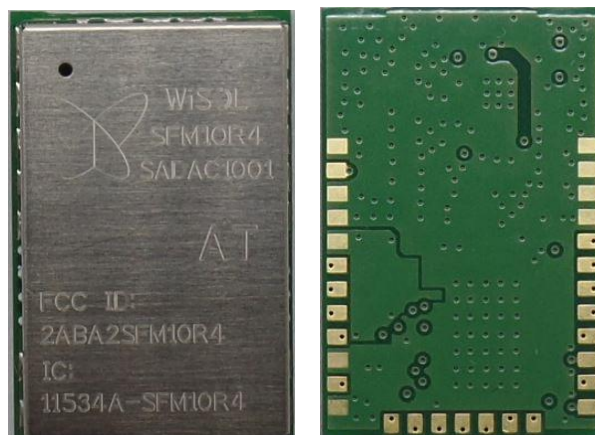


# WISOL / WSSF10R4AT

DATA SHEET Rev.02



## WISOL

531-7, Gajang-ro, Osan-si, Gyeonggi-do  
Rep. of Korea

<http://www.wisol.co.kr>

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**1. Approval Revision Record**

NO	REASON	RECORD OF REVISION	Date	Remark
1	REV00	WSSFM10R4AT Approval Releases	2016-12-15	-
2	REV01	Add VCC condition for VIL and VIH Add module marking Add Soldering footprint	2017-01-15	-
3	REV02	PIN27 note. Removed.	2017-03-20	-

## 2. Scope

Description : Sigfox Module RCZ4

Type : SMD Type

PCBA Size : 13mm(W) x 20mm(L) x 2.21mm(H)

This module is SIGFOX verified and that the FCC are completed.

## 3. Numbering of product

### 3-1. Product



### 3-2. Part No.

W	S	S	F	M	1	0	R	4	A	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

No.	EXPLANATION
(1),(2)	WISOL
(3),(4)	Application (SF:Sigfox)
(5)	Type (M:Module)
(6),(7)	Group model numbering
(8), (9)	Region Code
(10),(11)	Application Type(Firm Ware Type) AT(AT command version) AP(API version)

3-3. Lot. No.

<b>S</b>	<b>A</b>	<b>C</b>	<b>J</b>	<b>A</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

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⑥⑦	Model Serial Number (10,11,12,13...)																																																																																			
⑧⑨	A Serial Number (1serial: 1,100ea)																																																																																			

#### 4. Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VCC	Module input voltage	-0.5 to 5.5	V
OT	Operating Temperature	-30 to +85	°C
ST	Storage Temperature	-40 to +125	°C

#### 5. DC Characteristics

Symbol	Parameter	Min	Typ.	Max	Unit
VCC	Module input voltage	2.7	3.3	3.6	V
Current	Tx Current(@ "24" setting, MOD)	-	200	-	mA
	Rx Current	-	32	-	mA
	Sleep Current		2.5		uA

#### 6. I/O Specifications

Symbol	Parameter	Min	Typ.	Max	Unit
VIH	High level input voltage @VCC=3.3V	2.0			V
VIL	Low level input voltage @VCC=3.3V			0.8	V

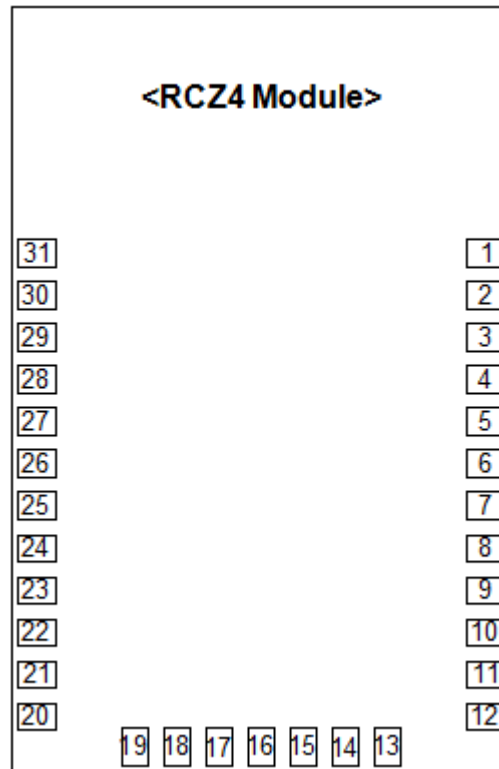
## 7. RF Specifications

Conditions: VCC=3.3V, Temp=25°C

Parameter		Min	Typ.	Max	Unit
<b>RF Characteristics</b>					
RF Frequency	Tx		920.8		MHz
	Rx		922.3		MHz
Tx output power(at "24" setting)		-	22.5	-	dBm
Frequency Error Tolerance(+25°C)		-2.5	-	+2.5	ppm
2 <sup>nd</sup> Harmonics(conducted)		-	-44	-	dBm
3 <sup>rd</sup> Harmonics(conducted)		-	-44	-	dBm
Rx Sensitivity(@600bps, GFSK)		-129	-		dBm
Rx Spurious Emission(30MHz~12.75GHz)				-54	dBm

