AI-Link

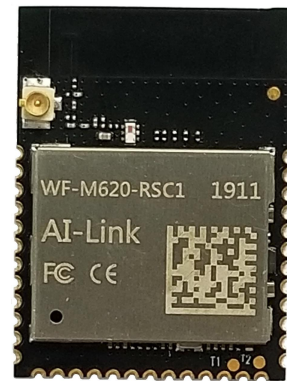# WF-M620-RSC1

Features：

➢ **Supported WLAN Standards**
IEEE Std. 802.11b
IEEE Std. 802.11g
IEEE Std. 802.11n

➢ **Chip Solution**
MTK MT3620AN

➢ **Size**
22.0mm*30.0mm*2.5mm

Product Name	Installation	Data Rate(max)	Band	Antenna Interface	Note
WF-M620-RSC1	SMD	72.2Mbps	2.4 GHz	IPEX/PCB Trace Antenna	DC 3.3V Power Supply

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Feedback of customer's Confirmation

We accept the specification after Confirmed

Customer name	Customer signature	Confirmation Date

Please feed back this paper and first paper after your signature by the address,thanks!

ADD： Anzhou,Industrial park,Mianyang,Sichuan

Factory： Sichuan AI-Link Technology Co.,Ltd.

Approved	Checked	Designed	Product	WiFi Module
Bai Lang	Ding Shuangpeng	Feng Jie	Model	WF-M620-RSC1
			Date	2019-3-14

Record of Modification

No	Date of modification	Main content of modification	Reason of modification	Serial number of modification	Confirm
Draft 1.0	20190314	Initial Release			Feng Jie

1. Brief Description

The WF-M620-RSC1 IoT module is based on the MediaTek MT3620AN,a highly integrated single chip,tricore WIFI MCU designed to meet the requirements of modern robust internet-connected devices.It leverages the Microsoft Azure Sphere security architecture to provide an unprecedented level of security to connected device manufacturers.For the lifetime of the device the Azure Sphere system provides device authentication and attestation,supports remote over-the-air software updates to maintain security in the face of evolving attacks,and automates error logging and reporting.

1.1 Block Diagram
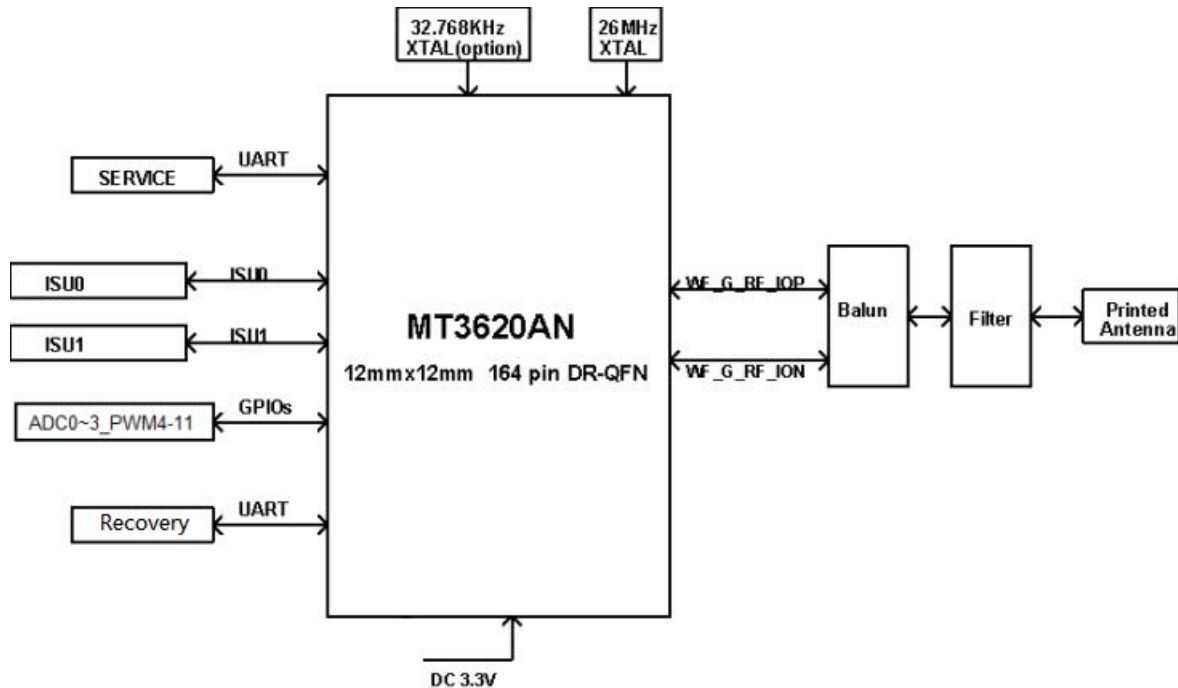
1.2 WIFI Feature
- Single band 2.4GHz ISM
- Supported IEEE 802.11b/g/n

