



# **iTM1055A-X / iTM1055A-X-C**

**IEEE 802.11a/b/g/n 1T1R WLAN  
Module Datasheet**

# Revision History

Date	Revision Content	Revised By	Version
2019/02/01	- Initial released	Jim Leng	1.0
2020/06/30	- Update diagram & power consumption	Issac Chen	1.1
2021/04/04	- Add new model names	Issac Chen	1.2
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# 1. General Description

The iotTech iTM1055A-X / iTM1055A-X-C are low-cost and highly integrated WLAN modules which have all of the Wi-Fi functionalities. The highly integrated modules make the possibilities of web browsing, VoIP, headsets and other applications. With seamless roaming capabilities and advanced security, they also could interact with all WIFI Access Points in the market.

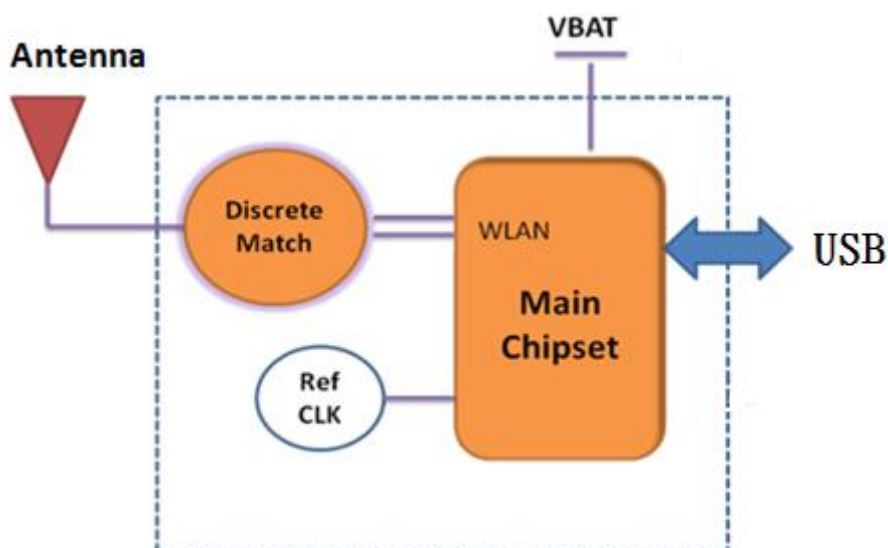
iTM1055A-X / iTM1055A-X-C are designed to support IEEE 802.11 a/b/g/n single stream with the state-of-the-art design techniques and process technology to achieve low power consumption and high throughput performance to address the requirement of mobile and handheld devices. iTM1055A-X / iTM1055A-X-C low power function use the innovative design techniques and the optimized architecture which best utilizes the advanced process technology to reduce active and idle power, and achieve extreme low power consumption at sleep state to extend the battery life.

This compact modules iTM1055A-X / iTM1055A-X-C are total solutions for Wi-Fi technologies. They are specifically developed for portable devices, and can minimize the resource consumption of CPU and memory for enabling Wi-Fi communication. iTM1055A-X / iTM1055A-X-C provide USB host interface for external CPU.

## 2. Features

- Wi-Fi Chipset : iComm SV6255P
- IEEE 802.11 a/b/g/n 1T1R
- Integrated dual-band WLAN CMOS efficient power amplifier with internal power detector and closed loop power calibration
- Single stream 802.11n provides highest throughput and superior RF performance for embedded system.
- Advanced 1X1 802.11n features:
  - Full / Half Guard Interval
  - Frame Aggregation
  - Reduced Inter-frame Space (RIFS)
  - Space Time Block Coding (STBC)
  - Greenfield mode
- Supports popular interfaces: USB 2.0
- Micro coaxial connector for connecting external antenna
- Optional shielding case (only available for iTM1055A-X-C)

The block diagram of iTM1055A-X and iTM1055A-X-C moduls is depicted in the figure below.



