



欧智通科技

*FN-Link*

6188S-UF

WiFi Single-band 1X1 802.11 b/g/n

Module Datasheet

# Revision History

Date	Revision Content	Revised By	Version
<b>2017-06-15</b>	<b>First Released</b>	<b>William Tan</b>	V1.0
<b>2017-07-15</b>	<b>Modified photo of module</b>	<b>William Tan</b>	V1.1

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# 1. Introduction

**6188S-UF is a small size and low profile of WiFi module, board size is 14.8mm\*18.2mm with module thickness of 1.9mm. It can be easily manufactured on SMT process and highly suitable for tablet PC, ultra book, mobile device and consumer products. It provides USB interface for WiFi. The WiFi throughput can go up to 150Mbps in theory by using 1x1 802.11b/g/n MIMO technology.**

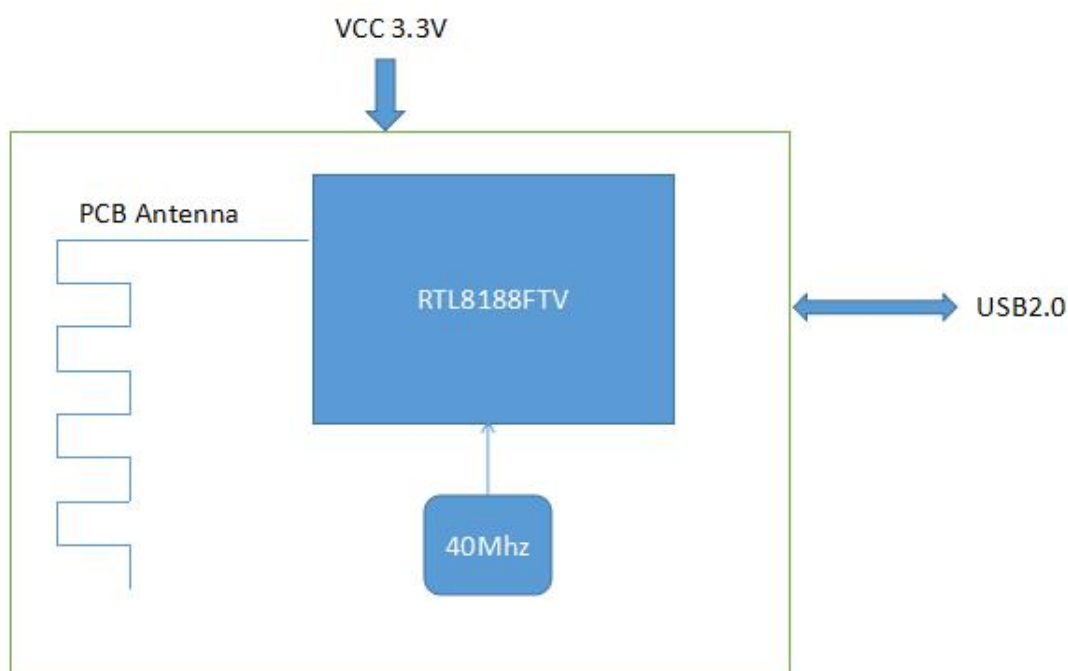
**6188S-UF uses highly integrated WiFi single chip based on advanced COMS process. 6188S-UF integrates whole WiFi function blocks into a chip, such as USB/PCM, MAC, BB, AFE, RFE, PA, EEPROM and LDO/SWR, except fewer passive components remained on PCB.**

**This compact module is a total solution for Wi-Fi technology. The module is specifically developed for Smart phones and Portable devices.**

## 2. Features

- Operate at ISM frequency bands (2.4GHz)
- USB for WiFi
- IEEE standards support: IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, IEEE 802.11d, IEEE 802.11e, IEEE 802.11h, IEEE 802.11i
- Enterprise level security which can apply WPA/WPA2 certification for WiFi.
- WiFi 1 transmitter and 1 receiver allow data rates supporting up to 150 Mbps downstream and 150 Mbps upstream PHY rates

The block diagram of module is depicted in the figure below.



