

LOM204A

DATA SHEET / REV.01



NOTE:

- *The label may vary from country to country*
- *Absolute gain of the antenna used in this equipment is limited to maximum of 2.5dBi*
- *If you do not use the antenna certified for this module, you are obliged to report the antenna used and its gain to the certification organization*

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▶ CONTENTS

1. Revision History	3
2. Scope	4
3. Numbering of product	4
3-1. Product	4
3-2. Part No.	4
3-3. Lot. No.	5
4. Electrical Specifications	6
4-1. Absolute Maximum Ratings	6
4-2. DC Characteristics	6
4-3. I/O Specifications	6
4-4. RF Specifications.....	7
5. Pin Description	8
5-1. Pin map (Top view).....	8
5-2. Pin description	9
6. Block Diagram	11
7. Dimensions & drawing	11
7-1. Design dimension	11
7-2. Soldering Footprint	12
8. Application Circuit	13
9. Reflow profile	14
10. Package	15
10-1. Dimension of Tape	15
10-2. Dimension of Reel	15
10-3. INBOX	16
10-4. OUTBOX.....	16
10-5. Packing Assembly	17
11. Notice	18

1. Revision History

NO	REASON	RECORD OF REVISION	Date	Remark
1	REV01	Initial Release	2018-07-15	-

2. Scope

Description : LoRa Module
 Type : SMD Type
 Module Size : 15mm(W) x 18mm(L) x 2.2mm(H)

“This device may cause radio interference while in use and may cause harmful interference from other devices”

3. Numbering of product

3-1. Product



** The label may vary from country to country*

3-2. Part No.

W	S	L	O	M	2	0	4	A	0	2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

No.	EXPLANATION
(1),(2)	Wireless Solution
(3),(4)	Application (LO:LoRa)
(5)	Type (M:Module)
(6)	Group model numbering (Main IC)
(7),(8)	Derived model
(9)	Assembly type(A : Module only)
(10),(11)	Firmware (02 : API version)

3-3. Lot. No.

L	A	C	J	A	1	0	0	1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

①	LoRa Module																																																																								
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⑥⑦	Model Serial Number (10,11,12,13...)																																																																								
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4. Electrical Specifications

4-1. Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD	Module input voltage	3.0 to 3.6	V
OT	Operating Temperature	-40 to +85	°C
ST	Storage Temperature	-40 to +85	°C

4-2. DC Characteristics

Symbol	Parameter	Min	Typ.	Max	Unit
VDD	Module input voltage	3.0	3.3	3.6	V
Current	Tx Current(RF Power Level = 18dBm)	-	140	-	mA
	Rx Current	-	20	-	mA
	Sleep Current	-	1.4	-	uA

4-3. I/O Specifications

Symbol	Parameter	Min	Typ.	Max	Unit
VIH	High level input voltage @T=25°C VDD=3.0V	0.7			V
VIL	Low level input voltage @ T=25°C VDD=3.0V TC, FT, FTf, RST I/Os			0.3	V
	Low level input voltage @ T=25°C VDD=3.0V BOOT0			0.14	V