## 3. General Specification

### 3.1 Voltages

#### 3.1.1 Absolute Maximum Ratings

Symbol	Description	Min.	Max.	Unit
VBAT	Input supply Voltage	-0.3	3.6	V

#### 3.1.2 Recommended Operating Ratings

Test conditions: At room temperature				
Symbol	Min.	Typ.	Max.	Unit
VBAT	3.0	3.3	3.6	V

Note: The voltage of VDDIO is depended on system I/O voltage.

Test conditions: At operating temperature -20°C ~70°C				
Symbol	Min.	Typ.	Max.	Unit
VBAT	3.0	3.3	3.6	V

## 3.2 Wi-Fi RF Specification (RX)

## 2.4G WLAN

Parameters	Conditions	Min.	Typ.	Max.	Unit
Frequency Range		2412		2484	MHz
RX Sensitivity 11b @ 8% PER	- 1Mbps		-95		dBm
	- 2Mbps		-93		dBm
	- 5.5Mbps		-91		dBm
	- 11Mbps		-88		dBm
RX Sensitivity 11g @ 10% PER	- 6Mbps		-91		dBm
	- 9Mbps		-90		dBm
	- 12Mbps		-88		dBm
	- 18Mbps		-86		dBm
	- 24Mbps		-82		dBm
	- 36Mbps		-79		dBm
	- 48Mbps		-74		dBm
	- 54Mbps		-73		dBm
Receive Sensitivity (11n,20MHz) @10% PER	- MCS0		-91		dBm
	- MCS=1		-88		dBm
	- MCS=2		-86		dBm
	- MCS=3		-81		dBm
	- MCS=4		-79		dBm
	- MCS=5		-74		dBm
	- MCS=6		-73		dBm
	- MCS=7		-72		dBm
Maximum Receive Level	802.11b		-10		dBm
	802.11g		-8		dBm
	802.11n		-8		dBm
Operating temperature	-20°C to 70°C				
Storage temperature	-40°C to 85°C				

## 5G WLAN

Parameters	Conditions	Min.	Typ.	Max.	Unit
Frequency Range		5180		5805	MHz
RX Sensitivity 11a @ 10% PER	- 6Mbps		-87		dBm
	- 9Mbps		-86		dBm

	- 12Mbps		-84		dBm
	- 18Mbps		-82		dBm
	- 24Mbps		-79		dBm
	- 36Mbps		-75		dBm
	- 48Mbps		-71		dBm
	- 54Mbps		-70		dBm
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0		-87		dBm
	- MCS=1		-84		dBm
	- MCS=2		-82		dBm
	- MCS=3		-79		dBm
	- MCS=4		-75		dBm
	- MCS=5		-71		dBm
	- MCS=6		-70		dBm
	- MCS=7		-69		dBm
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0		-84		dBm
	- MCS=1		-81		dBm
	- MCS=2		-79		dBm
	- MCS=3		-76		dBm
	- MCS=4		-72		dBm
	- MCS=5		-68		dBm
	- MCS=6		-67		dBm
	- MCS=7		-66		dBm



### 3.3 Wi-Fi RF Specification (TX)

#### 2.4G WLAN

Parameters	Conditions	Min.	Typ.	Max.	Unit
Frequency Range		2412		2484	MHz
Output Power	802.11b	16.0	18.0		dBm
	802.11g	12.0	14.0		dBm
	802.11n	12.0	14.0		dBm
@EVM	802.11b		-30	-10	dB
	802.11g		-30	-25	dB
	802.11n		-30	-28	dB

#### 5G WLAN

Parameters	Conditions	Min.	Typ.	Max.	Unit
Frequency Range		5180		5805	MHz
Output Power	802.11a	12.0	14.0		dBm
	802.11n	12.0	14.0		dBm
@EVM	802.11a		-30	-25	dB
	802.11n		-30	-28	dB