1.3 Hardware Feature

No.	Feature	Description
1	Main Chip	MT3620AN
2	RAM Capacity	approximately 5MB(including 256KB in each I/O subsystem and 4MB in the A7 application subsystem)
3	NOR-flash Capacity	16MB on-die and no external flash(The amount of flash that will be accessible to customer software is TBD)
4	Form Factor	37 pins(stamp hole)
5	Size	30 x 22 x 2.5mm±0.2mm
6	Interface	UART×2：ISU0(configured as SPI 0 or UART 0), ISU1(configured as SPI 1 or UART 1 or I2C 1) PWM×8：PWM4~PWM11 ADC×4：ADC0~3 GPIO：14 GPIO pins with multi-functions
7	Operation Voltage	3.3V+/-0.3
8	Current Consumption	(TBD)
9	Antenna Type	Integral PCB Trace Antenna/Option to fit IPEX connector for external antenna
10	Operating Temperature	-40°C to +85°C
11	Storage Temperature	-45°C to +135°C

2. Mechanical Specification(units:mm)

2.1 Mechanical Outline
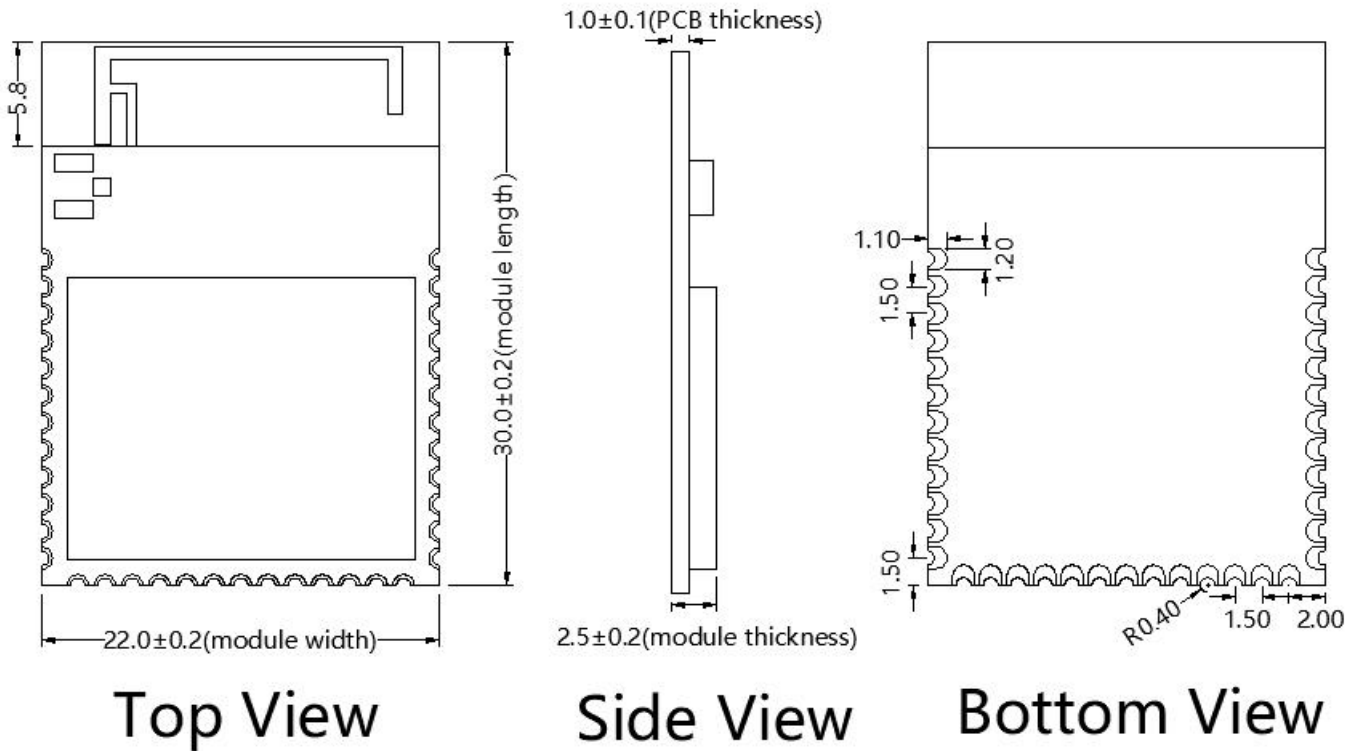
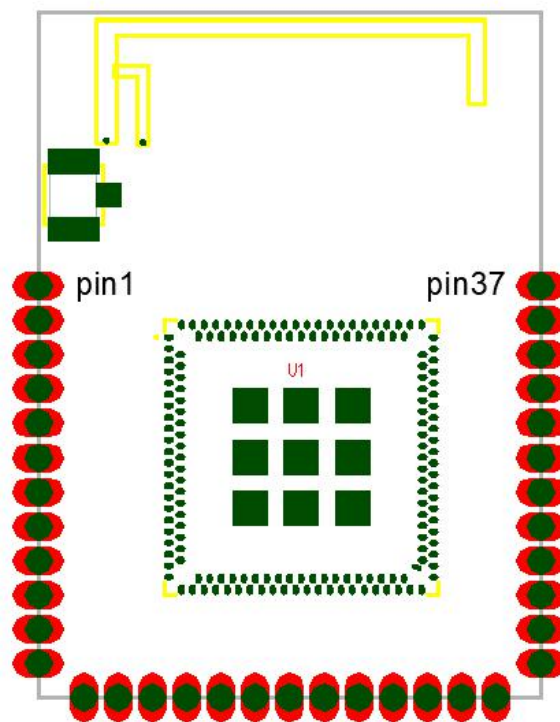NOTE:General tolerance **±0.2mm** unless otherwise stated