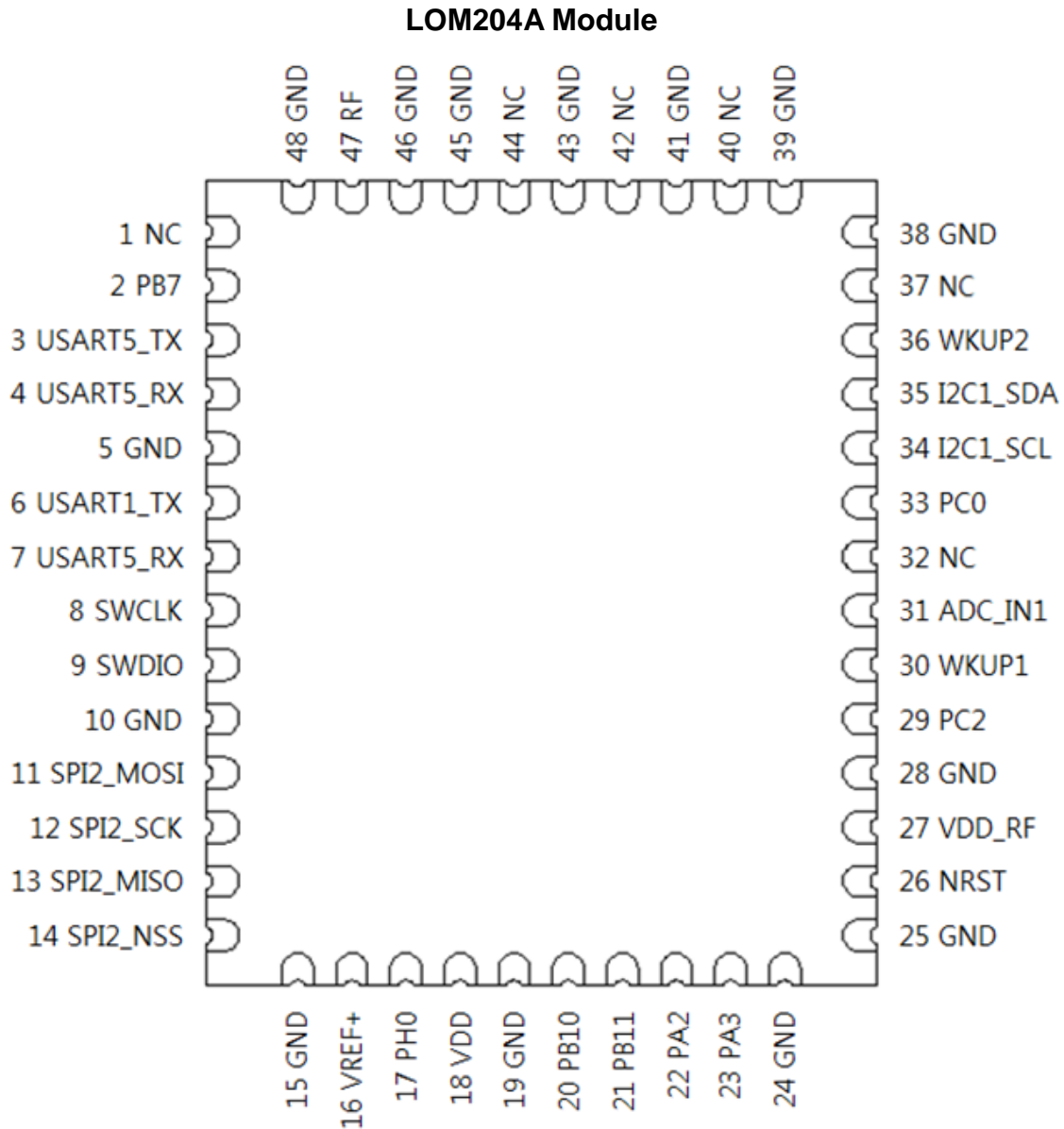
4-4. RF Specifications

Conditions: VCC=3.3V, Temp=25 °C

Parameter		Min	Typ.	Max	Unit
RF Characteristics					
RF Frequency	Tx	863		928	MHz
	Rx	863		928	MHz
Tx output power Range		7		18	dBm
Frequency Error Tolerance(+25 °C)		-20	-	+20	ppm
2 nd Harmonics(conducted)		-	-45		dBm
3 rd Harmonics(conducted)		-	-60		dBm
Rx Sensitivity(@SF12, BW125KHz)		-	-136	-	dBm

5. Pin Description

5-1. Pin map (Top view)



