

## RC-CC3200

based on TI CC3200



### IoT Wi-Fi Module based on CC3200 Texas Instrument chip.

The RC-CC3200 module is the second-generation series of modules in the SimpleLink family and consists of an applications microcontroller unit (MCU), Wi-Fi network processor, and a power-management subsystem. The module comes integrated with all required components including on-board flash, clocks, and RF filter for easy hardware integration and quick time-to-market. The applications MCU subsystem contains an industry-standard ARM Cortex-M4 core running at 80MHz. The RC-CC3200 module supports a wide variety of rich peripherals, including fast parallel camera of embedded RAM memory options, with peripheral drivers in ROM memory. The series also includes a secure device with on-chip 128-bit secret key supporting secure boot as well as applications and user data encryption.

The RC-CC3200 module also features a Wi-Fi network processor subsystem which contains a dedicated ARM Cortex-M3 MCU to completely offload the applications MCU. This subsystem includes 802.11 b/g/n radio, baseband, and medium access control with a powerful crypto engine for fast secured WLAN and internet connections with 256-bit encryption. The RC-CC3200 module supports station, access point, and Wi-Fi Direct modes. The RC-CC3200 module also supports WPA2 personal and enterprise security and WPS 2.0. The Wi-Fi network processor includes an embedded IPv4 TCP/IP stack.

The power-management subsystem includes an integrated DC-DC converter with support for a wide range of supply voltages. This subsystem enables low-power consumption modes such as the hibernate with RTC mode which requires less than 18µA of current.

For more information you can make reference to the CC3200 TI datasheet.

