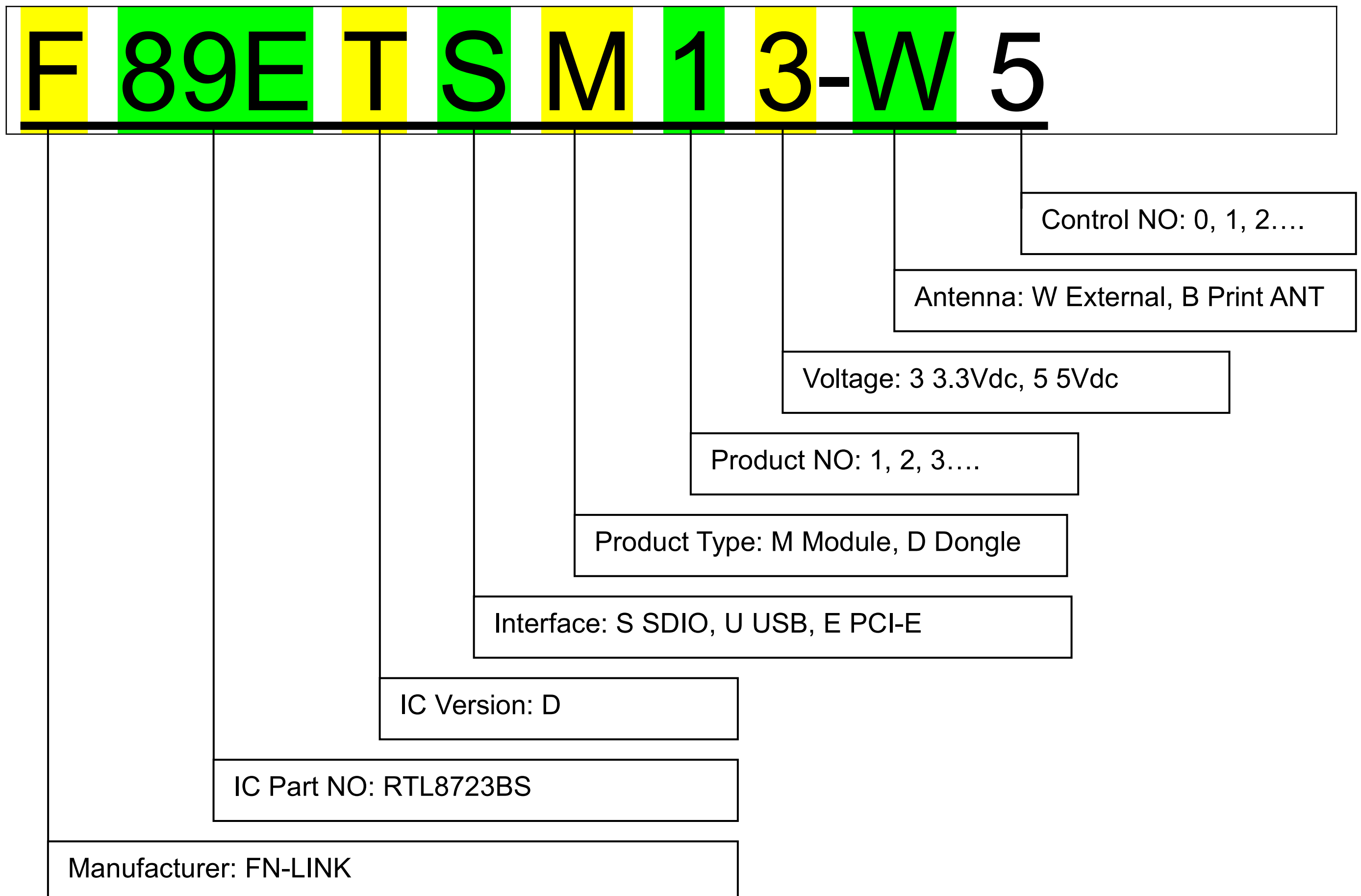
0 REVESION HISTORY 3
1.1 MODEL NO DEFINITION 3
1 INTRODUCTIONS 4
1.1 OVERVEIW 4
1.2 PRODUCT FEATURES 4
2 GENERAL SPECIFICATION 5
2.1 WIFI RF SPECIFICATION 5
2.2 POWER CONSUMPTION 5
3 MECHANICAL SPECIFICATION 6
3.1 OUTLINE DRAWING 6
3.2 PCB LAYOUT 6
3.3 PIN DEFINITION 7
3.4 APPLICATION CIRCUIT 8
4 ENVIRONMENTAL REQUIREMENTS 9
4.1 OPERATING & STORAGE TEMPRETURE 9
4.2 RECOMMENDED REFLOW PROFILE 9
4.3 NOTICE 9
5 PACKING INFORMATION 10