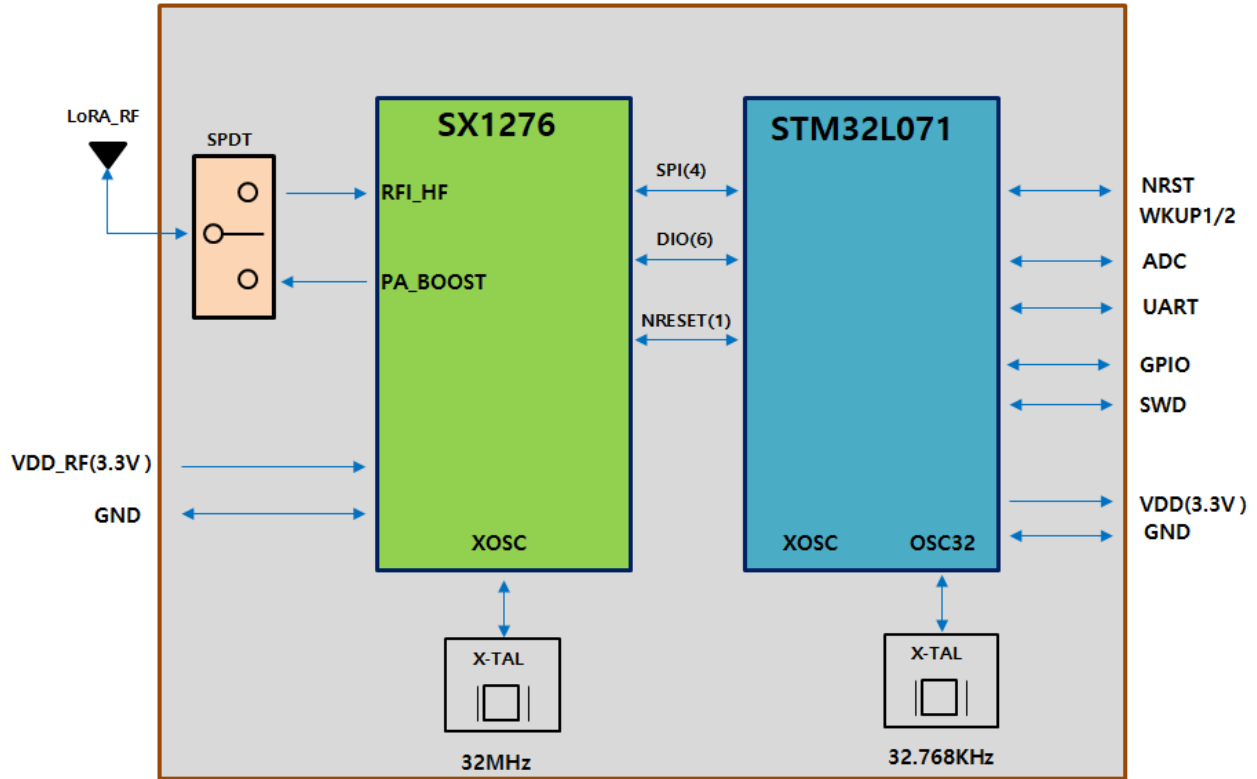
1	NC	9	SWDIO	17	PH0	25	GND	33	PC0	41	GND
2	PB7	10	GND	18	VDD	26	NRST	34	I2C1_SCL	42	NC
3	USART5_TX	11	SPI2_MOSI	19	GND	27	VDD_RF	35	I2C1_SDA	43	GND
4	USART5_RX	12	SPI2_SCK	20	PB10	28	GND	36	WKUP2	44	NC
5	GND	13	SPI2_MISO	21	PB11	29	PC2	37	NC	45	GND
6	USART1_TX	14	SPI2_NSS	22	PA2	30	WKUP1	38	GND	46	GND
7	USART1_RX	15	GND	23	PA3	31	ADC_IN1	39	GND	47	RF
8	SWCLK	16	VREF+	24	GND	32	NC	40	NC	48	GND

5-2. Pin description

PIN	PIN Name	PIN Type	MCU Pin	Description
1	NC	-	-	Not connection
2	PB7	I/O	PB7	Boot Loader (High Active)
3	USART5_TX	I/O	PB3	UART TX
4	USART5_RX	I/O	PB4	UART RX
5	GND	Supply	-	Ground connection
6	USART1_TX	I/O	PA9	UART TX for Firmware download
7	USART1_RX	I/O	PA10	UART RX for Firmware download
8	SWCLK	I/O	PA14	SWCLK
9	SWDIO	I/O	PA13	SWDIO
10	GND	Supply	-	Ground connection
11	SPI2_MOSI	I/O	PB15	sleep state: 0, Normal(wake-up) state:1
12	SPI2_SCKI	I/O	PB13	General purpose In/Out
13	SPI2_MISO	I/O	PB14	General purpose In/Out
14	SPI2_NSS	I/O	PB12	Payload data bit 3
15	GND	Supply	-	Ground connection
16	VREF+	Supply	VREF+	Positive reference voltage
17	NC	-	-	Not connection
18	VDD	Supply		Supply voltage
19	GND	Supply	-	Ground connection
20	PB10	I/O	PB10	Payload data bit 0
21	PB11	I/O	PB11	Payload data bit 1
22	NC	-	-	Not connection
23	PA3	I/O	PA3	Payload data bit 4 ~ 15
24	GND	Supply	-	Ground connection
25	GND	Supply	-	Ground connection
26	NRST	I/O	NRST	Reset
27	VDD_RF	Supply	-	SX1276 Supply voltage
28	GND	Supply	-	Ground connection
29	PC2	I/O	PC2	Battery Level 12bit (TBD)
30	WKUP1	I/O	PA0	Wake Up: Rising Edge, Payload data bit2