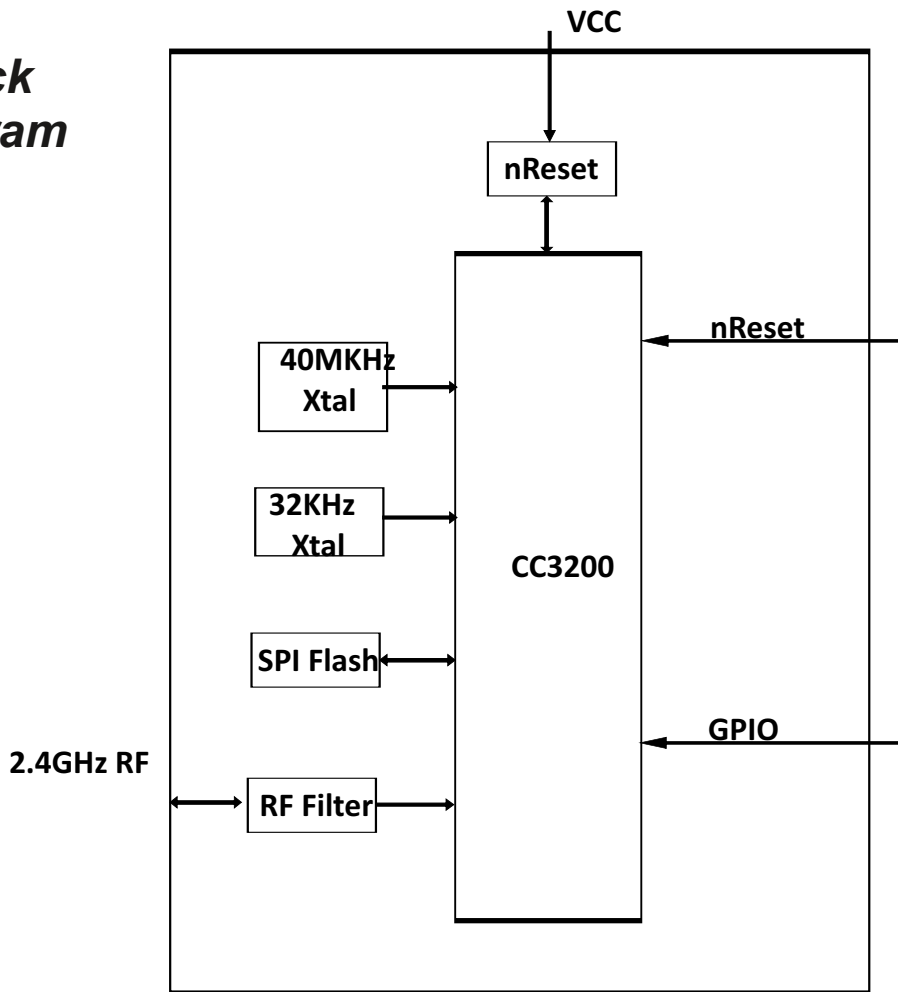
### Feature

- Wi-Fi Microcontroller Module
- Based on ARM Cortex - M4 kernel running frequency of 80MHz
- Support Wi-Fi@2.4 GHz 802.11 b/g/n wireless standards
- Ultra low power mode, support deep dormancy
- Minisize: 18.22mm x 26.65mm x 1.5mm SMT
- FCC/CE Certificated, ROHS compliant

### Applications

- Internet of Things (IoT)
- Home Automation
- Home Appliances
- Access Control
- Security Systems
- Smart Energy
- Industrial Control

## 1.0 Block Diagram



## 2.0 Technical Specifications

### 2.1 Absolute Maximum ratings

Characteristics	MIN	TYP	MAX	UNIT
VBAT and VIO (respect to GND)	-0,5	3.3	3.8	VDC
Digital I/O (respect to GND)	-0,5		VBAT + 0.5	VDC
Operating Temperature	-40	25	+85	°C

## 2.2 Recommended Operating Conditions

Characteristics	MIN	TYP	MAX	UNIT
VBAT and VIO	2.3	3.3	3.6	VDC

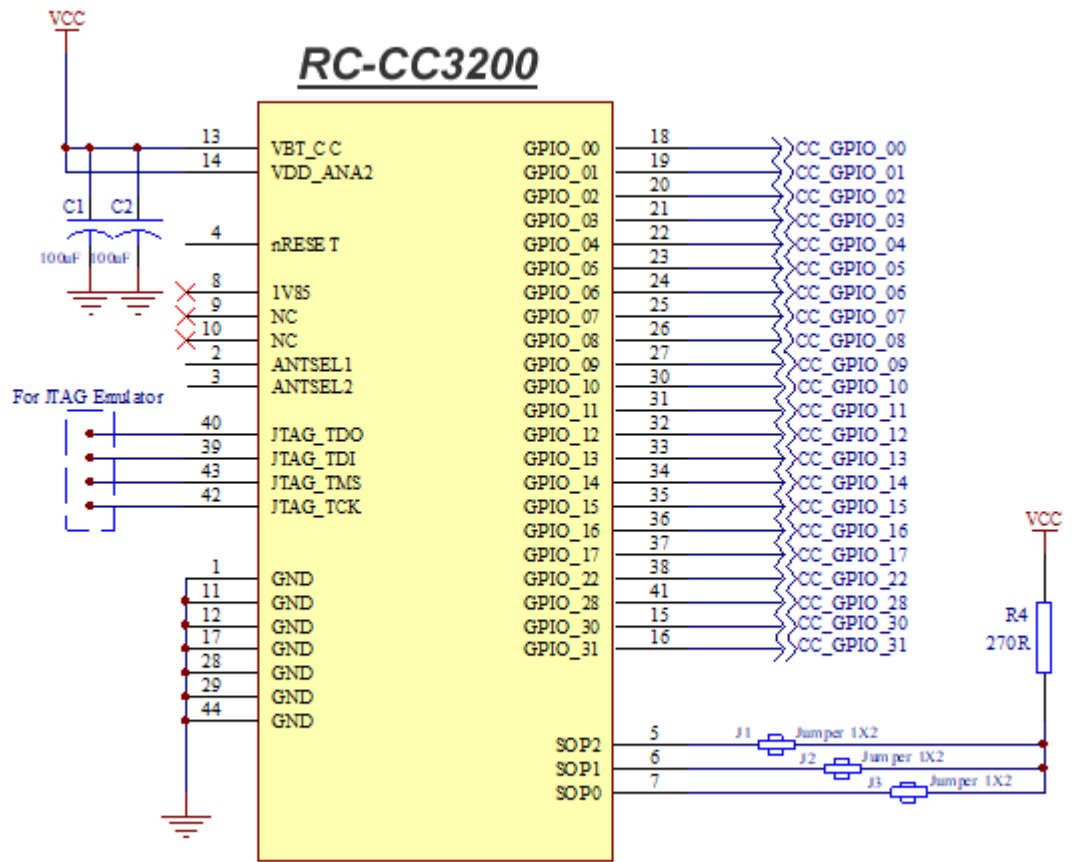
## 2.3 Reset requirement

Characteristics	MIN	TYP	MAX	UNIT
Operation mode level (ViH)		0.65 x VBAT		VDC
Shutdown mode level (ViL)	0	0.6		VDC
Minimum time for nReset low for resetting module	5			mS
Rise/fall Time		25		µs