2.2 Pin Definition

Figure 2.2 Pin assignment

Pin	Symbol	Type	Description	
1	GPIO41_ADC0/GPIO4_PWM4	AI/DIO	Configured as GPIO or ADC input or PWM output	
2	GPIO42_ADC1/GPIO5_PWM5	AI/DIO	Configured as GPIO or ADC input or PWM output	
3	GPIO43_ADC2/GPIO6_PWM6	AI/DIO	Configured as GPIO or ADC input or PWM output	
4	GPIO44_ADC3/GPIO7_PWM7	AI/DIO	Configured as GPIO or ADC input or PWM output	
5	GPIO26_SCLK0_TXD0/GPIO8_PWM8	DIO	Configured as GPIO or ISU0 SPI CLK or UART0 TX or PWM output	
6	GPIO27_MOSI0_RTS0_SCL0/GPIO9_PWM9	DIO	Configured as GPIO or ISU0 SPI MOSI or UART0 RTS or I2C0 CLK or PWM output	
7	GPIO28_MISO0_RXD0_SDA0/GPIO10_PWM10	DIO	Configured as GPIO or ISU0 SPI MISO or UART0 RX or I2C0 DATA or PWM output	
8	GPIO29_CSA0_CTS0/GPIO11_PWM11	DIO	Configured as GPIO or ISU0 SPI CSA or UART0 CTS or PWM output	
9	GPIO30_CSB0	DIO	Configured as GPIO or ISU0 SPI CSB	
10	GPIO32_MOSI1_RTS1_SCL1	DIO	Configured as GPIO or ISU1 SPI MOSI or UART1 RTS or I2C1 CLK	
11	GPIO34_CSA1_CTS1	DIO	Configured as GPIO or ISU1 SPI CSA or UART1 CTS	
12,13 27 36,37	GND	G	Ground	
14	GPIO31_SCLK1_TXD1	DIO	Configured as GPIO or ISU1 SPI CLK or UART1 TX	
15	GPIO33_MISO1_RXD1_SDA1	DIO	Configured as GPIO or ISU1 SPI MISO or UART1 RX or I2C1 DATA	
16	GPIO35_CSB1	DIO	Configured as GPIO or ISU1 SPI CSB	
17	RECOVERY_CTS	DI	Azure Sphere flash re-imaging Recovery UART CTS	
18	RECOVERY_RTS	DO	Azure Sphere flash re-imaging Recovery UART RTS	
19	RECOVERY_TXD	DO	Azure Sphere flash re-imaging Recovery UART TXD	
20	RECOVERY_RXD	DI	Azure Sphere flash re-imaging Recovery UART RXD	
21	SWO	DO	ARM SWO debug output	For IO CM4F cores only; a single SWD channel is shared between them.
22	SWD_CLK	DI	ARM SWD clock	
23	SWD_DIO	DIO	ARM SWD debug output	
24	DEBUG_RTS	DO	Azure Sphere OS debug RTS/Strapping pin when MT3620 boot up	
25	DEBUG_TXD	DO	Azure Sphere OS debug TXD	
26	3V3	P	DC 3.3V Power Supply	
28	3V3_RTC	P	DC 3.3V for real-time clock	
29	EXT_PMU_EN	DO	Enable/disable external PMU when in deep sleep mode (RTC mode)	
30	WAKEUP	DI	Wake from deep sleep (RTC mode)	
31	SYSRST_N	DI	System reset	
32	SERVICE_TXD	DO	Azure Sphere Service UART TXD	The Azure Sphere Service UART supports provisioning, app updates, manufacturing test and in-field debugging.
33	SERVICE_RTS	DO	Azure Sphere Service UART RTS	
34	SERVICE_RXD	DI	Azure Sphere Service UART RXD	
35	SERVICE_CTS	DI	Azure Sphere Service UART CTS	