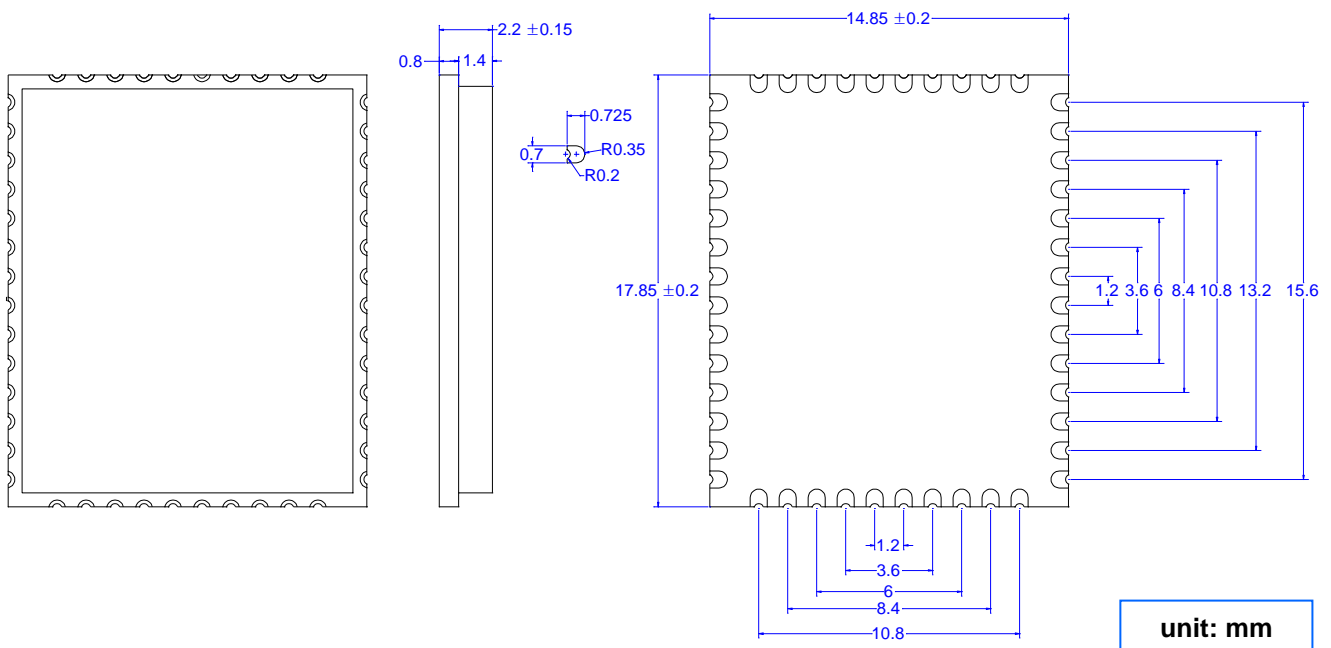
PIN	PIN Name	PIN Type	MCU Pin	Description
31	ADC_IN1	I/O	PA1	
32	NC	-	-	Not connection
33	PC0	I/O	PC0	General purpose In/Out
34	I2C1_SCL	I/O	PB8	General purpose In/Out
35	I2C1_SDA	I/O	PB9	General purpose In/Out
36	WKUP2	I/O	PC13	General purpose In/Out
37	NC	-	-	Not connection
38	GND	Supply	-	Ground connection
39	GND	Supply	-	Ground connection
40	NC	-	-	Not connection
41	GND	Supply		Ground connection
42	NC	-	-	Not connection
43	GND	Supply		Ground connection
44	NC	-	-	Not connection
45	GND	Supply		Ground connection
46	GND	Supply		Ground connection
47	RF	I/O		External 50Ω port for monostatic antenna connection.
48	GND	Supply		Ground connection

