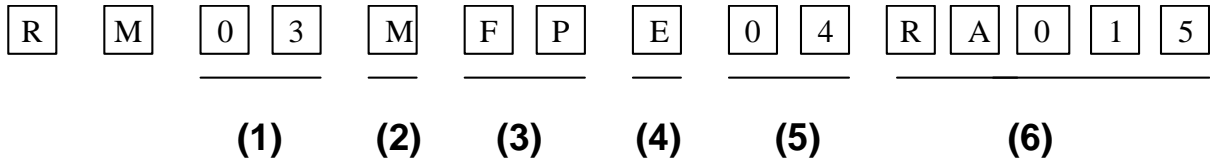


# NFC Tag Module(19x12mm) for FPCB

## 1. Explanation of Product Number



**Product Code:**

(1) Antenna Dimensions / Cable Diameter / Cable Length / Connector Type:

03: 19x12x0.86 mm /without /without /No connector

(2) Polarization:

M: Magnetic field

(3) Product categories:

FP: FPCB

(4) Working frequency:

E: 13.56MHz

(5) Applications:

04: NFC Tag

(6) Antenna Series:

RA015: serial number

<b>Tolerances (Unless otherwise specified)</b> X : ± 1      X.X : ± 0.1      X.XX : ± 0.01 Angle : ±                      Hole Dia. : ±		 RIFO Technologies Corporation Website: <a href="http://www.rifo.com.tw">www.rifo.com.tw</a>	
Scale :	Unit : mm	THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION	
Prepared By : Helen	Checked By : Jeff		
Designed By : Jason	Approved By : Allen		
<b>TITLE : NFC Tag Module for FPCB</b>		DOCUMENT NO. <b>RM03MFPE04RA015S</b>	REV. <b>A</b>

## 2. Features and benefits

### a. RF Interface (ISO/IEC 14443A)

- \* Contactless transmission of data and supply energy (no battery needed)
- \* Operating distance: up to 100 mm (depending on various parameters as e.g. field strength and antenna geometry)
- \* Operating frequency: 13.56 MHz
- \* Fast data transfer: 106 kbit/s
- \* High data integrity: 16-bit CRC, parity, bit coding, bit counting
- \* True anticollision
- \* 7 byte serial number (cascade level 2 according to ISO/IEC 14443-3)

### b. EEPROM


- \* 168 bytes of total memory, divided in 42 pages (4 bytes each)
- \* 144 bytes of user r/w memory area, divided in 36 pages (4 bytes each)
- \* Field programmable read-only locking function per page 16 pages (64 bytes) of the memory
- \* Field programmable read-only locking function per block (2 pages)
- \* 32-bit user definable One-Time Programmable (OTP) area
- \* 16-bit counter
- \* Data retention of 10 years
- \* Write endurance 10000 cycles

### c. Field detection

The NFC tag module features an additional RF field detection functionality. The corresponding output signal can be used as interrupt source to e.g. wake up an embedded microcontroller or trigger further actions. Typical applications are Bluetooth and Wi-Fi pairing.

### d. Security

- \* Anti-cloning support by unique 7-byte serial number for each device
- \* 32-bit one way counter
- \* Field programmable read-only locking function per page for first 16 pages (64 bytes) of the memory
- \* Read-only locking per block for rest of memory