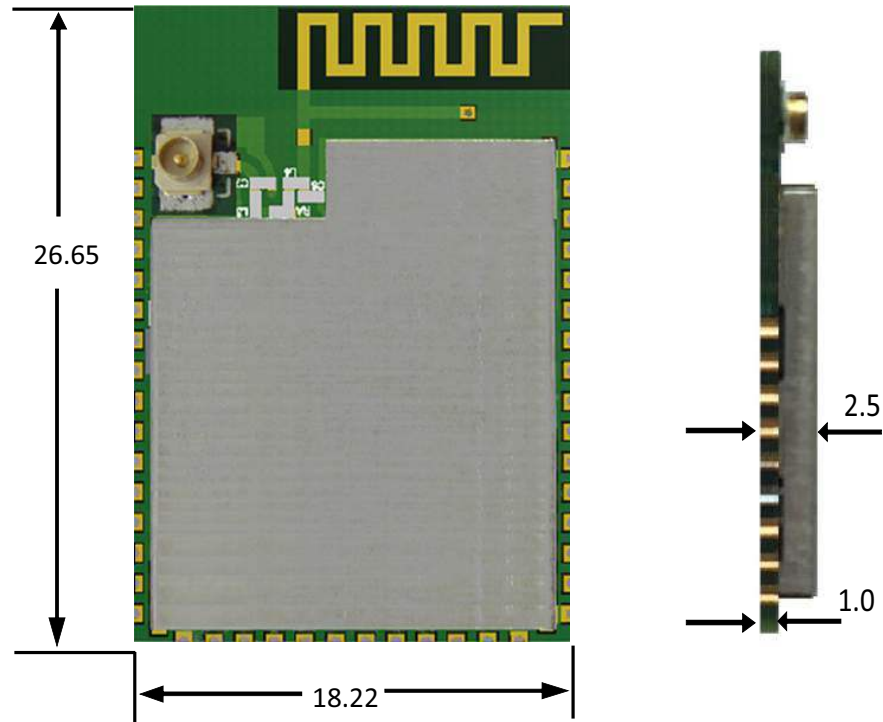
## 2.4 Current Consumption (Vbat=3.6Volt)

Mode	Parameters	Condition	MIN	TYP	MAX	UNIT
MCU ACTIVE	TX Current	1DSSS		278		mA
MCU ACTIVE	TX Current	6OFDM		254		mA
MCU ACTIVE	TX Current	54OFDM		229		mA
MCU ACTIVE	RX Current	1DSSS		59		mA
MCU ACTIVE	RX Current	54OFDM		59		mA
MCU SLEEP	TX Current	1DSSS		275		mA
MCU SLEEP	TX Current	6OFDM		251		mA
MCU SLEEP	TX Current	54OFDM		226		mA
MCU SLEEP	RX Current	1DSSS		56		mA
MCU SLEEP	RX Current	54OFDM		56		mA
MCU LPDS	TX Current	1DSSS		272		mA
MCU LPDS	TxCURRENT	1DSSS		248		mA
MCU LPDS	TX Current	6OFDM		223		mA
MCU LPDS	TX Current	54OFDM		53		mA
MCU LPDS	RX Current	1DSSS		53		mA
	Peak calibration current	VBAT=3.3V		450		mA
	Peak calibration current	VBAT=2.3V		520		mA