## 3. General Specification

### 3.1 General Specification

Model Name	6188S-UF
Product Description	Support WiFi functionality
Dimension	L x W x H: 14.8 x 18.2 x1.9 (typical) mm
WiFi Interface	Support USB2.0
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 85°C

#### 3.1.2 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	0	25	70	deg.C
VCC33	3.15	3.3	3.45	V

## 4. WiFi RF Specification

### 4.1 2.4GHz RF Specification

Feature	Description
Operating Frequency	<b>2.400~2.4835GHz</b>
Standards	WiFi: <b>IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, IEEE 802.11d, IEEE 802.11e, IEEE 802.11h, IEEE 802.11i</b>
Modulation	WiFi: <b>802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps),</b> <b>802.11 g/n: OFDM</b>

PHY Data rates	WiFi: <b>802.11b: 11,5.5,2,1 Mbps</b> <b>802.11g: 54,48,36,24,18,12,9,6 Mbps</b> <b>802.11n: up to 150Mbps</b>													
EVM	<b>802.11b /1Mbps : EVM <math>\leq</math> -10dB</b> 802.11b /11Mbps : EVM $\leq$ -10dB 802.11g /6Mbps : EVM $\leq$ -5dB <b>802.11g /54Mbps : EVM <math>\leq</math> -25dB</b> 802.11n /6.5Mbps : EVM $\leq$ -5dB <b>802.11n /65Mbps : EVM <math>\leq</math> -28dB</b> 802.11n /13.5Mbps : EVM $\leq$ -5dB 802.11n /135Mbps : EVM $\leq$ -28dB													
Receiver Sensitivity (WiFi)	802.11b@8% PER <b>1Mbps <math>\leq</math> -91dBm</b> <b>2Mbps <math>\leq</math> -89dBm</b> <b>5.5Mbps <math>\leq</math> -87dBm</b> <b>11Mbps <math>\leq</math> -85dBm    Max input level <math>\geq</math> -8</b>													
	802.11g@10% PER <b>6Mbps <math>\leq</math> -87dBm</b> <b>9Mbps <math>\leq</math> -86dBm</b> <b>12Mbps <math>\leq</math> -84dBm</b> <b>18Mbps <math>\leq</math> -82dBm</b> <b>24Mbps <math>\leq</math> -79dBm</b> <b>36Mbps <math>\leq</math> -75dBm</b> <b>48Mbps <math>\leq</math> -71dBm</b> <b>54Mbps <math>\leq</math> -70dBm    Max input level <math>\geq</math> -20</b>													
	802.11n@10% PER <table border="0"> <tr> <td><b>HT20_MCS 0 <math>\leq</math> -87dBm</b></td> <td>HT40_MCS 0 <math>\leq</math> -84</td> </tr> <tr> <td>HT20_MCS 1 <math>\leq</math> -84dBm</td> <td>HT40_MCS 1 <math>\leq</math> -81</td> </tr> <tr> <td>HT20_MCS 2 <math>\leq</math> -82dBm</td> <td>HT40_MCS 2 <math>\leq</math> -79</td> </tr> <tr> <td>HT20_MCS 3 <math>\leq</math> -79dBm</td> <td>HT40_MCS 3 <math>\leq</math> -76</td> </tr> <tr> <td>HT20_MCS 4 <math>\leq</math> -75dBm</td> <td>HT40_MCS 4 <math>\leq</math> -72</td> </tr> <tr> <td>HT20_MCS 5 <math>\leq</math> -71dBm</td> <td>HT40_MCS 5 <math>\leq</math> -68</td> </tr> <tr> <td>HT20_MCS 6 <math>\leq</math> -70dBm</td> <td>HT40_MCS 6 <math>\leq</math> -67</td> </tr> </table>	<b>HT20_MCS 0 <math>\leq</math> -87dBm</b>	HT40_MCS 0 $\leq$ -84	HT20_MCS 1 $\leq$ -84dBm	HT40_MCS 1 $\leq$ -81	HT20_MCS 2 $\leq$ -82dBm	HT40_MCS 2 $\leq$ -79	HT20_MCS 3 $\leq$ -79dBm	HT40_MCS 3 $\leq$ -76	HT20_MCS 4 $\leq$ -75dBm	HT40_MCS 4 $\leq$ -72	HT20_MCS 5 $\leq$ -71dBm	HT40_MCS 5 $\leq$ -68	HT20_MCS 6 $\leq$ -70dBm
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HT20_MCS 5 $\leq$ -71dBm	HT40_MCS 5 $\leq$ -68													
HT20_MCS 6 $\leq$ -70dBm	HT40_MCS 6 $\leq$ -67													