## 8. Pin Description

8-1. Interface PIN(SMD Type : 31 Pin)\_Bottom view



1	GND	9	GPIO5	17	TXLED/DBG_CLK	25	GPIO2
2	GND	10	GPIO4	18	NC4/DBG_EN	26	GPIO3
3	GND	11	CPU_LED	19	RST_N	27	GND
4	GND	12	RADIO_LED	20	GND	28	GND
5	NC3/ SYSCLK	13	GPIO9	21	VDD_IO	29	GND
6	GPIO8	14	UARTTX	22	GND	30	RF_IO
7	GPIO7	15	UARTRX	23	GPIO0	31	GND
8	GPIO6	16	RXLED/DBG_DATA	24	GPIO1		

# Pin-map of RCZ1, RCZ2, RCZ3 and RCZ4 module is compatible (Pin to Pin)



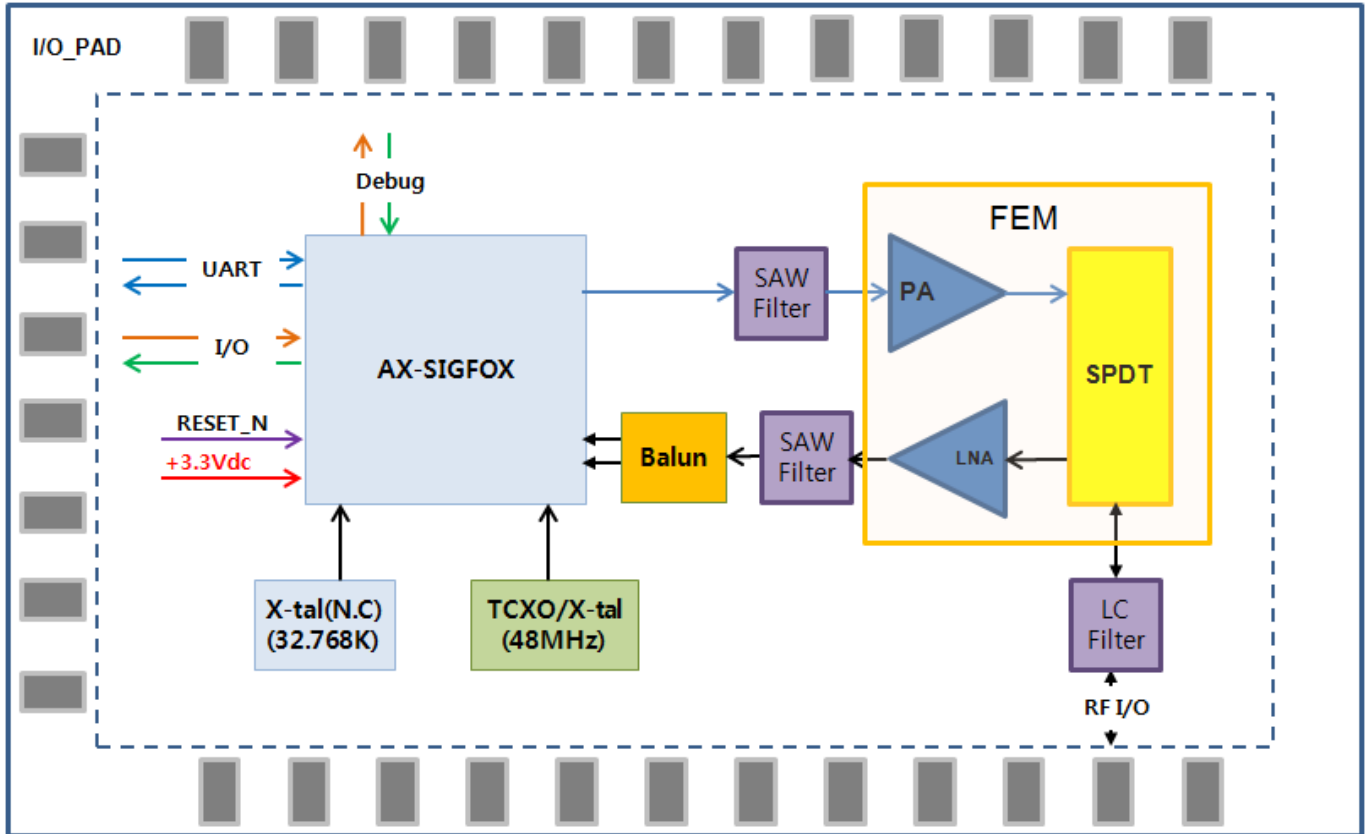
## 8-2. Interface PIN description

PIN(s)	NAME	TYPE	Description
1~4	GND	P	Ground
5	NC3/SYSCLK	N	Do not connect
6	GPIO8	I/O/PU	General purpose IO
7	GPIO7	I/O/PU	General purpose IO, selectable SPI functionality (MISO)
8	GPIO6	I/O/PU	General purpose IO, selectable SPI functionality (MOSI)
9	GPIO5	I/O/PU	General purpose IO, selectable SPI functionality (SCK)
10	GPIO4	I/O/PU	General purpose IO, selectable $\Sigma\Delta$ DAC functionality, selectable dock functionality
11	CPU_LED	O	CPU activity indicator