## REFERENCE SCHEMATICS

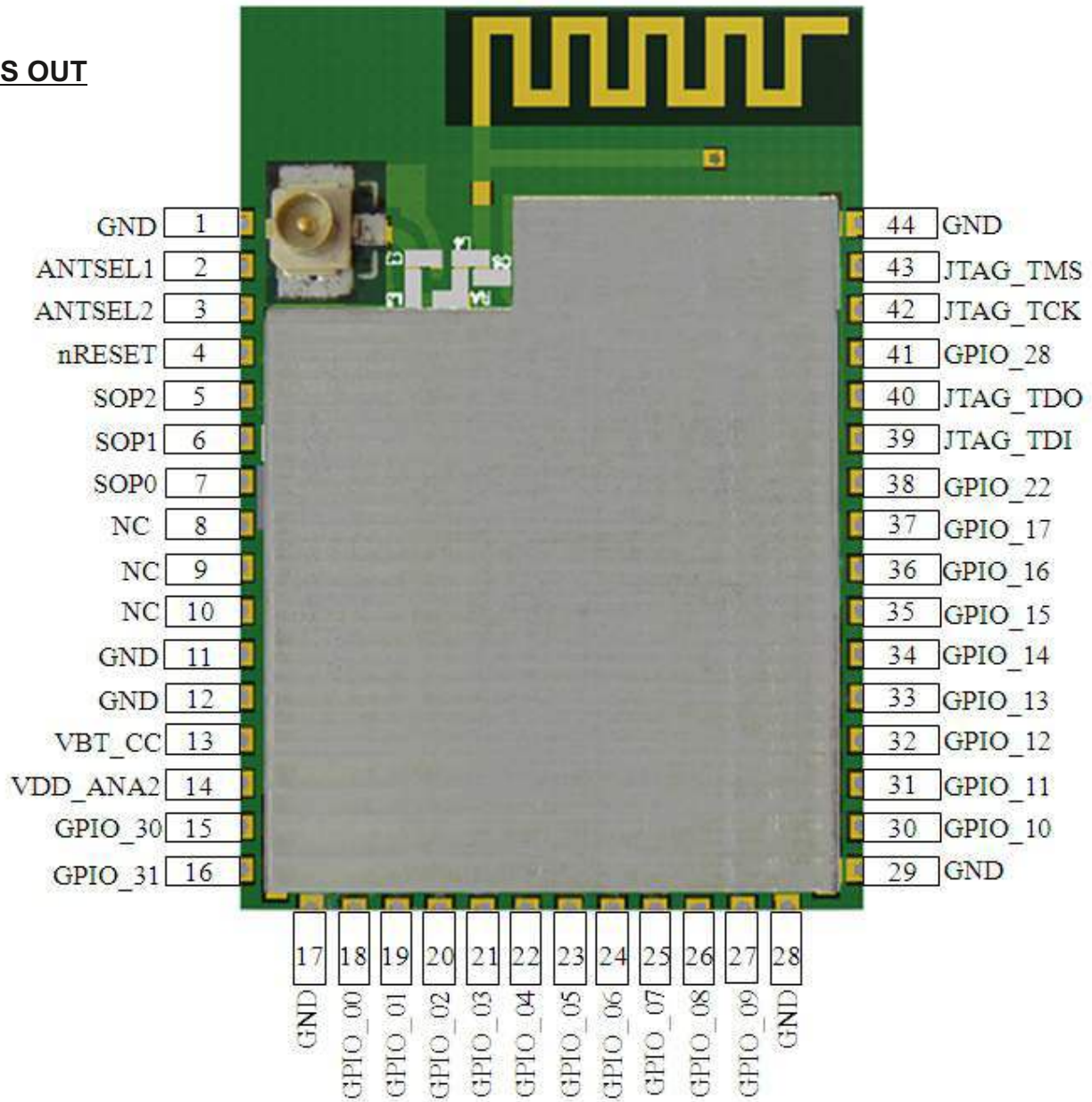


## MECHANICAL DIMENSIONS



Unit: mm Tolerance: 0.2mm

## PINS OUT



## PINS OUT DESCRIPTION

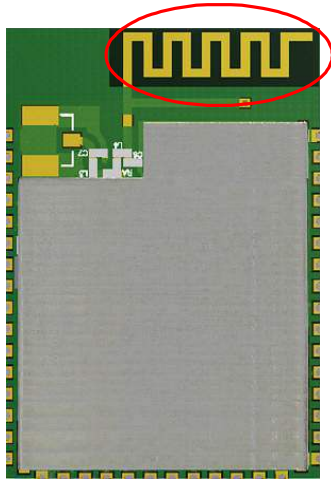
Pad Number	Pins Name	Description	CC3200 Pad Number
1	GND	Ground	65
2	ANTSEL1	Antenna Selection Control	29
3	ANTSEL2	Antenna Selection Control	30
4	nRESET	Master chip reset (Active low)	32
5	SOP2	Sense On Power 2	21
6	SOP1	Sense On Power 1	34