	HT20_MCS 7 $\leq$ -69dBm      HT40_MCS 7 $\leq$ -66 Max input level $\geq$ -20
Operating Channel	WiFi 2.4GHz: <b>11: (Ch. 1-11) – United States</b>
Media Access Control	WiFi: <b>CSMA/CA with ACK</b>
Antenna	<b>PCB Antenna</b>
Network Architecture	<b>Ad-hoc mode (Peer-to-Peer ) Infrastructure mode Software AP WiFi Direct</b>
Security	<b>WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit &amp; 128bit, IEEE 802.11x, IEEE 802.11i</b>
OS Supported	<b>Android /Linux/ Win CE /iOS /XP/WIN7</b>
Host Interface	<b>USB2.0</b>

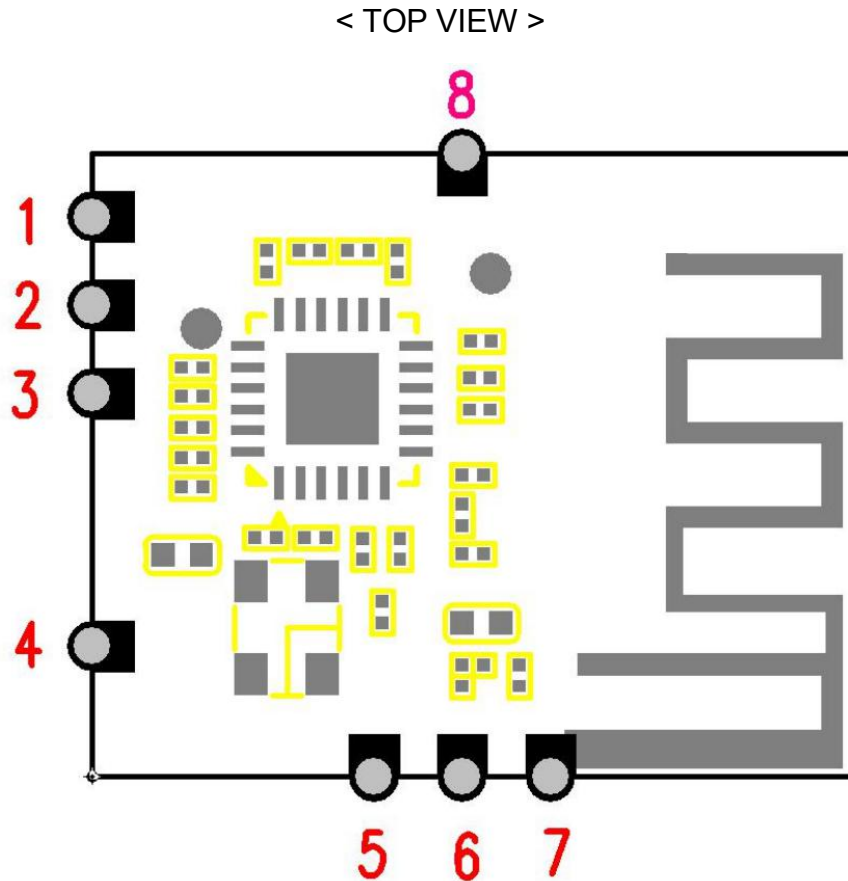
## 5. Power Consumption

Power Consumption (Typical by using SWR)	<b>TX Mode: (Throughput mode) 170mA (MCS7/BW40/13dBm) RX Mode: (Throughput mode) 130mA (MCS7/BW40/-60dBm) Associated Idle power saving with DTIM=3 2.1mA</b>
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## 6. Pin Assignments