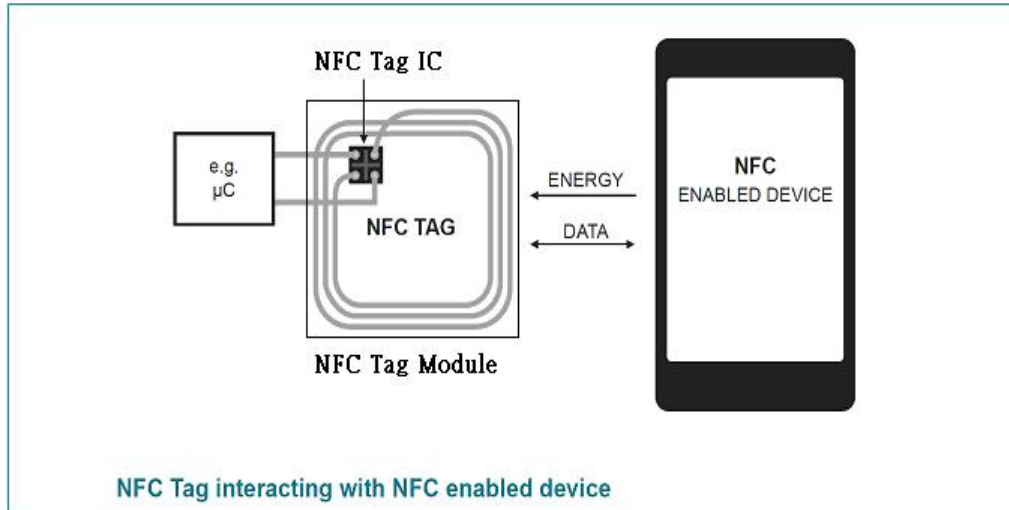
<b>Tolerances (Unless otherwise specified)</b> X : $\pm 1$ X.X : $\pm 0.1$ X.XX : $\pm 0.01$ Angle : $\pm$ Hole Dia. : $\pm$		 RIFO Technologies Corporation Website: <a href="http://www.rifo.com.tw">www.rifo.com.tw</a>
Scale :	Unit : mm	
Prepared By : Helen	Checked By : Jeff	THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION
Designed By : Jason	Approved By : Allen	
<b>TITLE : NFC Tag Module for FPCB</b>		DOCUMENT NO. <b>RM03MFPE04RA015S</b>
		REV. <b>A</b>

### e. Cascaded UID

The UID of the NFC tag module is 7 bytes long and supports cascade level 2 according to ISO/IEC 14443-3.

## 3. Applications

\*Hand-held devices when NFC tag functions are needed.



## 4. Description


RIFO's NFC antenna series are specially designed for 13.56MHz band application. Based on RIFO's proprietary designs and processes, this NFC antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

## 5. Electrical Specifications

5-1.

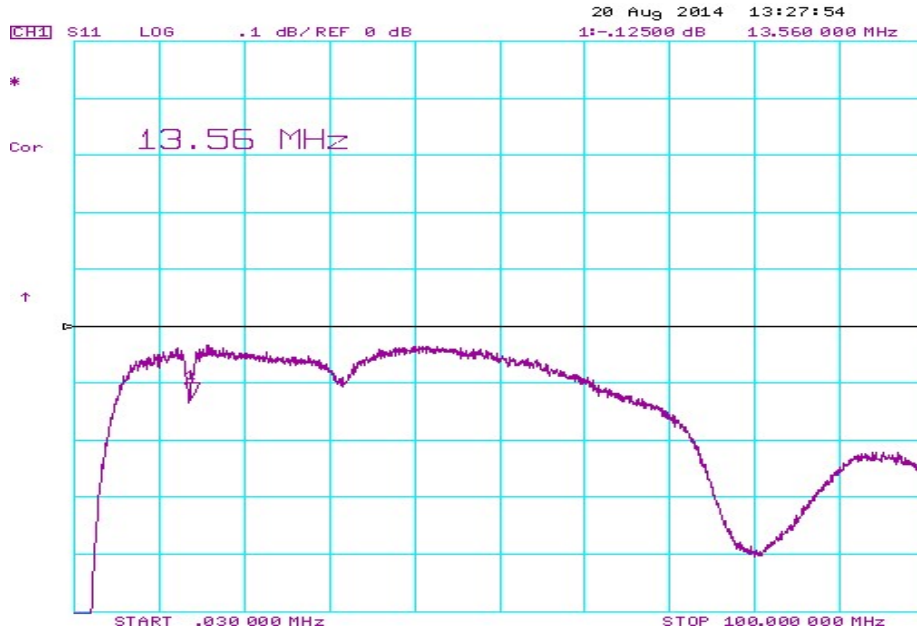
Characteristics	Specifications	Unit
Outline Dimensions	<b>19x 12 x 0.86</b>	mm
Center Frequency*	13.56	MHz
Impedance	50	$\Omega$
Polarization	Magnetic field	

\*Center frequency will be offset to working frequency according to the conditions of user's ground plane and radome.

<b>Tolerances (Unless otherwise specified)</b> X : $\pm 1$ X.X : $\pm 0.1$ X.XX : $\pm 0.01$ Angle : $\pm$ Hole Dia. : $\pm$		 RIFO Technologies Corporation Website: <a href="http://www.rifo.com.tw">www.rifo.com.tw</a>
Scale :	Unit : mm	
Prepared By : Helen	Checked By : Jeff	THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION
Designed By : Jason	Approved By : Allen	
<b>TITLE : NFC Tag Module for FPCB</b>		DOCUMENT NO. <b>RM03MFPE04RA015S</b>
		REV. <b>A</b>

5-2.