12	RADIO_LED	O	Radio activity indicator
13	GPIO9	I/O/PU	General purpose IO, wakeup from deep sleep
14	UARTTX	O	UART transmit
15	UARTRX	I/PU	UART receive
16	RXLED/DBG_DATA	O	Receive activity indicator
17	TXLED/DBG_CLK	O	Transmit activity indicator
18	NC4/DBG_EN	PD	Do not connect
19	RST_N	I/PU	Optional reset pin
20	GND	P	Ground
21	VDD_IO	P	Power supply
22	GND	P	Ground
23	GPIO0	I/O/A/PU	General purpose IO, selectable ADC functionality, selectable $\Sigma\Delta$ DAC functionality, selectable clock functionality
24	GPIO1	I/O/A/PU	General purpose IO, selectable ADC functionality
25	GPIO2*	I/O/A/PU	General purpose IO, selectable ADC functionality
26	GPIO3**	I/O/A/PU	General purpose IO, selectable ADC functionality
27	GND	P	Ground
28~29	GND	P	Ground
30	RF_IO	A	RF input/output
31	GND	P	Ground

\* GPIO2 is TX\_EN pin of FEM. This pin can not be used by the user.

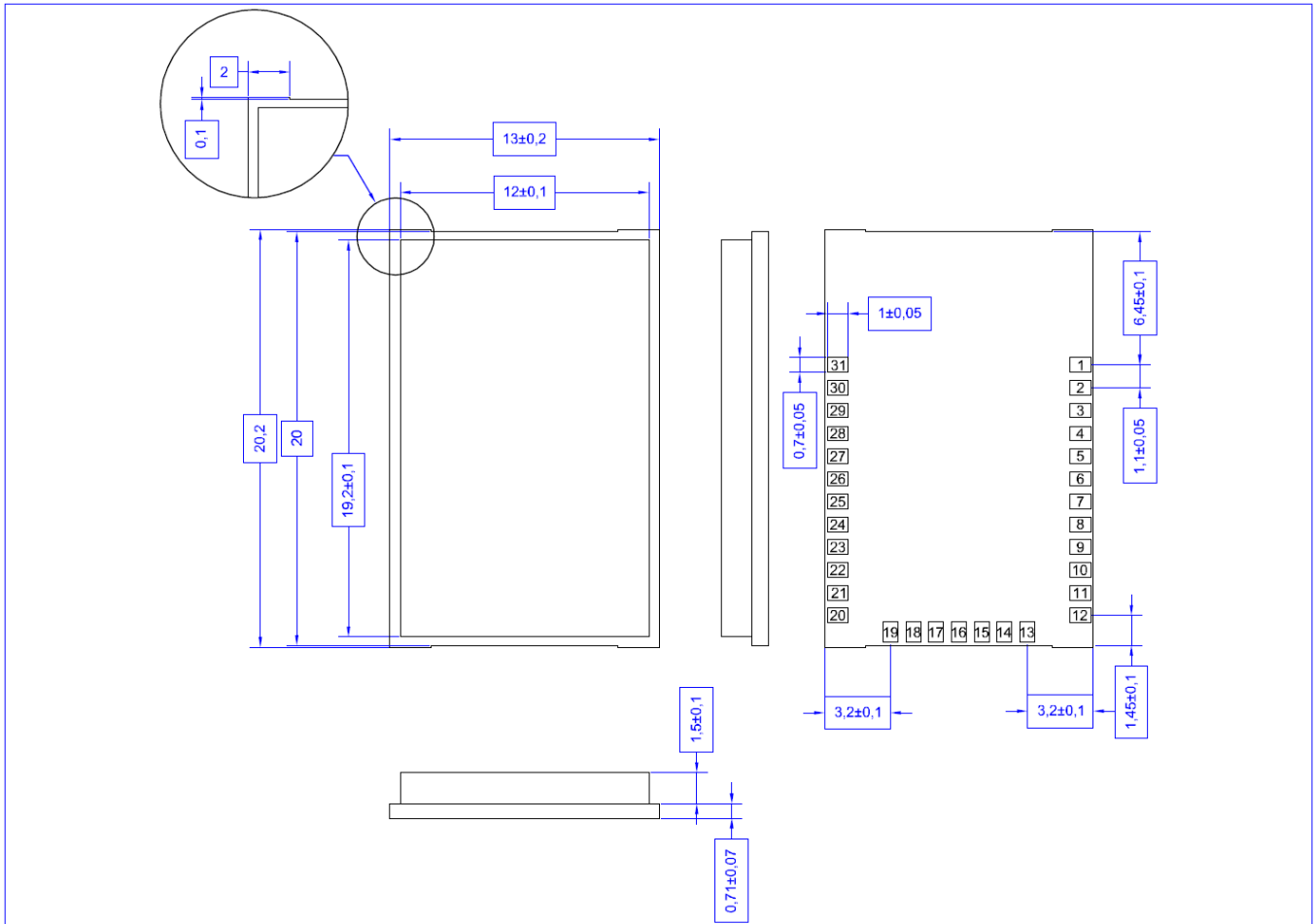
\*\* GPIO3 is RX\_EN pin of FEM. This pin can not be used by the user.