6. Block Diagram

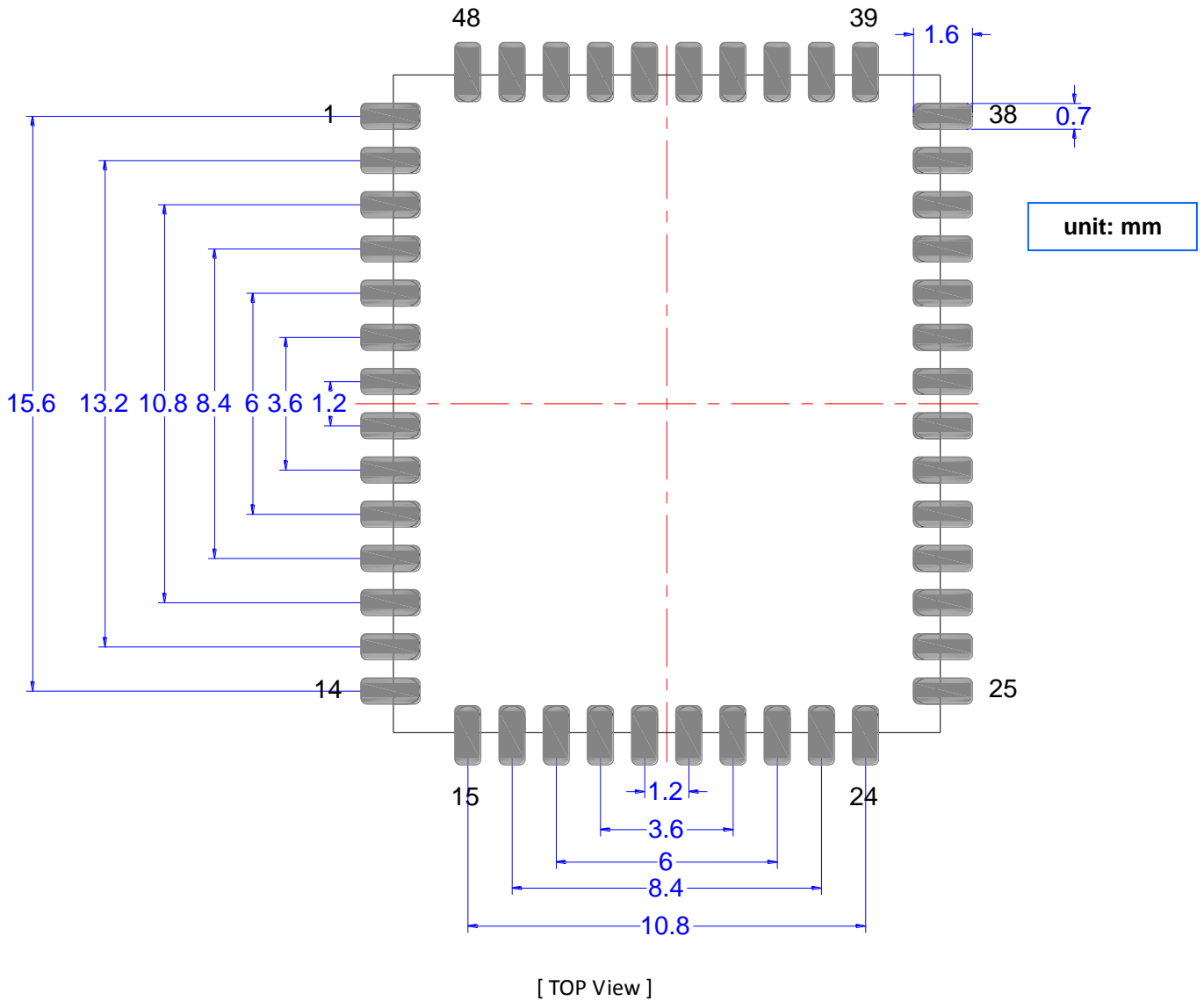


7. Dimensions & drawing

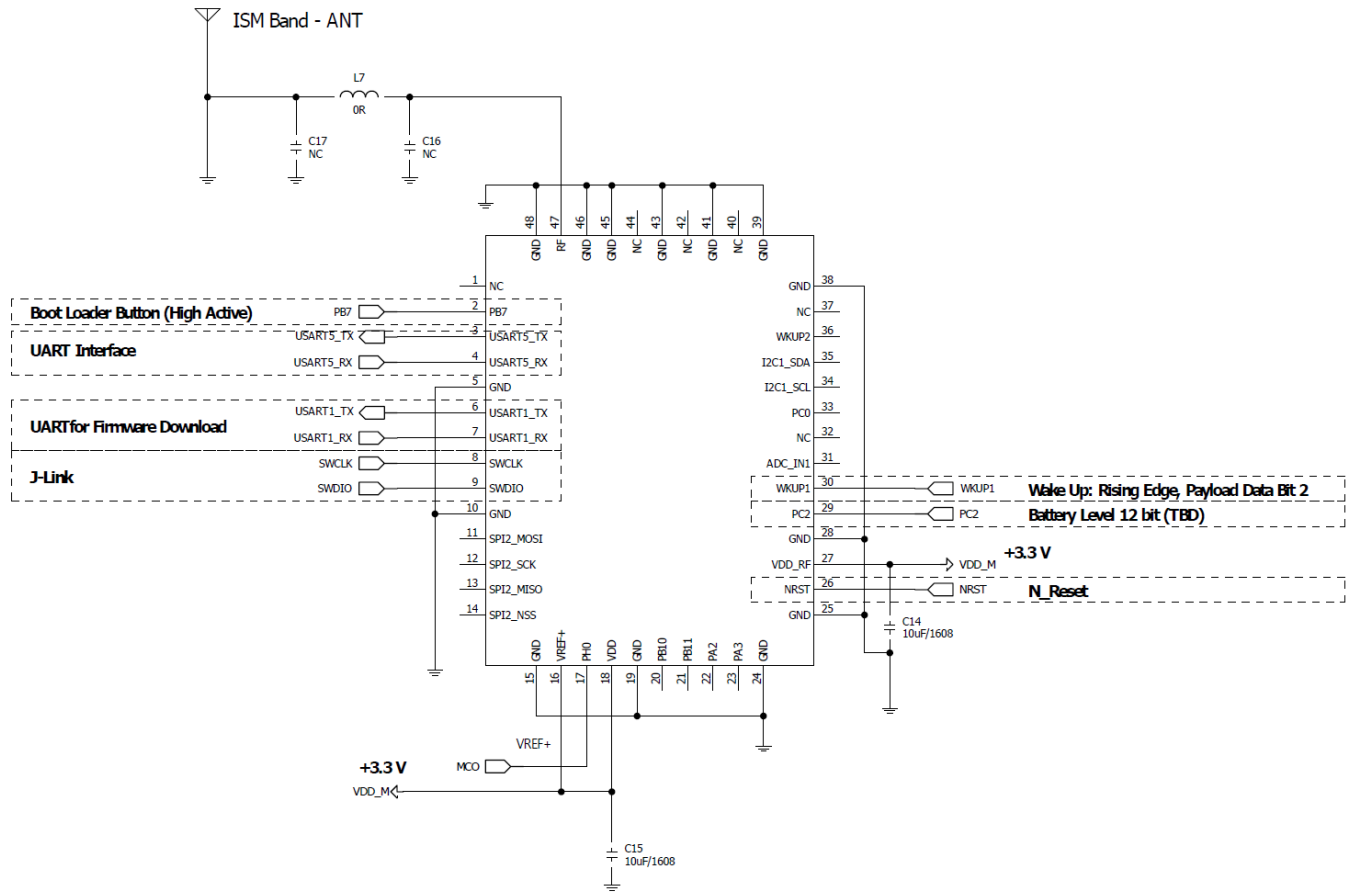
7-1. Design dimension