Return Loss(S<sub>11</sub>)



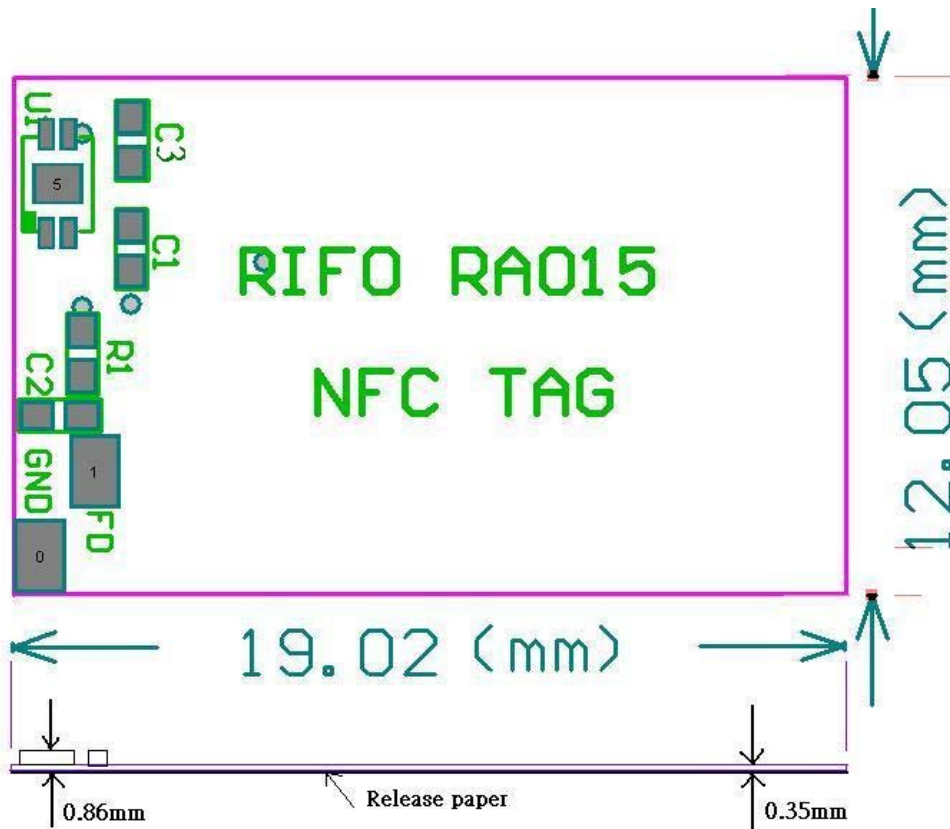
6. NFC Tag Module Pin Configuration



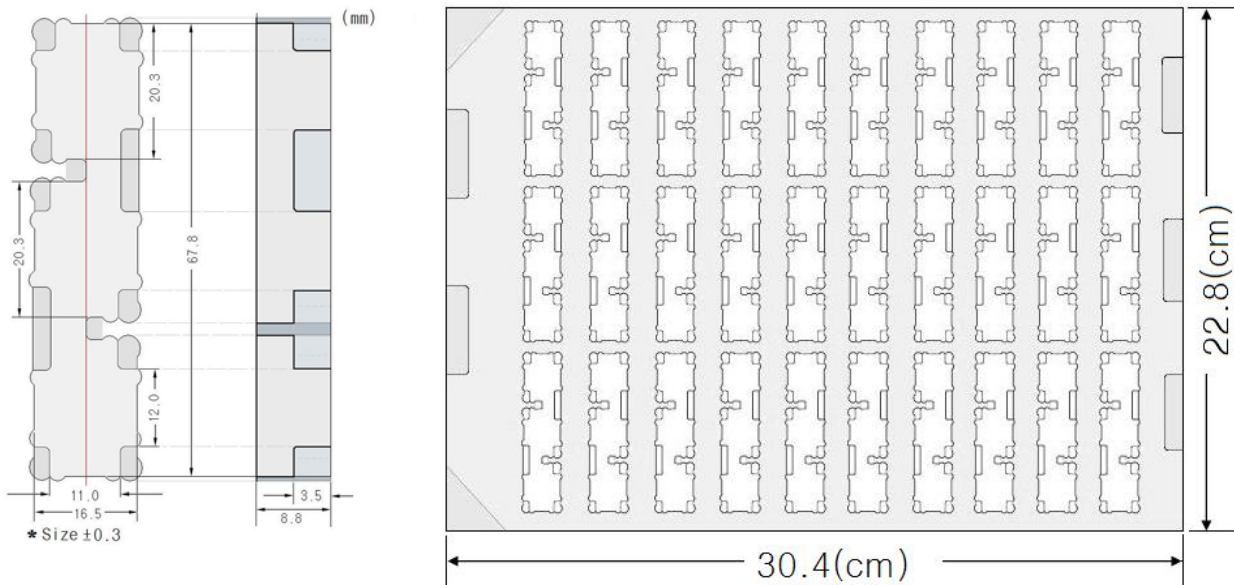
Pin #	Pin name	Pin type	Description
1	FD	Digital Input	RF Field Detect connection
2	GND	GND	Ground