### 6.1 Pin Outline

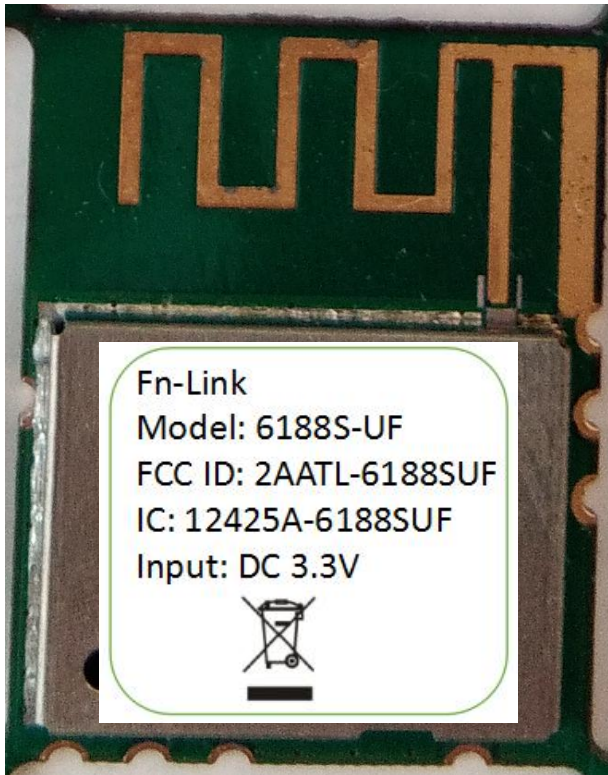


### 6.2 Pin Definition

NO	Name	Type	Description
1	GND	—	Ground connections
2	USB_DP	I/O	USB2.0 differential pair for WLAN
3	USB_DM	I/O	USB2.0 differential pair for WLAN
4	VDD33	P	Main power voltage source input 3.3V
5	GND	—	Ground connections
6	RF0	I/O	Wlan RF I/O, the pin can float if use internal antenna
7	GND	—	Ground connections
8	GND	—	Ground connections

# 7. Dimensions

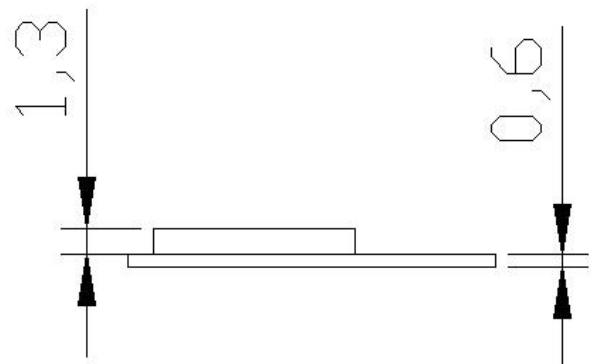
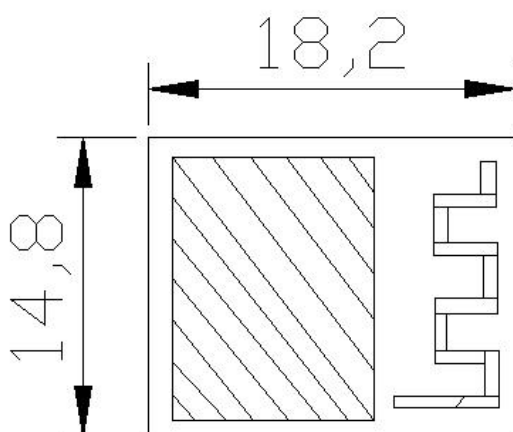
## 7.1 Physical Dimensions



< TOP VIEW >

< Side View >

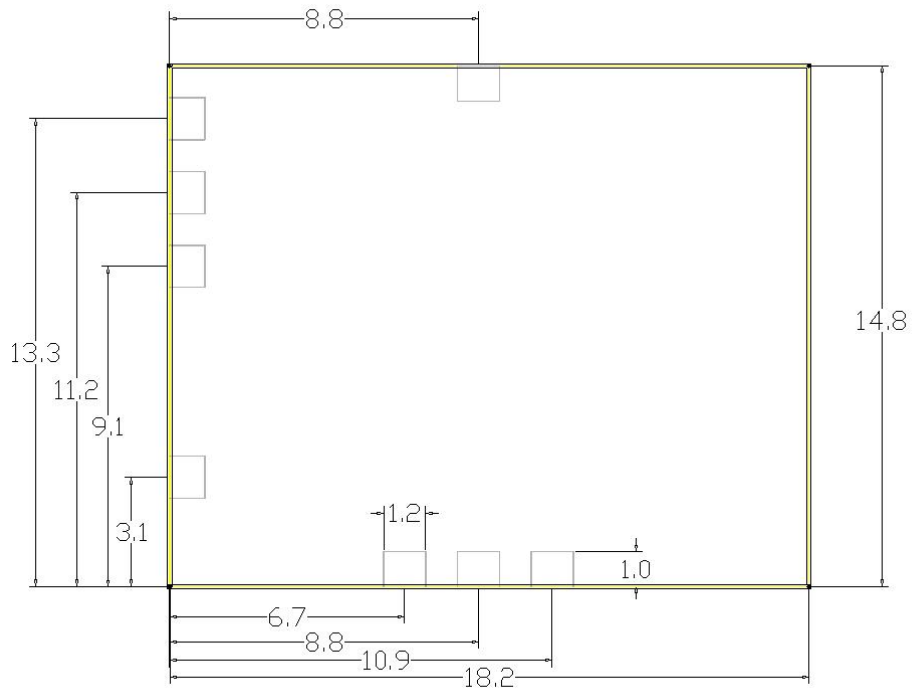
(Unit: mm)