7-2. Soldering Footprint

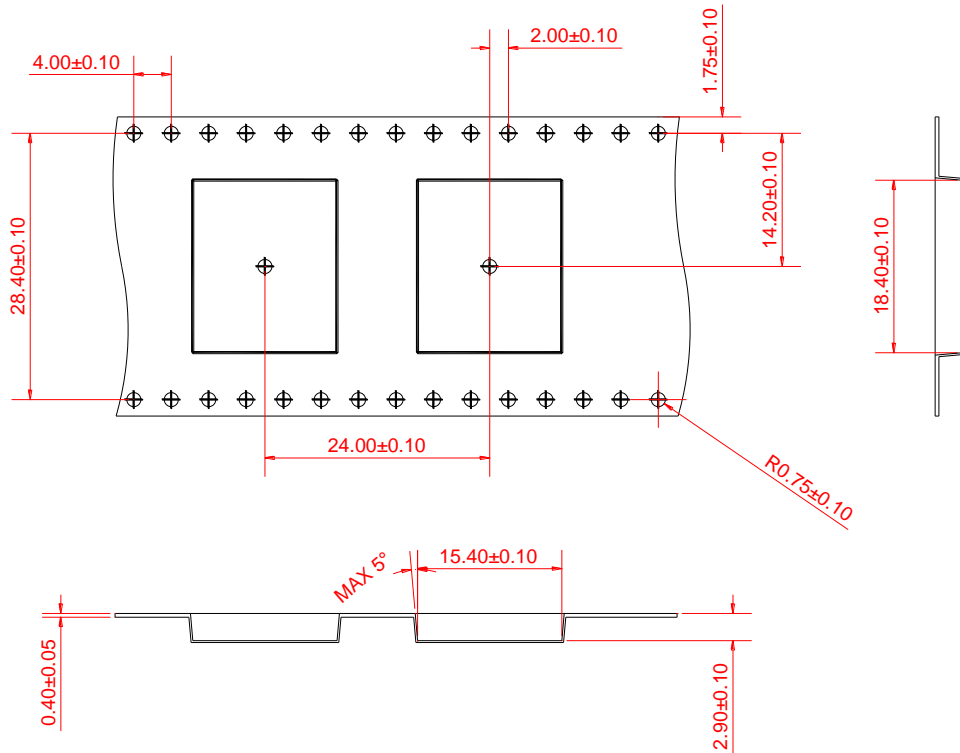


8. Application Circuit

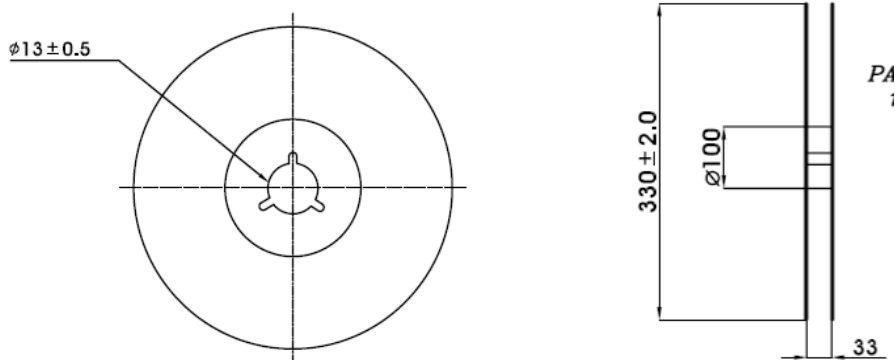


10. Package