### 3.4 Power Consumption

#### SWR Buck Converter Enabled

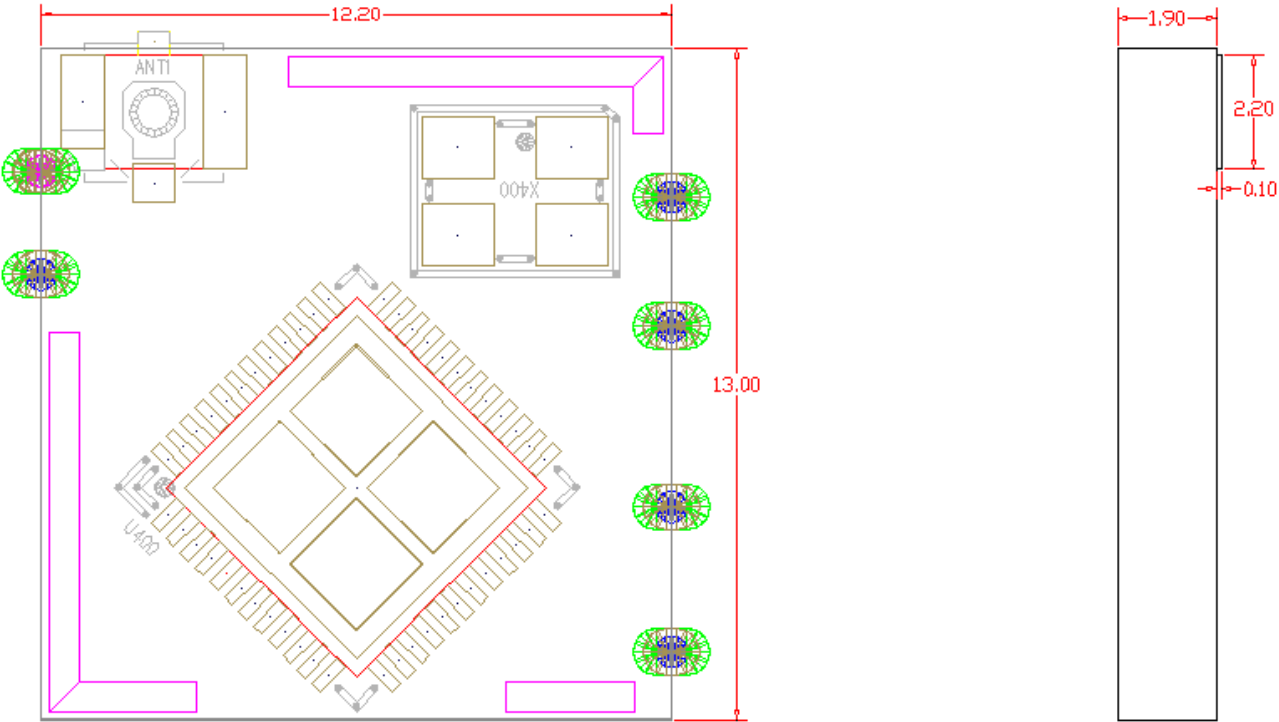
WLAN Operational Modes	Typ. <sup>a</sup>	Unit
OFF <sup>a</sup>	2	uA
Rx, CCK, 1 Mbps	68	mA
Rx, OFDM, 54 Mbps	68	mA
Rx, HT20, MCS7	68	mA
Rx, HT40, MCS7	75	mA
Rx, 5.18G HT20, MCS7	88	mA
Rx, 5.805G HT20, MCS7	88	mA
Rx, 5.18 G HT40, MCS7	97	mA
Rx, 5.805G HT40, MCS7	97	mA
Tx, CCK, 1 Mbps	307	mA
Tx, OFDM, 54 Mbps@15dBm	256	mA
Tx, HT20, MCS7@15dBm	260	mA
Tx, HT40, MCS7@15dBm	260	mA
Tx, 5.18 G HT20, MCS7	310	mA
Tx, 5.805G HT20, MCS7	293	mA