### 9. Block Diagram

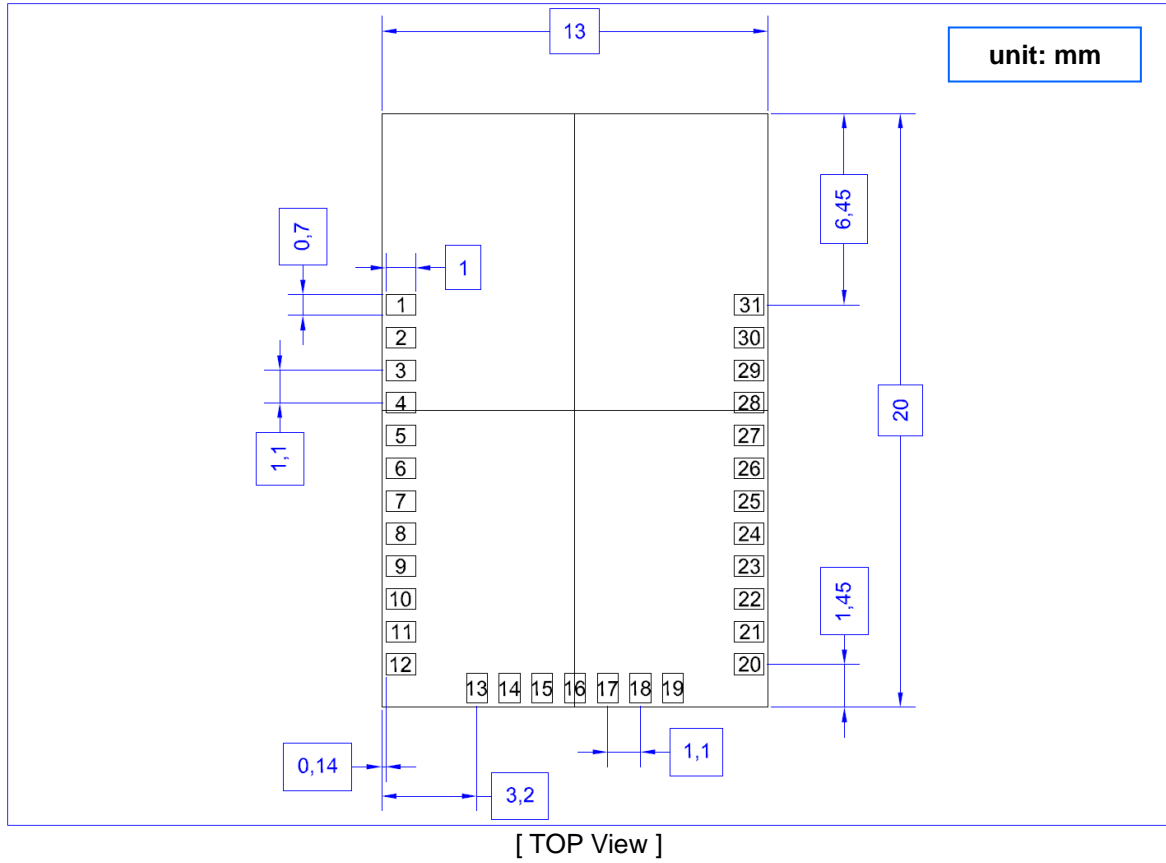


### 10. Dimensions & drawing

#### 10-1. Design dimension

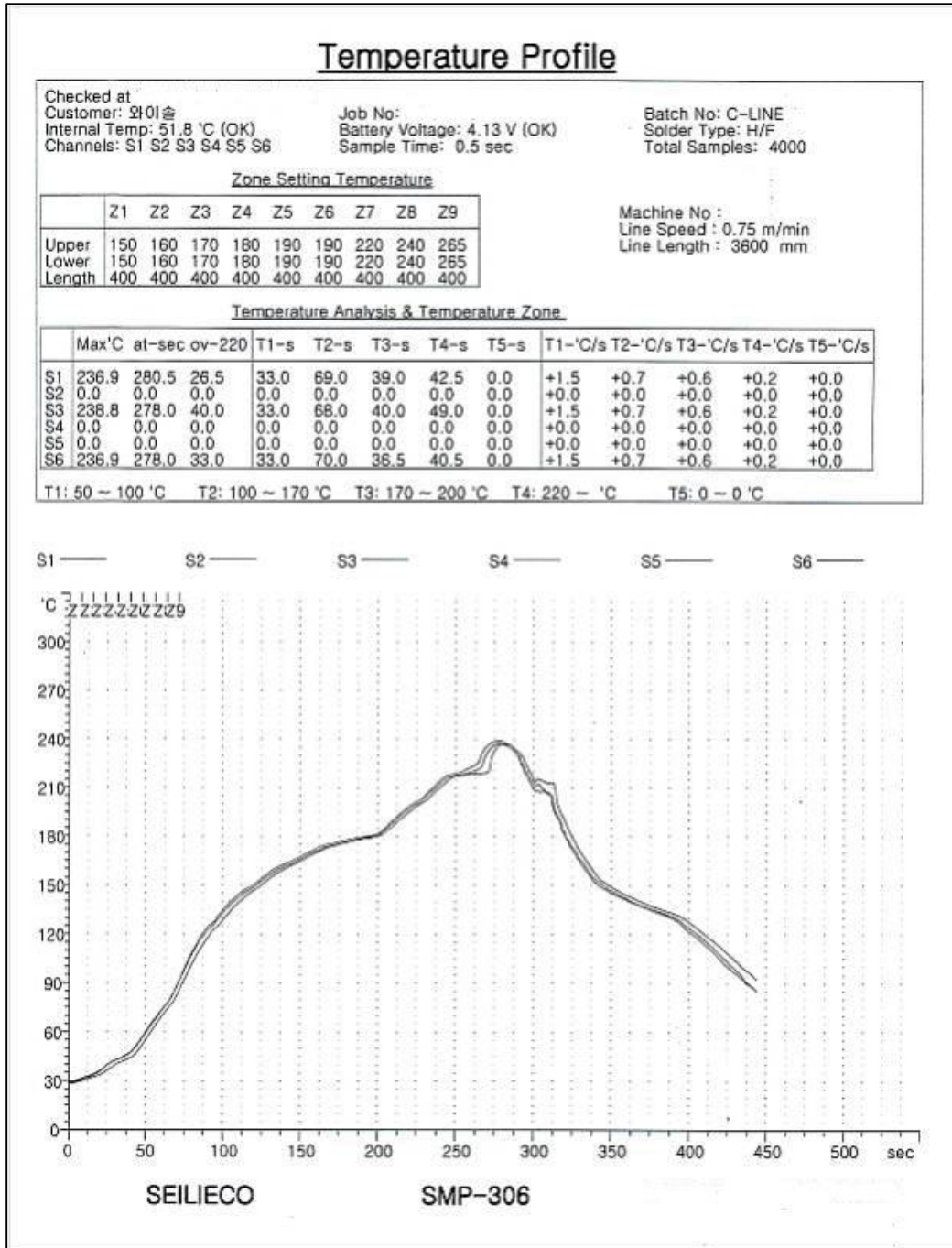