## PINS OUT DESCRIPTION

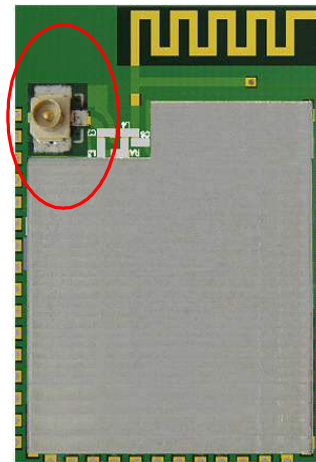
Pad Number	Pins Name	Description	CC3200 Pad Number
7	SOP0	Sense On Power 0	35
8	NC		
9	NC		
10	NC		
11	GND	Ground	65
12	GND	Ground	65
13	VBT_CC	Chip Supply Voltage VBAT	10,37,39,44,54
14	VDD_ANA2	ANA2 DCDC O	47
15	GPIO_30	General-Purpose I/O	53
16	GPIO_31	General-Purpose I/O	45
17	GND	Ground	65
18	GPIO_00	General-Purpose I/O	50
19	GPIO_01	General-Purpose I/O	55
20	GPIO_02	General-Purpose I/O	57
21	GPIO_03	General-Purpose I/O	58
22	GPIO_04	General-Purpose I/O	59
23	GPIO_05	General-Purpose I/O	60
24	GPIO_06	General-Purpose I/O	61
25	GPIO_07	General-Purpose I/O	62
26	GPIO_08	General-Purpose I/O	63
27	GPIO_09	General-Purpose I/O	64
28	GND	Ground	65
29	GND	Ground	65
30	GPIO_10	General-Purpose I/O	1
31	GPIO_11	General-Purpose I/O	2
32	GPIO_12	General-Purpose I/O	3
33	GPIO_13	General-Purpose I/O	4
34	GPIO_14	General-Purpose I/O	5
35	GPIO_15	General-Purpose I/O	6
36	GPIO_16	General-Purpose I/O	7
37	GPIO_17	General-Purpose I/O	8
38	GPIO_22	General-Purpose I/O	15
39	JTAG_TDI	JTAG TDI - Reset Default Pinout	16
40	JTAG_TDO	JTAG TDO - Reset default Pinout	17
41	GPIO_28	General-Purpose I/O	18
42	JTAG_TCK	JTAG/SWD TCK Reset Default Pinout	19
43	JTAG_TMS	JTAG/SWD TMS Reset default Pinout	20
44	GND	Ground	65

## ANTENNA OPTION

There are two antenna way for RC-CC3200 module :