# 4. Pin Assignments

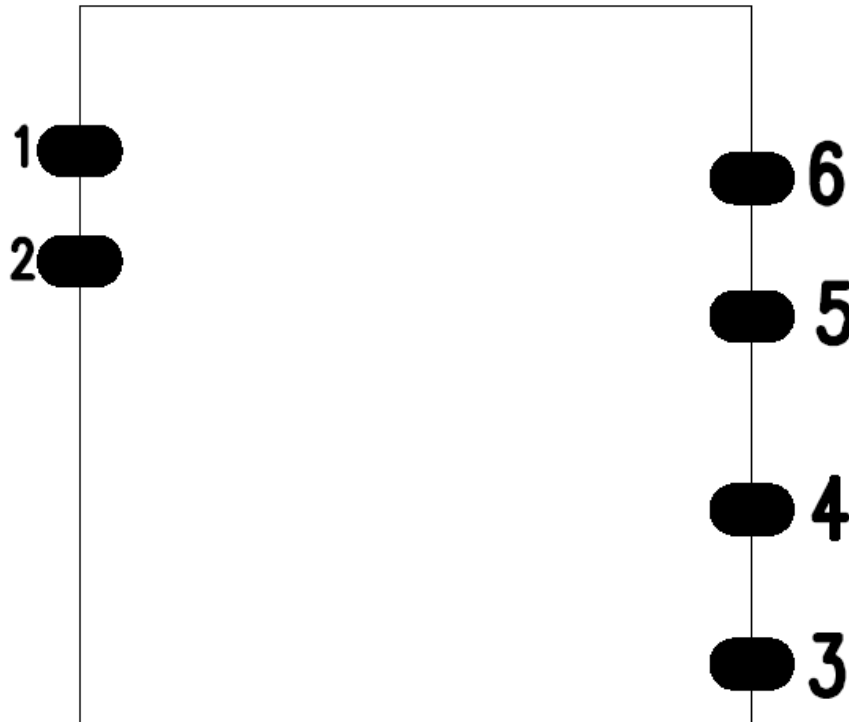
## 4.1 PCB Pin Outline

(12.2x13.0x2.0mm, iTM1055A-X-C, with shielding case)

< TOP VIEW >



## 4.2 Pin Definition



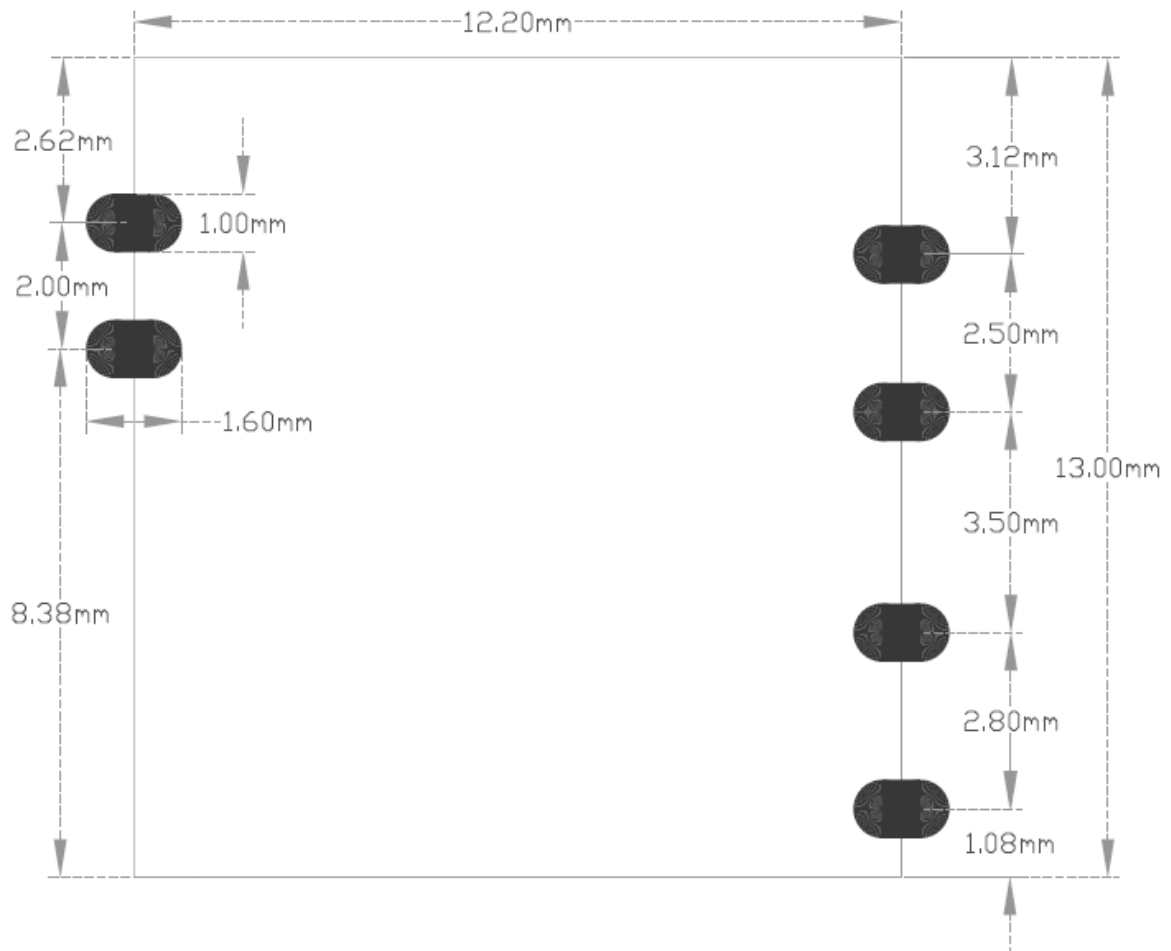
Pin #	Name	Description
1	GND	Ground
2	RF0	NC (Reserved)
3	VIN	Main power voltage source input (VBAT)
4	USB_D-	USB_D-
5	USB_D+	USB_D+
6	GND	Ground