10-1. Dimension of Tape

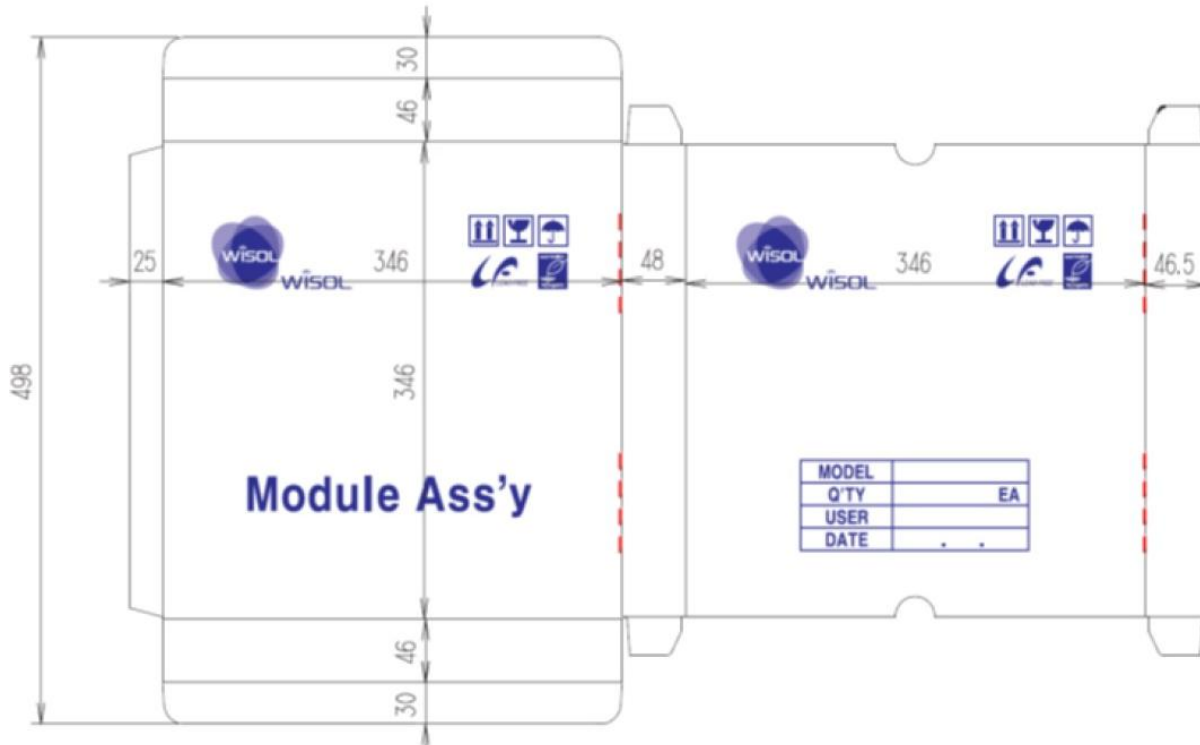


10-2. Dimension of Reel

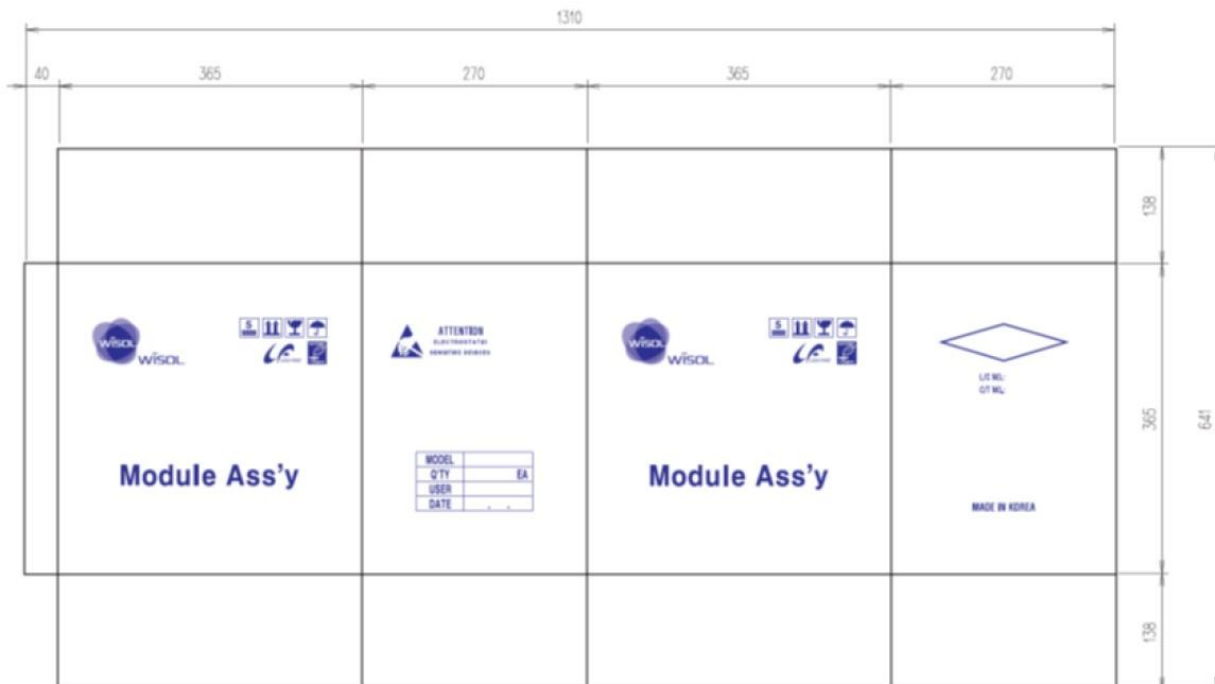


500pcs / 1Reel (13inch)