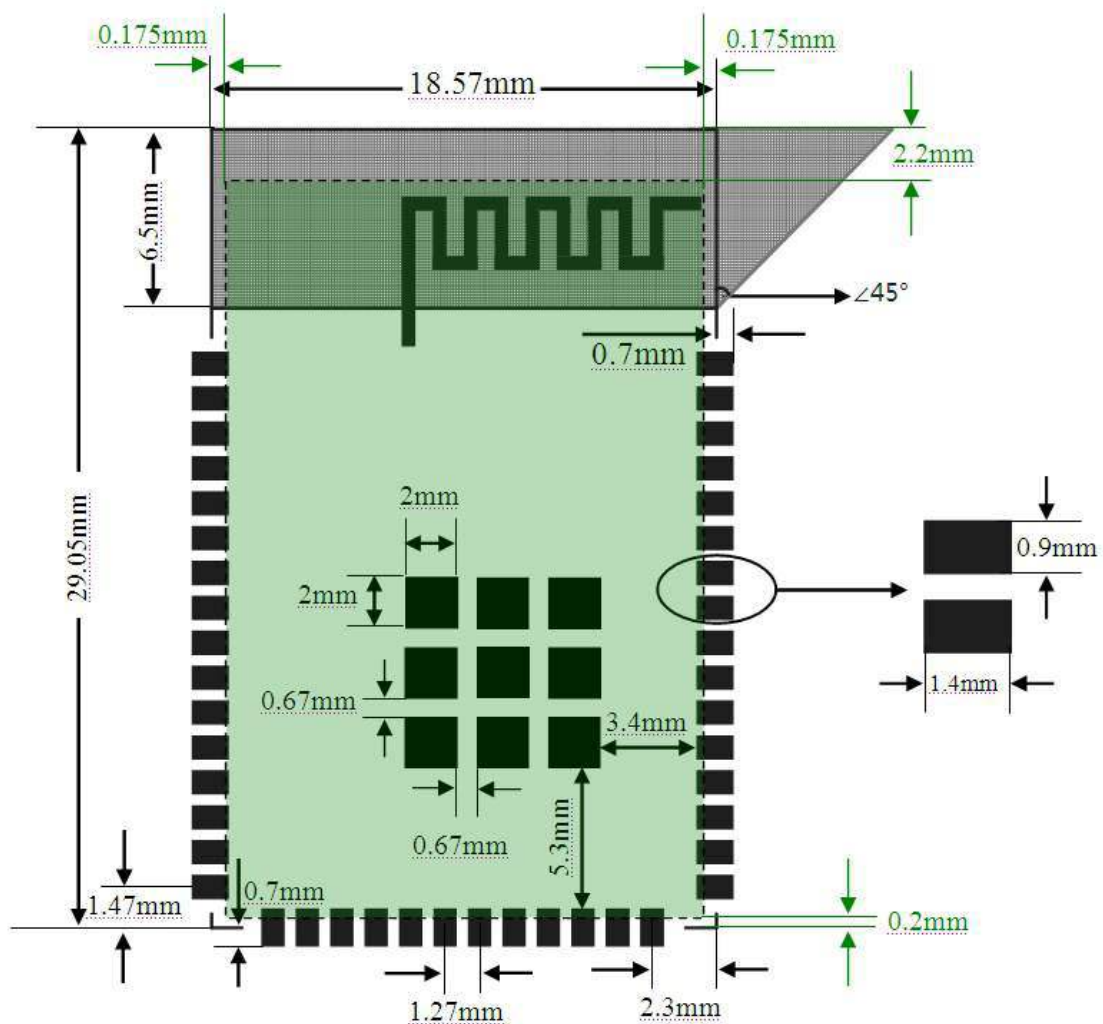


pcb Antenna



UFL connector

## RECOMMENDED PCB LAYOUT



## 3 Environmental Requirements and Specifications

### 3.1 Temperature

#### 3.1.1 PCB Bending

The PCB bending specification shall maintain planeness at a thickness of less than 0.1mm

### 3.2 Handling Environment

#### 3.2.1 ESD

The product ESD immunity is Human Body Model (HBM)  $\geq \pm 1500(V)$ , Mechanical Model(MM)  $\geq \pm 200(V)$ . Handle it under ESD protection environment.

This device is ESD sensitive, thus it must be protected at all times from ESD. Industry-standard ESD precautions must be followed at all time.

#### 3.2.2 Terminals

The product is mounted with motherboard through stamp hole. To prevent poor soldering, do not touch it by hand.

#### 3.2.3 Falling

The mounted components will be damaged if the product falls or is dropped. Such damage may cause the product malfunction.

### 3.3 Storage Condition

#### 3.3.1 Moisture Barrier Bag Before Opened

A moisture barrier bag must be stored in a temperature of less than 30°C with humidity under 85% RH. The calculated shelf life for the dry-packed product shall be a 12 months from the date the bag is sealed.

#### 3.3.2 Moisture Barrier Bag Open

Humidity indicator cards must be blue, <30%.