10-2. Soldering Footprint



11. Reflow profile

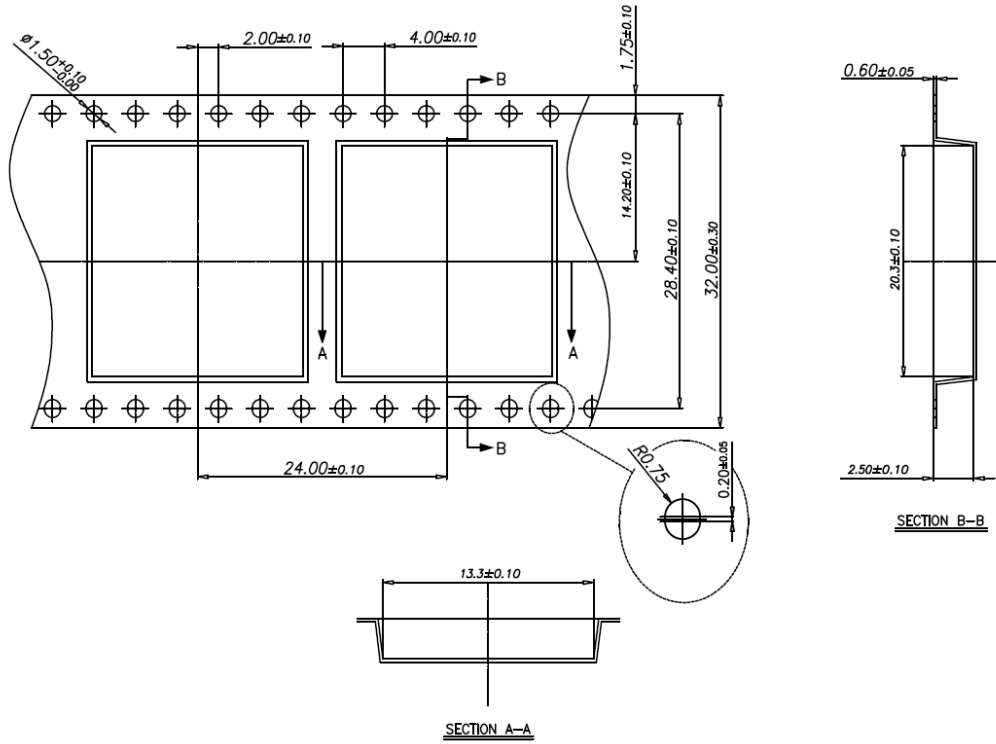
<Reflow profile of Module>



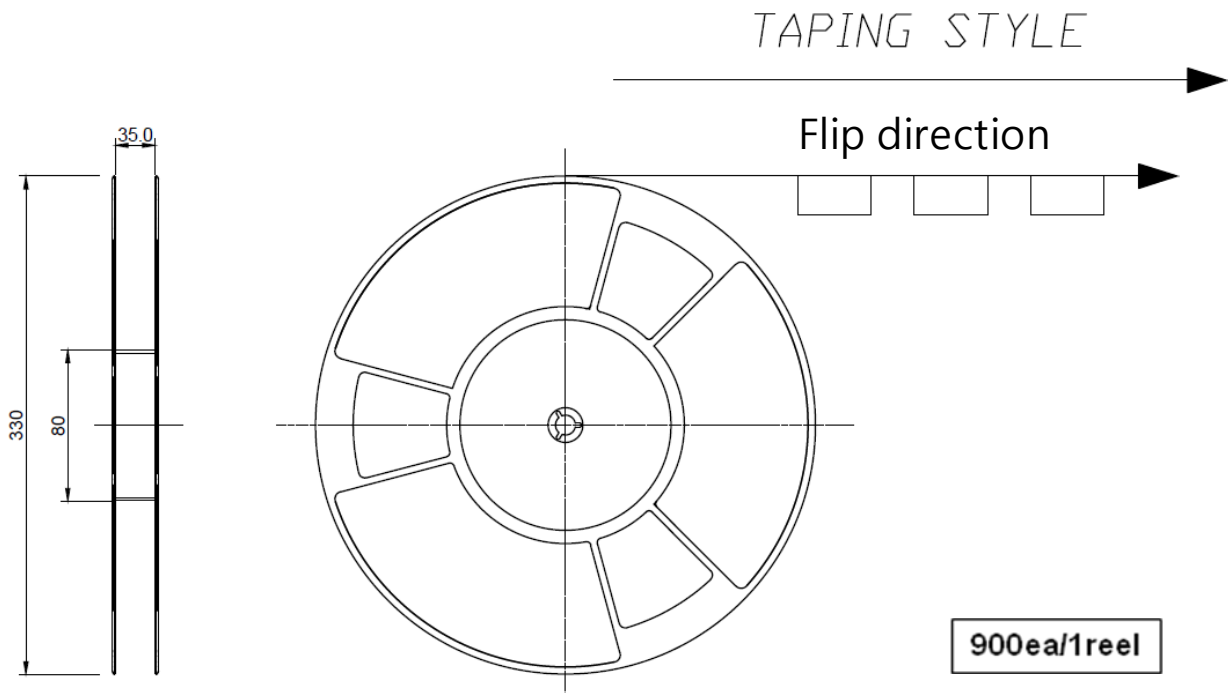
SPEC	Preheat	Soak	Ramp	PEAK
	50~100°C	100~170°C	220°C ↑	240°C
	1~2°C/sec	60~100sec	30~50sec	±5°C
result of measurement	1.5	69	44	237.5
	OK	OK	OK	OK