# 5. Dimensions

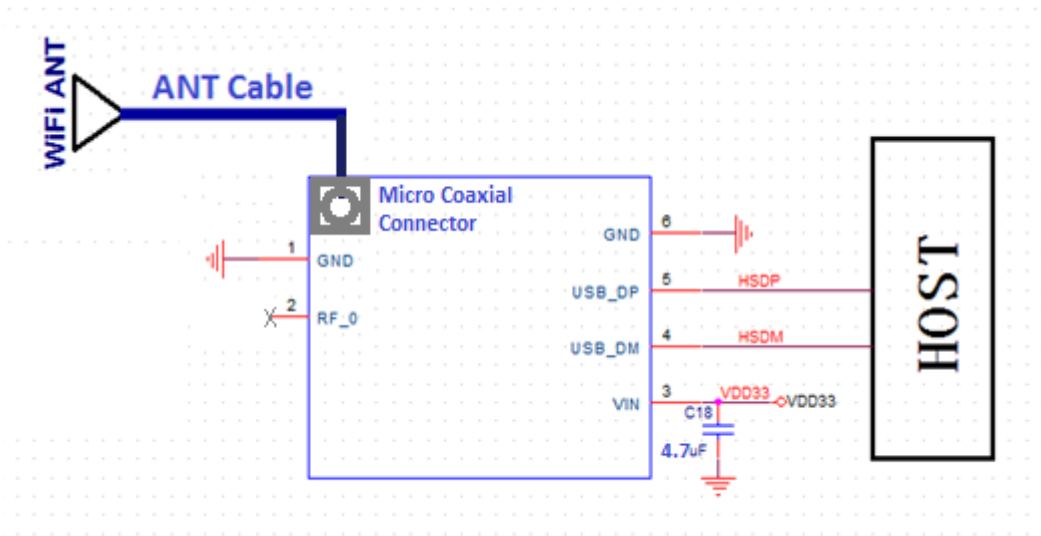
## 5.1 Layout Recommendation

(Unit: mm)