## 7.2 Module Physical Dimensions

(Unit: mm)

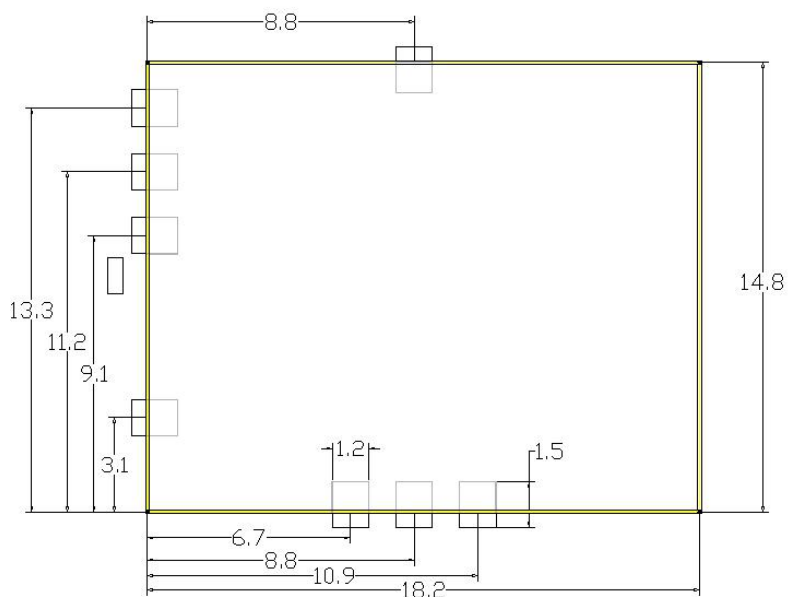
< TOP VIEW >



## 7.3 Layout Recommendation

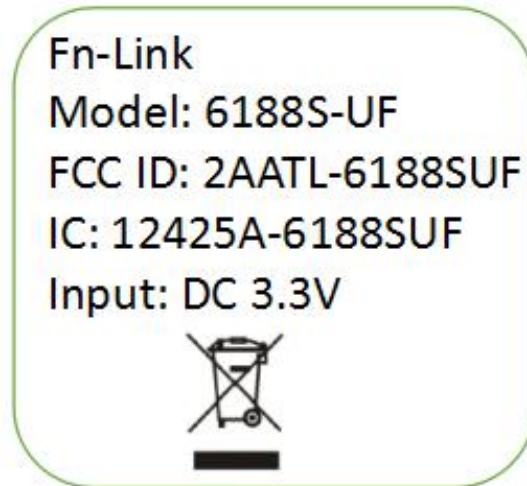
(Unit: mm)