0. Revision History

REV NO	Date	Modifications	Draft
Rev.1.0	2018-8-6	First Released	lzm
Rev.1.1	2018-8-7	Modified RF Spec	lzm

0.1. Model No Definition

Example: F89ETSM13-W5



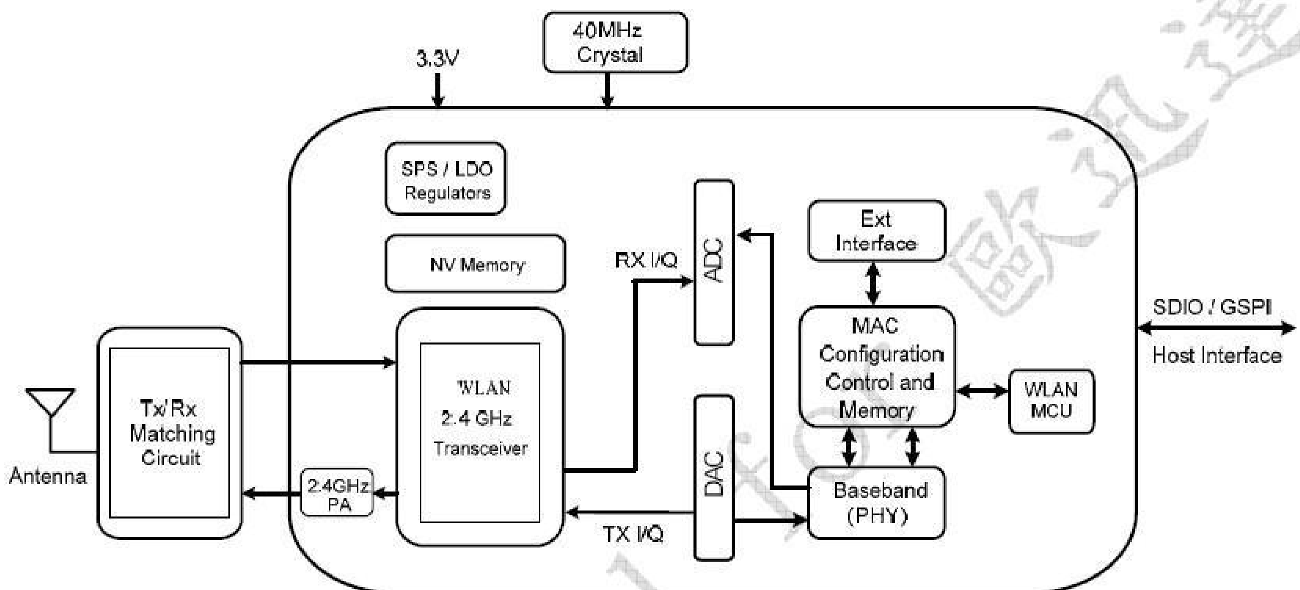
1. Introduction

1.1 Overview

F89FTSM13-W4 is a highly integrated and excellent performance Wireless LAN (WLAN) SDIO network interface device. High-speed wireless connection up to 72.2 Mbps.