### 3.4 Baking Conditions

Products require baking before mounting if:

- Humidity indicator cards read >30%.
- Temp <30°C, humidity <70% RH, over 96 hours

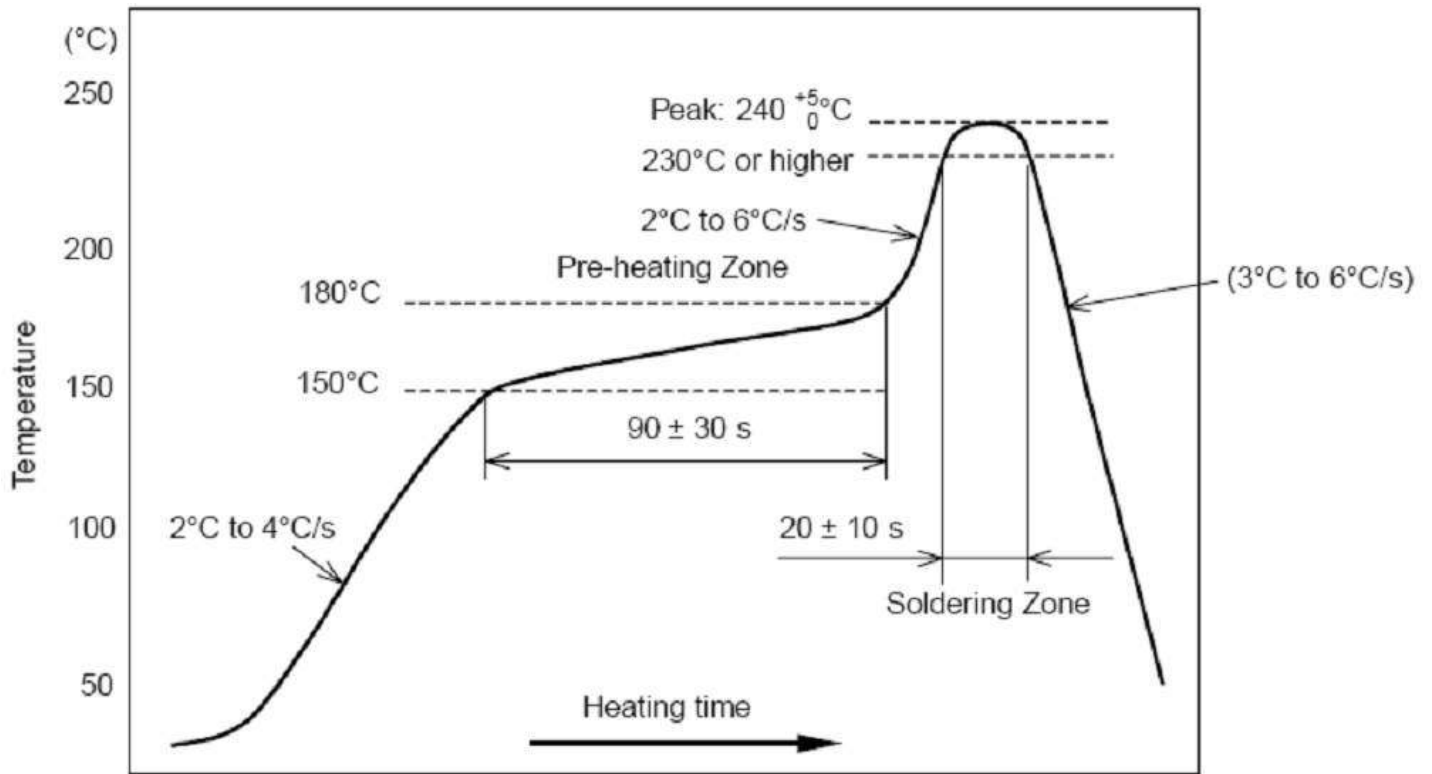
Baking condition: 90°C, 12-24 hours

Baking times: 1 time

### 3.5 Soldering and Reflow Condition

1. Heating method: Conventional Convection or IR/convection
2. Temperature measurement: Thermocouple d=0.1mm to 0.2mm CA(K) or CC(T) at soldering portion or equivalent method.
3. Solder paste composition: Sn/3.0Ag/0.5Cu
4. Allowable reflow soldering times: 2 times based on the following reflow soldering profile (see Figure 6-1).
5. Temperature profile: Reflow soldering shall be done according to the following temperature profile (see Figure 6-1).
6. Peak temp: 245°C.





**Temperature Profile for Evaluation of Solder Heat Resistance of a Component (at Solder Joint)**