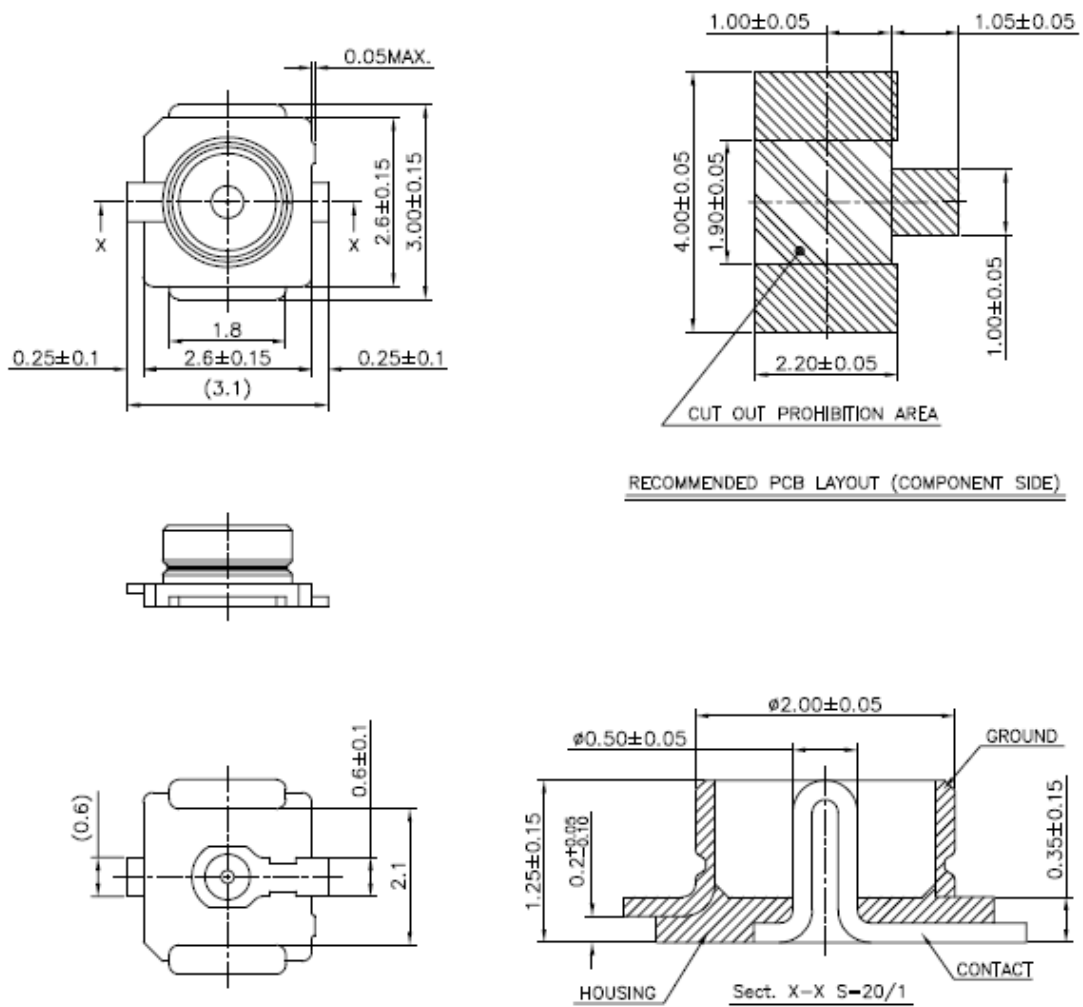
< TOP VIEW >



## 6. Reference Design



Micro Coaxial Connector on iTM1055A-X / iTM1055A-X-C:

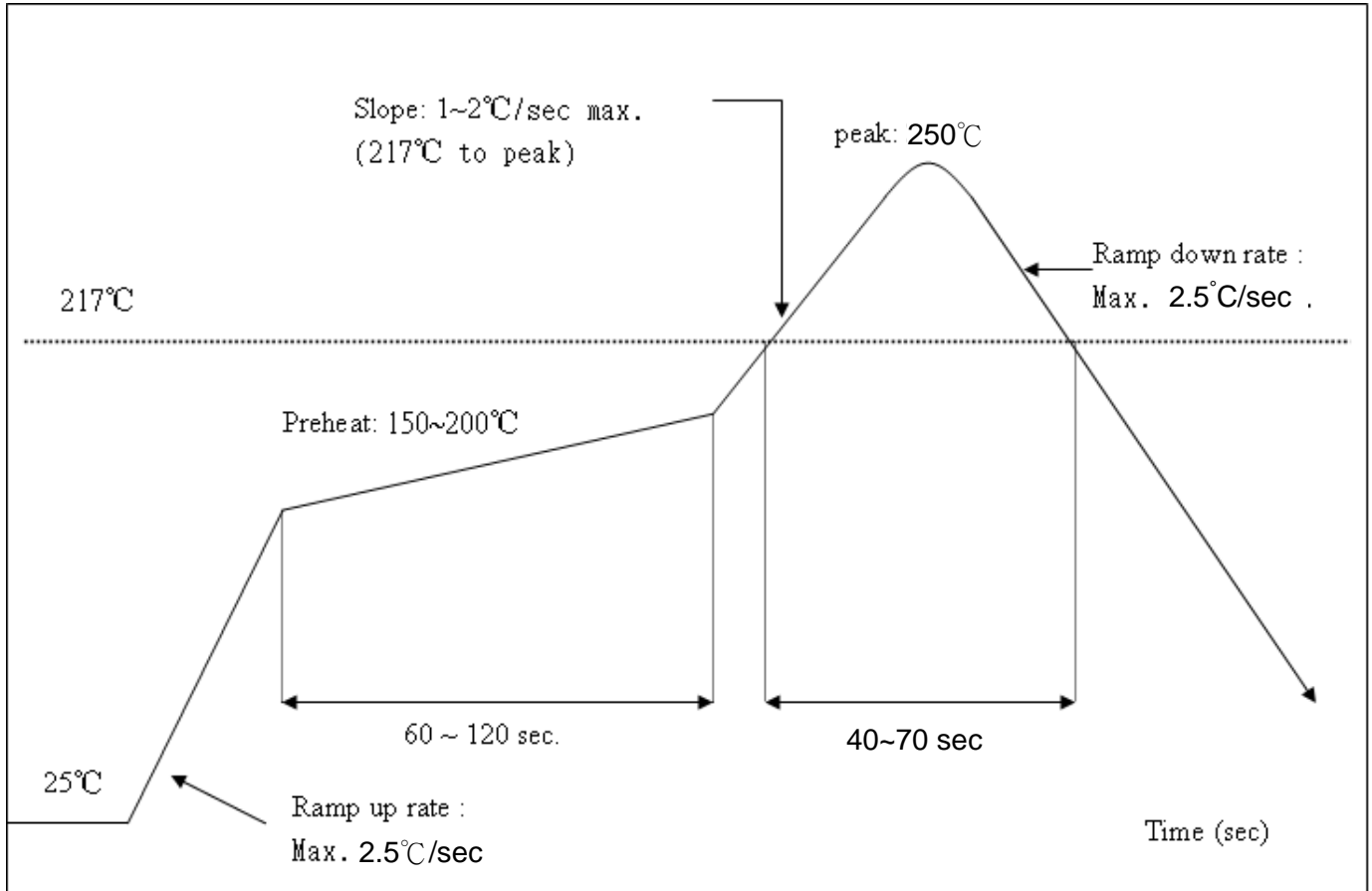


## 7. Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

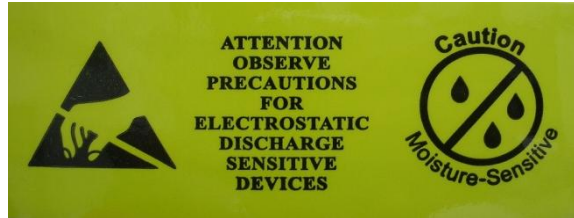
Number of Times :  $\leq 2$  times



# 8. Packing Information

## 8.1 Label

Label A → Anti-static and humidity notice



Label B → MSL caution / Storage Condition

	<b>Caution</b>	LEVEL
	This bag contains MOISTURE-SENSITIVE DEVICES	
<small>If blank, see adjacent bar code label</small>		
1. Calculated shelf life in sealed bag: 12 months at <math>-40^{\circ}\text{C}</math> and <math><90\%</math> relative humidity (RH)		
2. Peak package body temperature: _____ $^{\circ}\text{C}$ <small>If blank, see adjacent bar code label</small>		
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be		
a) Mounted within: _____ hours of factory conditions <small>If blank, see adjacent bar code label</small>		
<math>\leq 30^{\circ}\text{C}/60\% \text{ RH}</math>, or		
b) Stored per J-STD-033		
4. Devices require bake, before mounting, if:		
a) Humidity Indicator Card reads >10% for level 2a - 5a devices or >60% for level 2 devices when read at <math>23 \pm 5^{\circ}\text{C}</math>		
b) 3a or 3b are not met		
5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure		