The general hardware for the module is shown in Figure 1. This WLAN Module design is based on Realtek RTL8189FTV. It is a highly integrated single-chip 1*1 MIMO (Multiple In Multiple Out) Wireless LAN (WLAN) SDIO network interface controller complying with the 802.11n specification. It combines a MAC, a 1T1R capable baseband, and RF in a single chip. It is designed to provide excellent performance with low power Consumption and enhance the advantages of robust system and cost-effective.

Single-Band 11n (1x1) Solution



1.2 Product Features

- Operate at ISM frequency bands (2.4GHz)
- SDIO Interface for WiFi
- IEEE standards support: IEEE 802.11b, IEEE 802.11g, IEEE 802.11n,
- Enterprise level security which can apply WPA/WPA2 certification for WiFi.
- WiFi 1 transmitter and 1 receiver allow data rates supporting up to 72.2Mbps downstream and 72.2 Mbps upstream PHY rates

2. GENERAL SPECIFICATION

2.1 WiFi RF Specifications

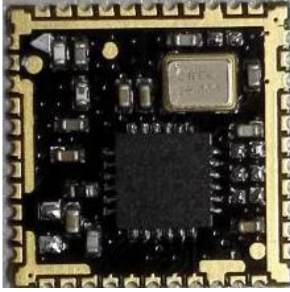
Main Chipset	RTL8189FTV
Operating Frequency	2.400～2.4835GHz
Standards	**WiFi:** IEEE 802.11b, IEEE 802.11g, IEEE 802.11n,
Modulation	**WiFi:** 802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps), 802.11 g/n: OFDM
PHY Data rates	**WiFi:** 802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 72.2Mbps
Transmit Output Power (Tolerance: ±2.0dBm)	**WiFi:** 802.11b@11Mbps 16dBm 802.11g@6Mbps 15dBm 802.11g@54Mbps 15dBm 802.11n 14dBm (MCS 0_HT20) 14dBm (MCS 7_HT20)
Receiver Sensitivity	802.11b@11Mbps -82±1dBm 802.11g@54Mbps -71±1dBm 802.11n -67±1dBm (MCS 7_HT20)
Operating Channel	**WiFi 2.4GHz:** 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Media Access Control	**WiFi:** CSMA/CA with ACK
Antenna	External Antenna
Network Architecture	**WiFi:** Ad-hoc mode (Peer-to-Peer) Infrastructure mode Software AP WiFi Direct
Security	**WiFi:** WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit,
OS Supported	Android /Linux
Host Interface	**WiFi:** SDIO/GPIO
Operating Voltage	3.3Vdc ±10% I/O supply voltage
Dimension	Typical L12.0*W12. 0*H1.6mm

2.2 Power Consumption

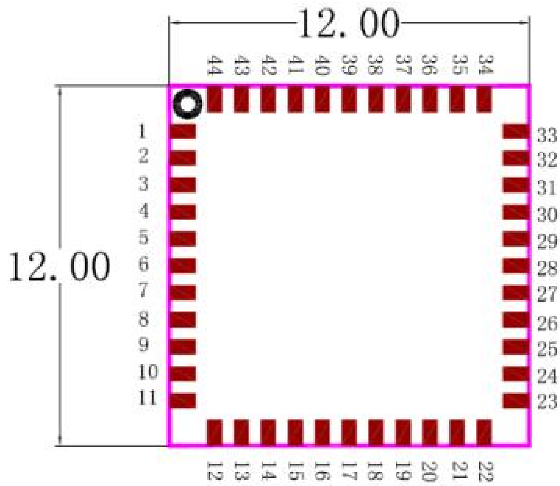
Mode	Status	Power(mA)	Note
OS Windows XP	Link	130	
	RX	130	20M
	TX	190	20M(MCS7)