2.3 Product Pictures
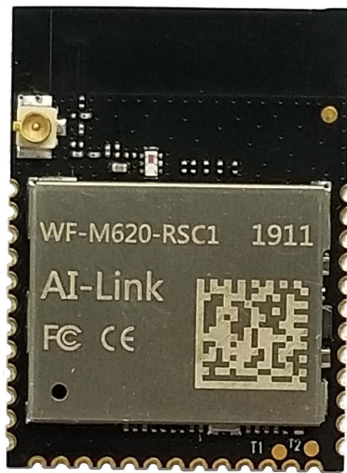
TOP VIEW   BOTTOM VIEW

3. RF Characteristics:

3-1 IEEE 802.11b Section:

Items	Contents				
Specification	IEEE802.11b				
Mode	CCK				
Channel	CH1 to CH13				
Data rate	1, 2, 5.5, 11Mbps				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics					
1. Power Levels(Calibrated)					
1) for each data rate	14	16	18	dBm	
2. Spectrum Mask @ target power					
1) fc +/-11MHz to +/-22MHz	-	-	-30	dBr	
2) fc > +/-22MHz	-	-	-50	dBr	
3 Constellation Error(EVM)@ target power					
1) 1Mbps	-	-	-10	dB	
2) 2Mbps	-	-	-10	dB	
3) 5.5Mbps	-	-	-10	dB	
4) 11Mbps	-		-10	dB	
4. Frequency Error	-10	-5	10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity(each chain)					
1) 1Mbps (FER ≦8%)	-		-95	dBm	
2) 2Mbps (FER ≦8%)	-		-93	dBm	
3) 5.5Mbps (FER ≦8%)	-		-91	dBm	
4) 11Mbps (FER ≦8%)	-		-88	dBm	
6 Maximum Input Level (FER ≦8%)	-10	-	-	dBm	

3-2 IEEE 802.11g Section:

Items	Contents				
Specification	IEEE802.11g				
Mode	OFDM				
Channel	CH1 to CH13				
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps				
	Min.	Typ.	Max.	Unit	Remark
TX Characteristics					
1. Power Levels					
1) For Each data rate	13	15	17	dBm	
2. Spectrum Mask @ target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-40	dBr	
3 Constellation Error(EVM)@ target power					
1) 6Mbps	-	-	-5	dB	
2) 9Mbps	-	-	-8	dB	
3) 12Mbps	-	-	-10	dB	
4) 18Mbps	-	-	-13	dB	
5) 24Mbps	-	-	-16	dB	
6) 36Mbps	-	-	-19	dB	
7) 48Mbps	-	-	-22	dB	
8) 54Mbps	-		-25	dB	
4 Frequency Error	-10	-5	10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
5 Minimum Input Level Sensitivity(each chain)					
1) 6Mbps (PER ≦10%)	-		-92	dBm	
2) 9Mbps (PER ≦10%)	-		-90	dBm	
3) 12Mbps (PER ≦10%)	-		-88	dBm	
4) 18Mbps (PER ≦10%)	-		-86	dBm	
5) 24Mbps (PER ≦10%)	-		-83	dBm	
6) 36Mbps (PER ≦10%)	-		-81	dBm	
7) 48Mbps (PER ≦10%)	-		-76	dBm	
8) 54Mbps (PER ≦10%)	-		-74	dBm	
6 Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

3-3 IEEE 802.11n HT20 Section:

Items	Contents				
Specification	IEEE802.11n HT20 @ 2.4GHz				
Mode	OFDM				
Channel	CH1 to CH13				
Data rate (MCS index)	MCS0/1/2/3/4/5/6/7				
TX Characteristics	Min.	Typ.	Max.	Unit	Remark
2. Power Levels					
1) For Each antenna port	12	14	16	dBm	
3. Spectrum Mask @target power					
1) at fc +/-11MHz	-	-	-20	dBr	
2) at fc +/-20MHz	-	-	-28	dBr	
3) at fc > +/-30MHz	-	-	-45	dBr	
4. Constellation Error(EVM)@ target power					
1) MCS0	-	-	-5	dB	
2) MCS1	-	-	-10	dB	
3) MCS2	-	-	-13	dB	
4) MCS3	-	-	-16	dB	
5) MCS4	-	-	-19	dB	
6) MCS5	-	-	-22	dB	
7) MCS6	-	-	-25	dB	
8) MCS7	-		-28	dB	
5. Frequency Error	-10	-	10	ppm	
RX Characteristics	Min.	Typ.	Max.	Unit	
6. Minimum Input Level Sensitivity(each chain)					
1) MCS0 (PER ≦10%)	-		-90	dBm	
2) MCS1 (PER ≦10%)	-		-88	dBm	
3) MCS2 (PER ≦10%)	-		-85	dBm	
4) MCS3 (PER ≦10%)	-		-83	dBm	
5) MCS4 (PER ≦10%)	-		-80	dBm	
6) MCS5 (PER ≦10%)	-		-75	dBm	
7) MCS6 (PER ≦10%)	-		-73	dBm	
8) MCS7 (PER ≦10%)	-		-73	dBm	
7. Maximum Input Level (PER ≦10%)	-20	-	-	dBm	