Bag Seal Date: _____ <small>If blank, see adjacent bar code label</small>		
<small>Note: Level and body temperature defined by IPC/JEDEC J-STD-020</small>		

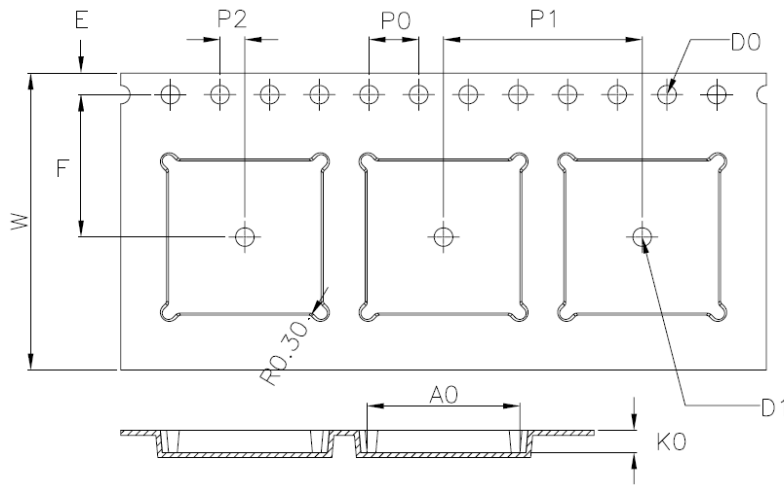
Label C → Inner box label .

PKG S/N :	
	9PKG1201310001
Model:	
	XXXXXXXX(HF)
P/N :	
	99P-W01-0042R
Qty :	
	1500
Date Code :	
	1205
Lot Code :	
	T0C102B

Label D → Carton box label .

<b>iotTech Corporation</b>	
Model Name :	
	XXXXXXXX(HF)
Part No :	
	99P-W01-0042R
Quantity :	
	7500 <small>ea</small>
Lot D/C :	
	1205
Manufacture :	
	2012/02/22

## 8.2 Dimension



W <sup>±</sup>	24.00±0.30 <sup>±</sup>
A0 <sup>±</sup>	13.30±0.10 <sup>±</sup>
B0 <sup>±</sup>	12.60±0.10 <sup>±</sup>
K0 <sup>±</sup>	1.80±0.10 <sup>±</sup>
E <sup>±</sup>	1.75±0.10 <sup>±</sup>
F <sup>±</sup>	11.65±0.10 <sup>±</sup>
P0 <sup>±</sup>	4.00±0.10 <sup>±</sup>
P1 <sup>±</sup>	17.00±0.10 <sup>±</sup>
P2 <sup>±</sup>	2.00±0.10 <sup>±</sup>
D0 <sup>±</sup>	1.50±0.10 <sup>±</sup>
D1 <sup>±</sup>	φ1.50MIN <sup>±</sup>

1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.20$ .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness :  $0.30 \pm 0.05$  mm.
6. Packing length per 22" reel : 98.5 Meters.(1:3)
7. Component load per 13" reel : 1500 pcs.