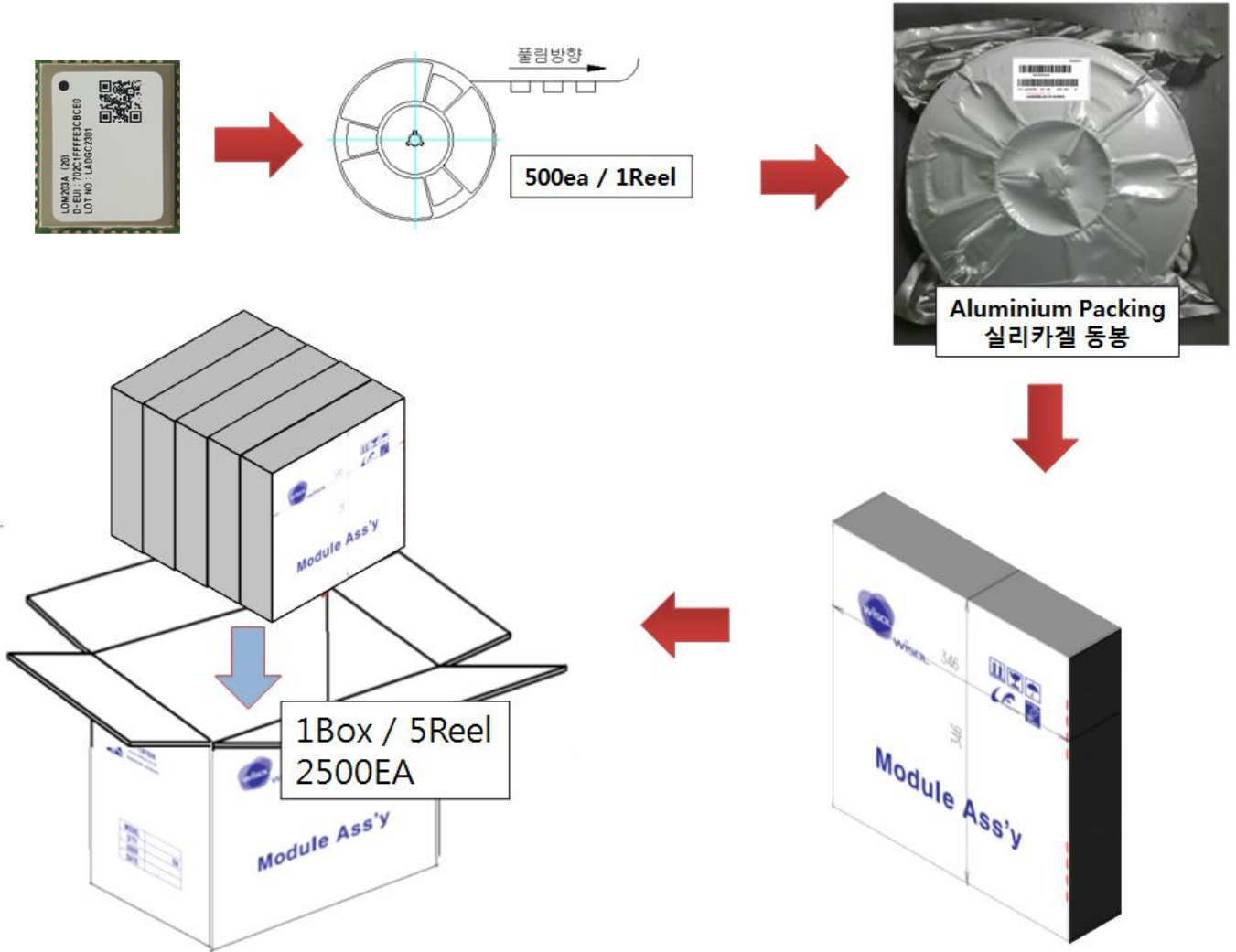
10-3. INBOX



10-4. OUTBOX



10-5. Packing Assembly



11. Notice

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