<b>Tolerances (Unless otherwise specified)</b> X : ± 1      X.X : ± 0.1      X.XX : ± 0.01 Angle : ±      Hole Dia. : ±		 RIFO Technologies Corporation Website: www.rifo.com.tw
Scale :	Unit : mm	
Prepared By : Helen	Checked By : Jeff	THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION
Designed By : Jason	Approved By : Allen	
<b>TITLE : NFC Tag Module for FPCB</b>		DOCUMENT NO. <b>RM03MFPE04RA015S</b>
		REV. <b>A</b>

## 7. NFC Tag Module Dimensions(Tolerances:±0.1mm)



## 8. Skin packing Information



### Tolerances (Unless otherwise specified)

X : ± 1      X.X : ± 0.1      X.XX : ± 0.01

Angle : ±      Hole Dia. : ±

Scale :      Unit : mm

Prepared By : Helen      Checked By : Jeff

Designed By : Jason      Approved By : Allen



RIFO Technologies Corporation  
Website: www.rifo.com.tw

THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION

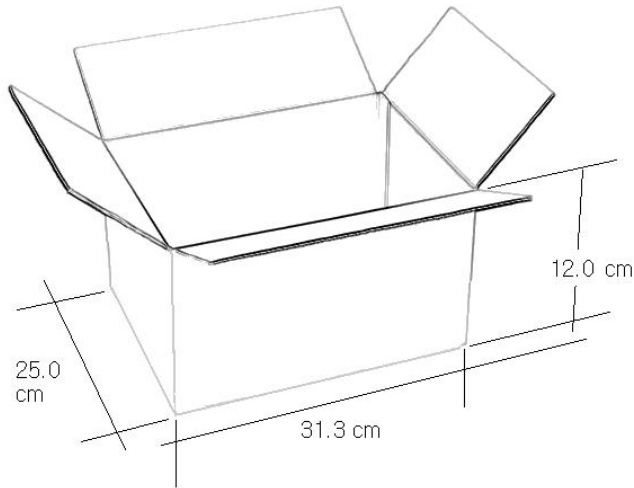
TITLE : NFC Tag Module for FPCB

DOCUMENT NO.

RM03MFPE04RA015S

REV. A

## 9. Skin packing box Information



Device	Type	SPQ	Length(cm)	Width(cm)	Height(cm)
<b>RM03MFPE04RA015</b>	Module	1800	31.3	25.0	12.0

**Tolerances (Unless otherwise specified)**  
 X :  $\pm 1$       X.X :  $\pm 0.1$       X.XX :  $\pm 0.01$   
 Angle :  $\pm$       Hole Dia. :  $\pm$



RIFO Technologies Corporation  
 Website: [www.rifo.com.tw](http://www.rifo.com.tw)

Scale :      Unit : mm  
 Prepared By : Helen      Checked By : Jeff  
 Designed By : Jason      Approved By : Allen

THIS SPECIFICATION IS THE PROPERTY OF RIFO TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED IN ALL CIRCUMSTANCES WITHOUT WRITTEN PERMISSION

**TITLE : NFC Tag Module for FPCB**

**DOCUMENT NO.**

**RM03MFPE04RA015S**

REV.

**A**