## 12. Package

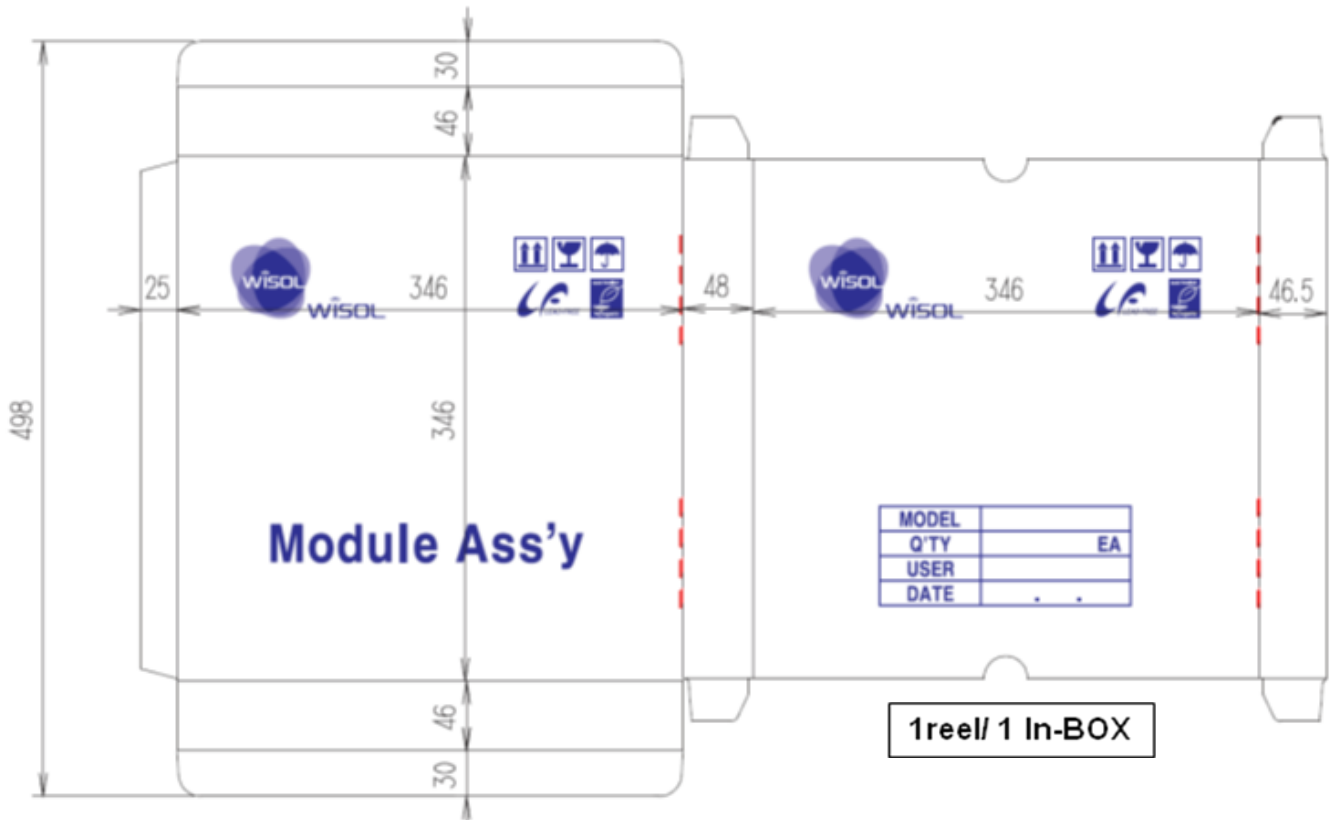
### 12-1. Dimension of Tape



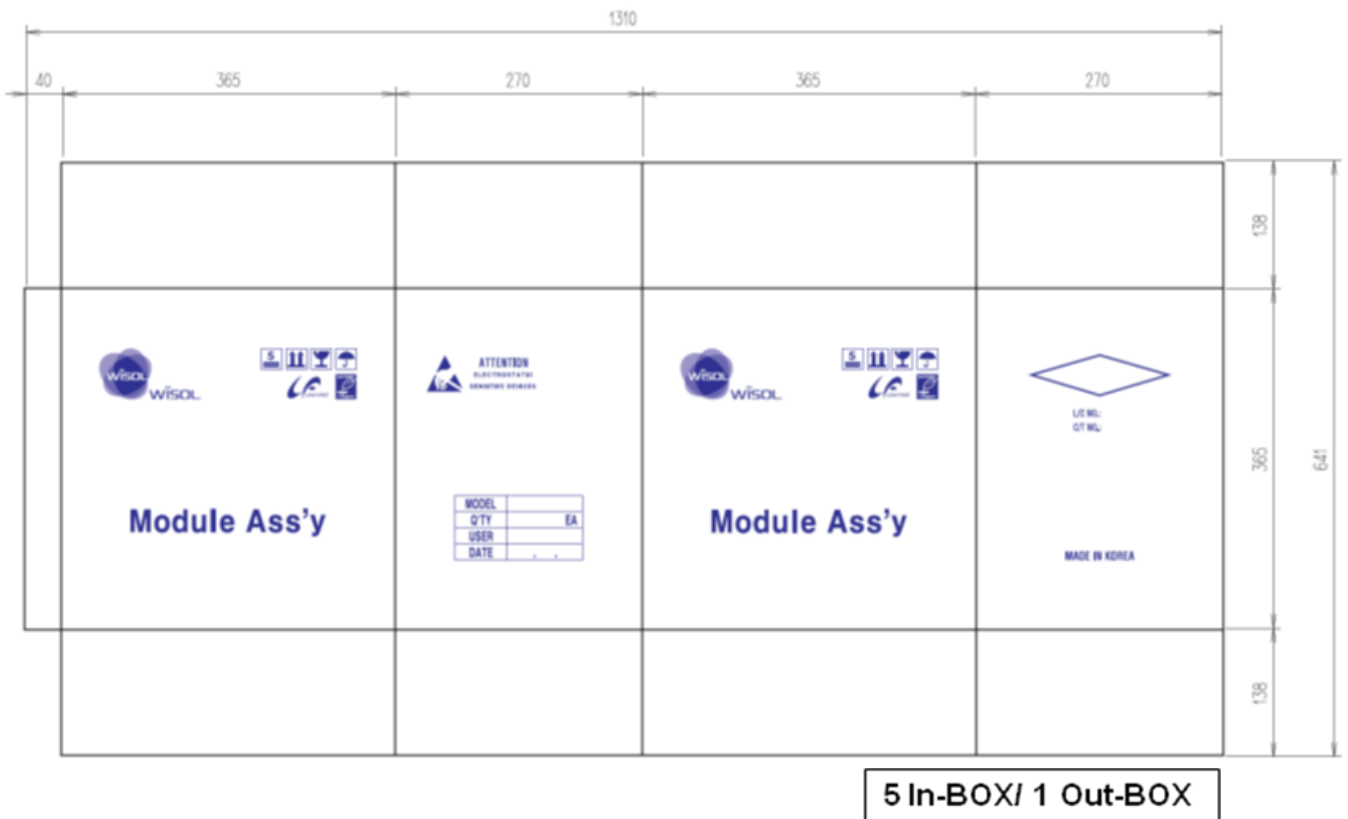
### 12-2. Dimension of Reel



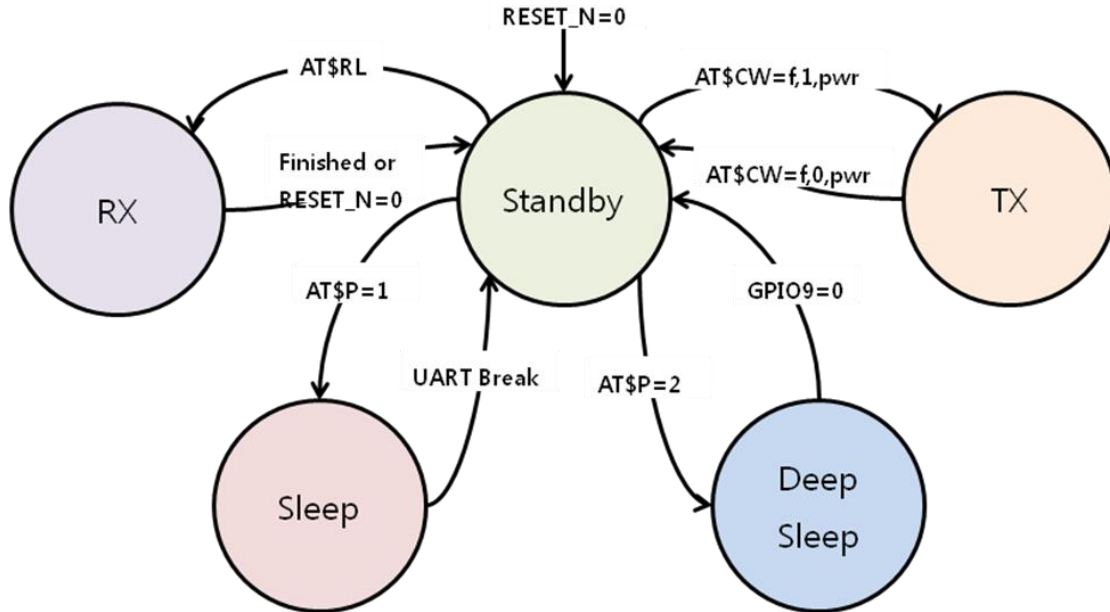
12-3. IN BOX



12-4. OUT BOX



### 13. Power Modes



#### 13-1. TX current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. TX current test method
  - 1) Input AT command 'AT' (UART condition checking)
  - 2) Click the Quick command (  MOD RCZ4 ON : default power table '24' ) or Input AT command 'AT\$IF=920800000' click 'Send' icon and then input AT command 'AT\$CB=-1,1' click 'Send' icon.
  - 3) Disconnect UART Switch(SW10~SW11) on EVB
  - 4) And then, Check TX current

#### 13-2. RX current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. RX current test method
  - 1) Input AT command 'AT' (UART condition checking)
  - 2) Input AT command 'AT\$RL' and then click 'Send' icon.
  - 3) Disconnect UART Switch(SW10~SW11) on EVB
  - 4) And then, Check RX current.



### 13-3. Sleep current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. Sleep current test method
  - 1) Input AT command 'AT' (UART condition checking)
  - 2) Input AT command 'AT\$P=1' (sleep mode command)
  - 3) Disconnect UART Switch(SW10~SW11) on EVB
  - 4) And then, Check Sleep current

### 13-4. Deep sleep current test

1. Disconnect Debug Switch(SW5~SW9) on EVB
2. Connect UART Switch(SW10~SW11) on EVB
3. Power switch ON(SW4) on EVB
4. Push the RESET Switch(SW1) on EVB
5. Initial mode=Standby mode (@500uA/ Remove J2-CPULED jumper)
6. Deep sleep current test method
  - 1) Input AT command 'AT' (UART condition checking)
  - 2) Input AT command 'AT\$P=2' (Deep sleep mode command)
  - 3) Disconnect UART Switch(SW10~SW11) on EVB
  - 4) And then, Check Deep sleep current
  - 5) If the module wakes up, Push the tact switch(SW2: wakeup PIN)