4. Refelow Standard Condition
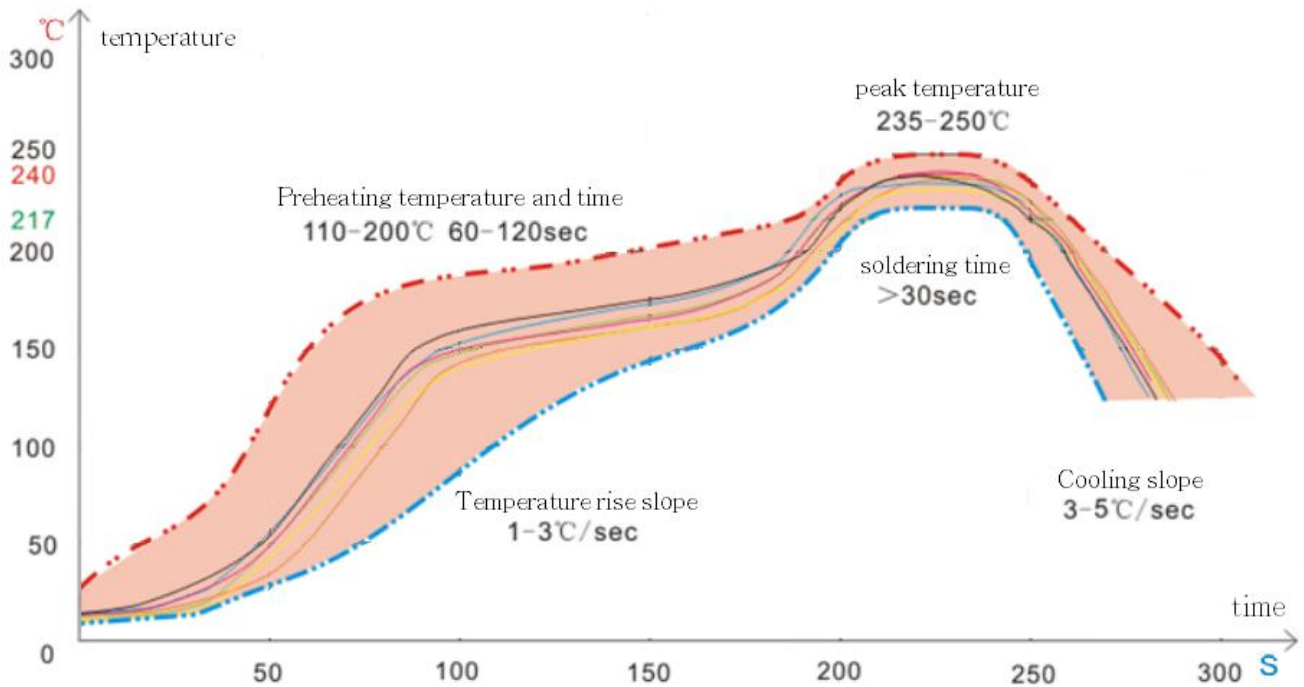
5. Key Materials

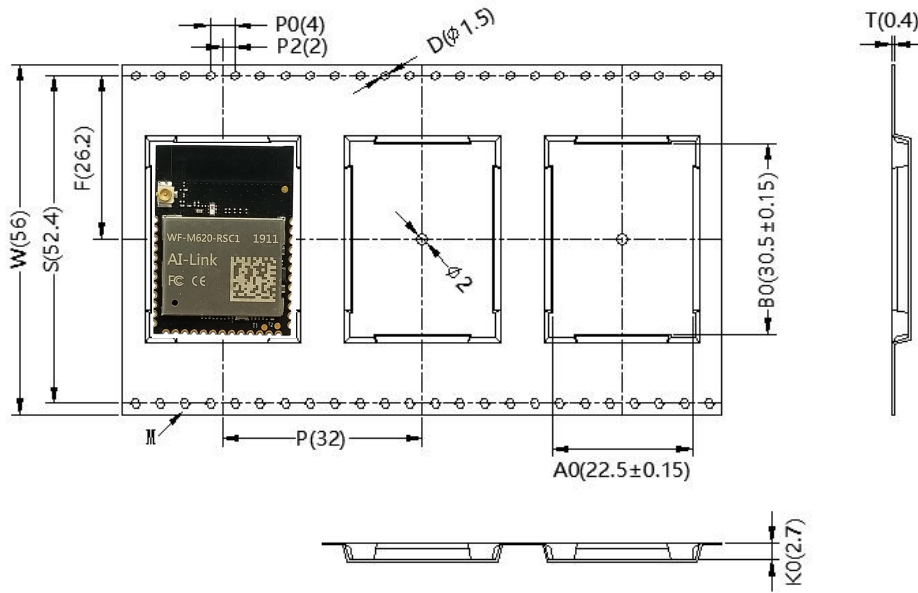| Item	Category	MPN	Description	MFR	Notes
1	IC	MT3620AN	165-QFN	MTK	
2	PCB	JUI7.820.0392-5	FR-4,4LAY	Sunlord IQPCB SHPCB	
3	Crystal Oscillator	-	26MHz,2520,11pF±10ppm,-20~75℃; 32.768KHZ,2012,11pF±20ppm,-40~85℃;	JWT Hosonic ACX	

6. Package

Figure 13.1 Dimensions of Tape

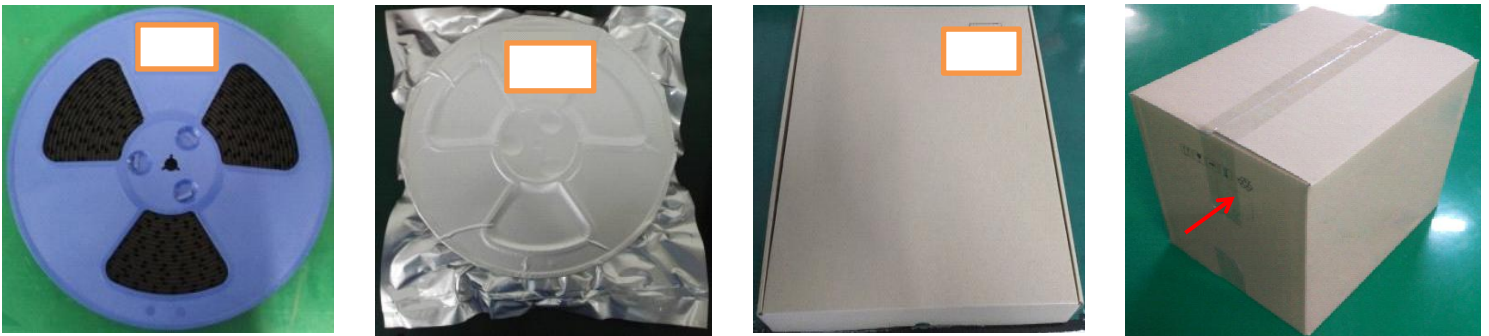Figure 13.2 Packaging Details

Notes:

1.Dimensions of the inner box:355mm*355mm*72mm;

Dimensions of the Outer case:370mm*370mm*300mm;

2.600PCS modules per tape,1 tape for each inner box,4 inner boxes for each outer case,and total 2400PCS modules per outer case;