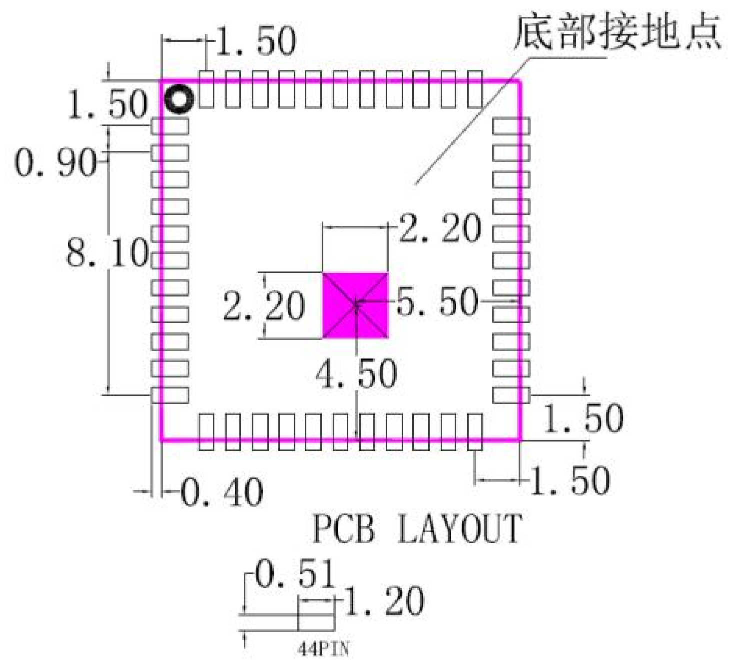
3. Mechanical Specification

3.1 Outline Drawing

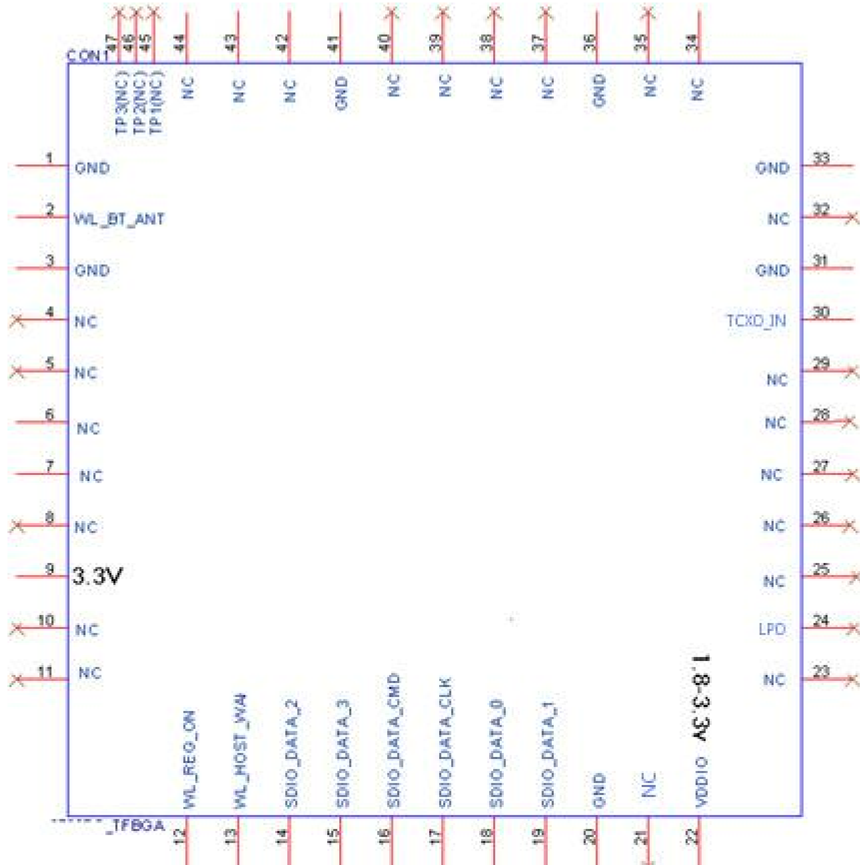


3.2 PCB LAYOUT (Unit: ±0.15mm)





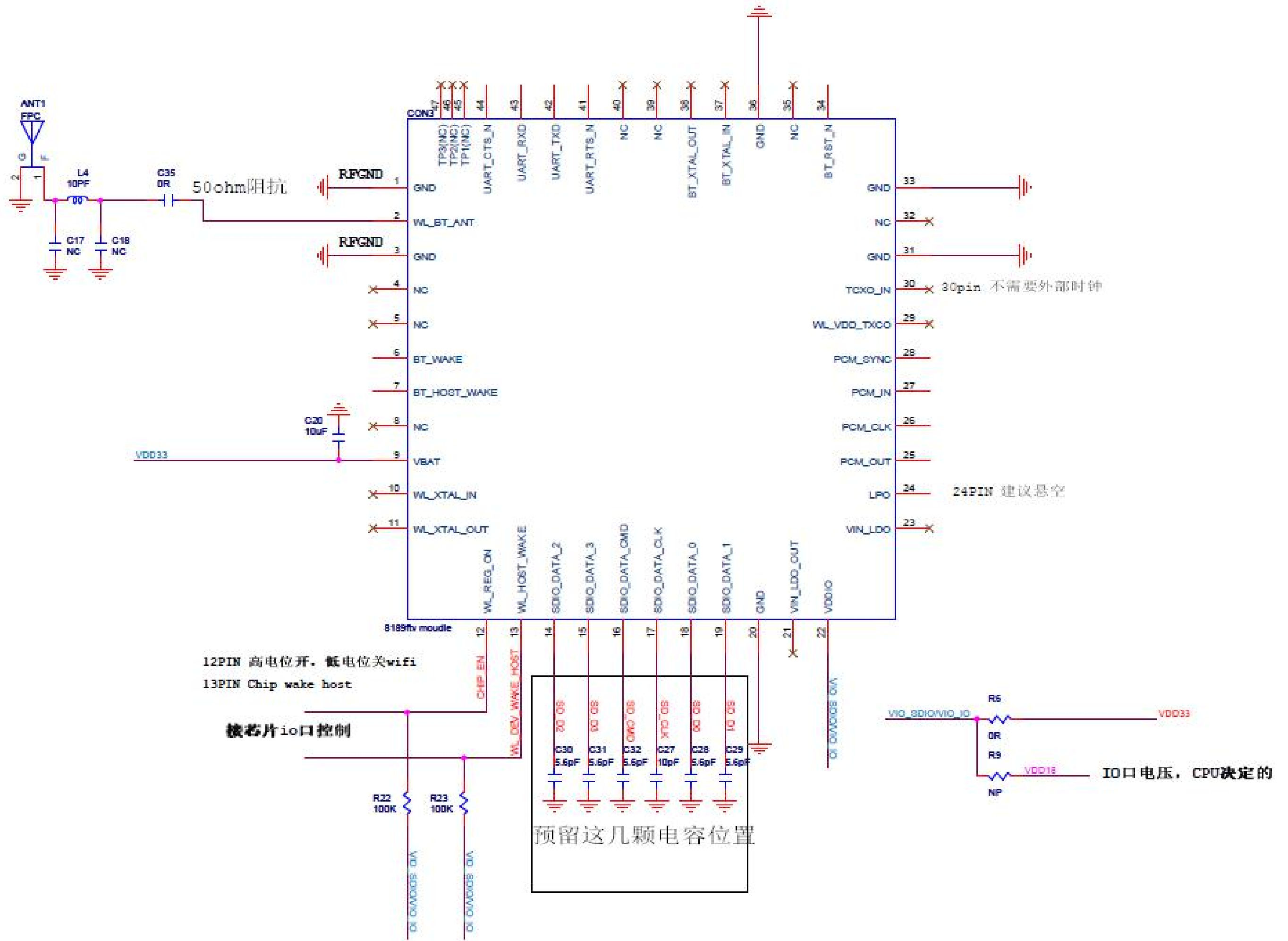
3.3 PIN Assignment



Pin #	Name	Description
1	GND	GND
2	RF	RF OUTPUT
3	GND	GND
4~8	NC	NC
9	VBAT	3.3V Optional
10	NC	NC
11	NC	NC
12	WL_REG_ON	WL_REG_ON
13	WL_HOST_WAKE	WAKE UP
14	SDIO_DATA_2	SDIO_D2
15	SDIO_DATA_3	SDIO_D3
16	SDIO_DATA_CMD	SDIO_CMD
17	SDIO_DATA_CLK	SDIO_CLK
18	SDIO_DATA_D0	SDIO_D0
19	SDIO_DATA_D1	SDIO_D1
20	GND	GND
21	NC	NC
22	VDIO	1.8~3.3V
23	NC	NC
24	LPO	CLK_REQ
25~29	NC	NC
30	TCXO_IN	26MHz_IN
31	GND	GND