< TOP VIEW >

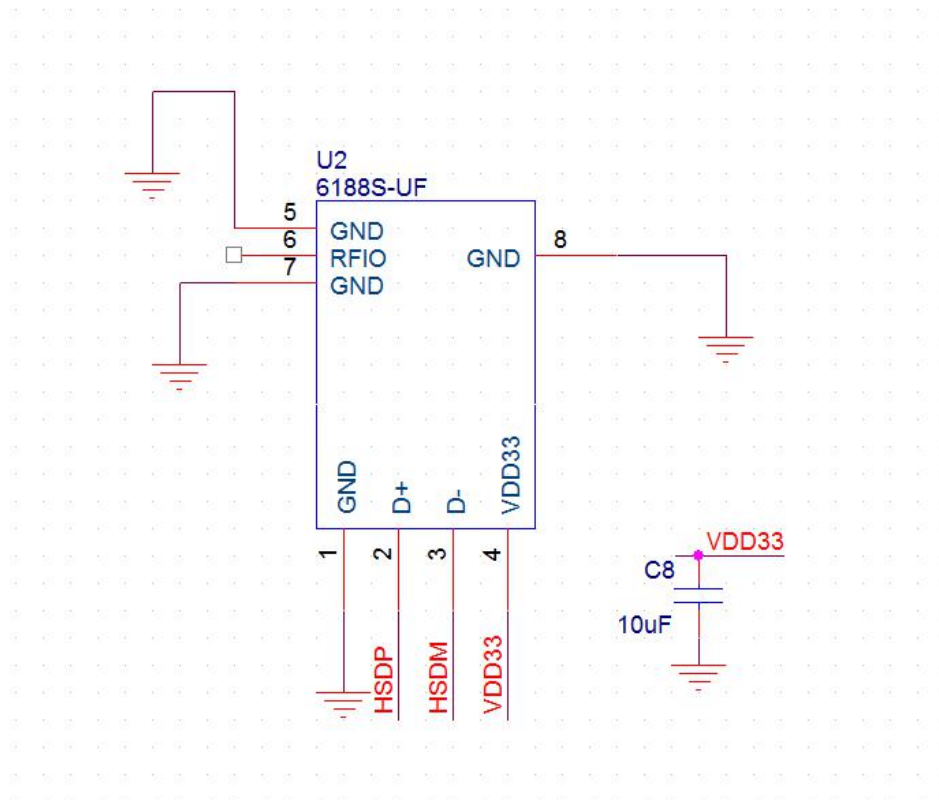


## 7.4 Marking Description

<TOP VIEW>



## 8. Reference Design

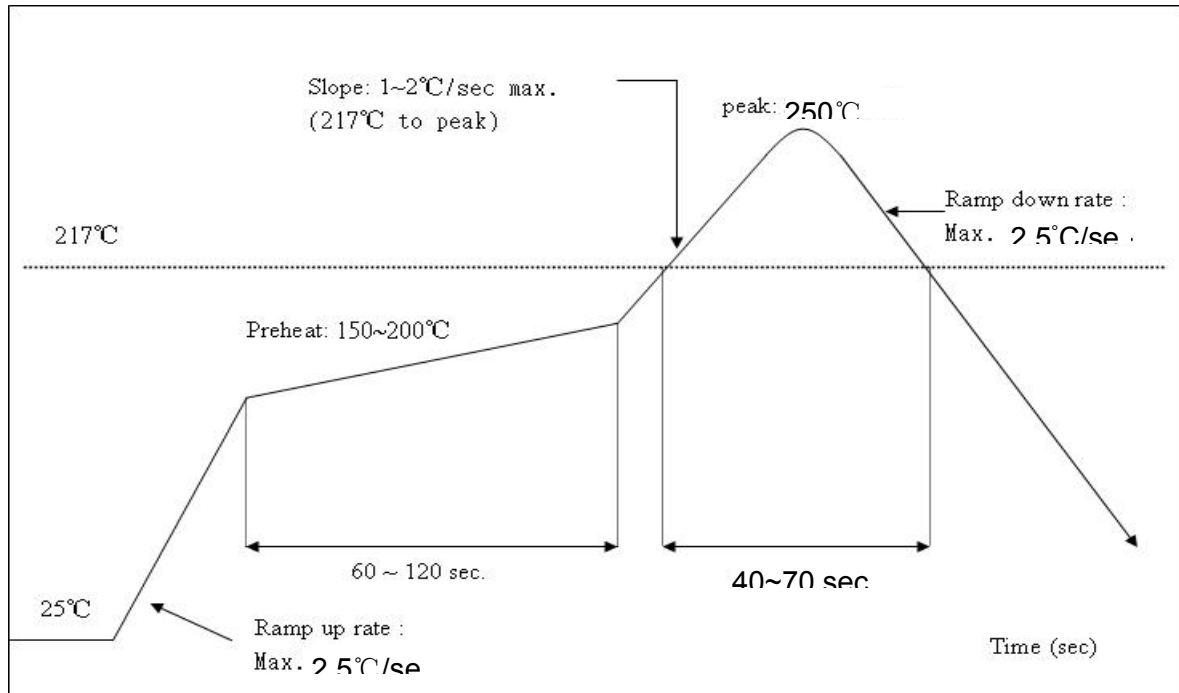


## 9. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

Number of Times : ≤2 times



## 10. Package Information

the take-up package



Using self-adhesive tape

Size of black tape:24mm\*32.6m the cover tape :21.3mm\*32.6m

Color of plastic disc:blue

A roll of 2000pcs



NY bag size:460mm\*385mm

size : 350\*350\*35mm



The packing case size:350\*210\*370mm

This device complies with Part 15 of the FCC Rules / Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC / IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

*Les antennes installées doivent être situées de façon à ce que la population ne puisse y être exposée à une distance de moins de 20 cm. Installer les antennes de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'*

*antenne.*

*La FCC des états-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.*

**Information for the OEM Integrators**

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

**Label Information to the End User by the OEM or Integrators**

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with “Contains FCC ID: 2AATL-6188SUF and IC: 12425A-6188SUF”.