32	NC	NC
33	GND	GND
34~35	NC	NC
36	GND	GND
37~40	NC	NC
41	GND	GND
42~44	NC	NC

3.4 Application Circuit

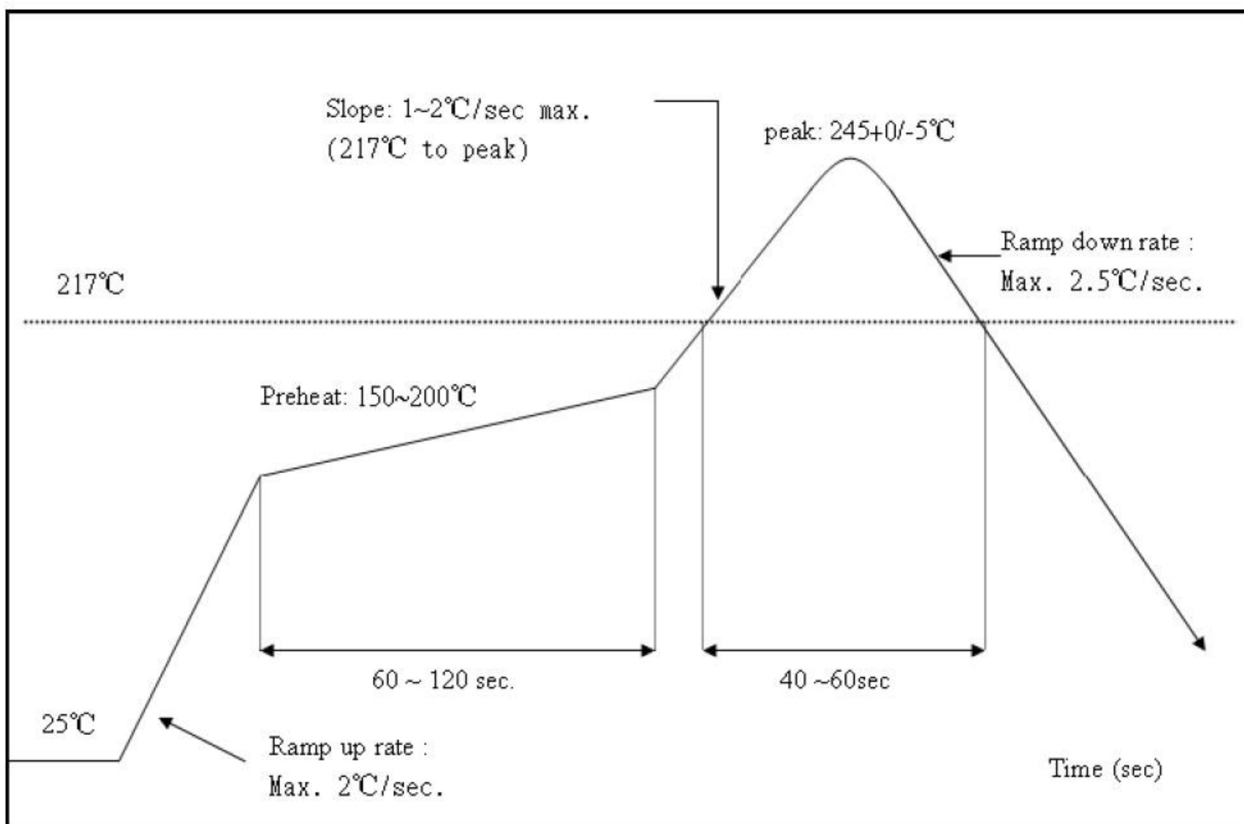


4. Environmental Requirements

4.1 Operating & storage tempreture

Operating	Temperature: -5°C to +55°C
	Relative Humidity: 10-90% (non-condensing)
Storage	Temperature: -40°C to +80°C (non-operating)
	Relative Humidity: 5-90% (non-condensing)
MTBF (Mean Time Between Failures)	Over 150,000hours

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



4.3 Patch WIFI modules installed before the notice:

WIFI module installed note:
1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.12 mm thickness When open a stencil
2. Take and use the WIFI module, please insure the electrostatic protective measures.
3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at 250 + 5 ℃ for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:
1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: < 40 ℃, relative humidity: < 90% r.h.
2. The module vacuum packing once opened, time limit of the assembly:
Card: 1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption.
2.) factory environmental temperature humidity control: ≦ -30℃, ≦ 60% r.h..
3). Once opened, the workshop the preservation of life for 168 hours.

3. Once opened, such as when not used up within 168 hours:
1). The module must be again to remove the module moisture absorption.
2). The baking temperature: 125 ℃, 8 hours.
3.) After baking, put the right amount of desiccant to seal packages.

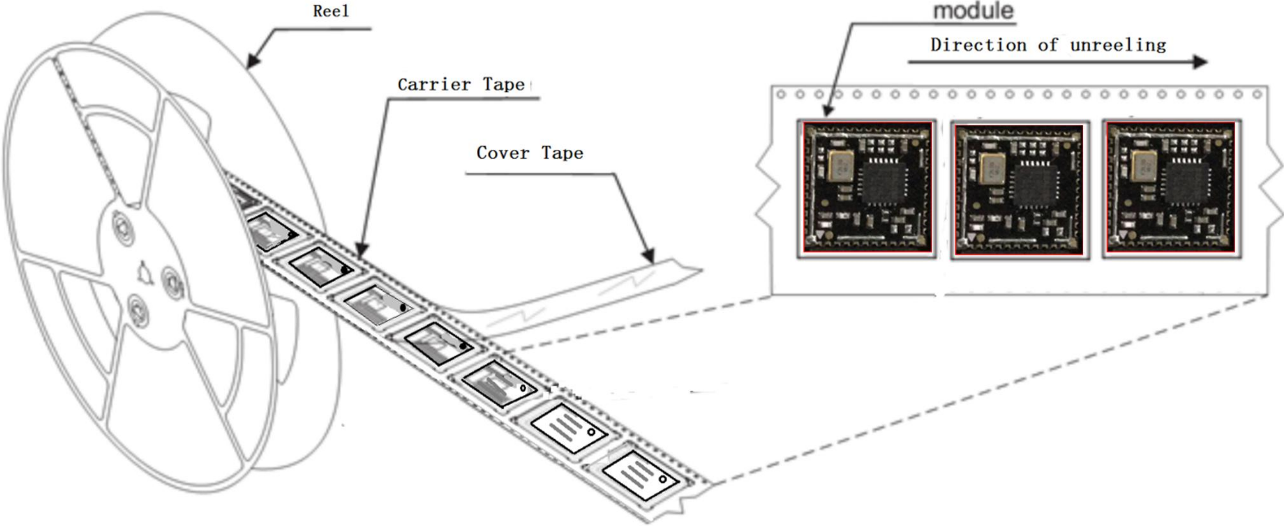
5. PACKING INFORMATION

5.1 Blister packaging

A piece of 100 PCS

5.2 Coiling Packaging

A roll of 2000pcs


Reel
Carrier Tape
Cover Tape
module
Direction of unreeling