

# MAGICSTRAP® Technical Data Sheet

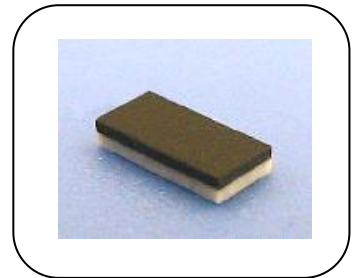
## Murata part number : LXMS31ACNA / LXMS31ACMD



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### 1. General Descriptions

Murata MAGICSTRAP® is an innovative RFID module with a wide range of RF features. It incorporates an industry standard IC.



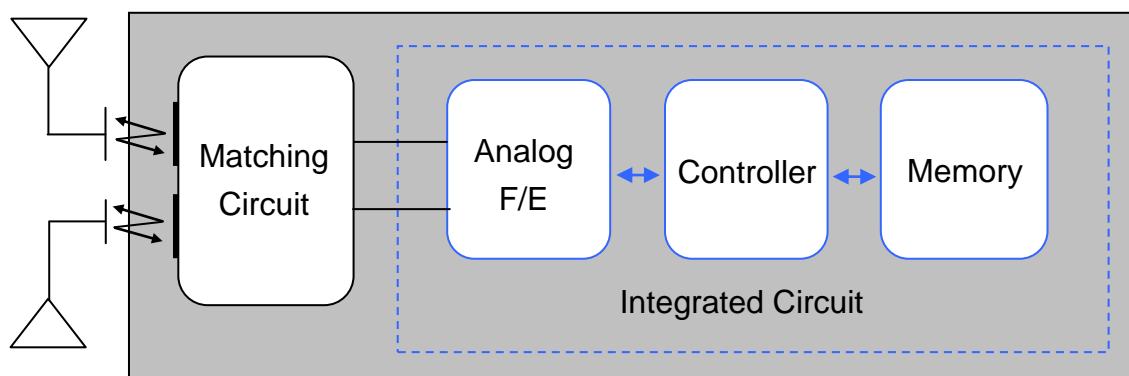
#### [Features]

- 1-1. Compliant to EPC global Class1Gen2
- 1-2. Ultra small package (3.2X1.6X0.55mm typ.)
- 1-3. Supports wide frequency range from 865MHz to 955MHz, allowing to cover all globally relevant UHF frequency bands with one single design.
- 1-4. Impedance transformation function for more accurate matching with various antenna designs
  - 4 different variants available, which allow perfect matching to antenna impedance
- 1-5. Both conductive material & non-conductive material can be used for connection to antenna.
- 1-6. Wide mechanical mounting tolerance for assembly into RFID tag or inlay
- 1-7. Fully Compatible with conventional SMT process and reflow soldering
- 1-8. Compatible with plastic molding process (150°C max. over 2 hours)
- 1-9. High ESD protection function
- 1-10. 100% green material for full RoHS compliance
- 1-11. Internal 512bit user memory available

### 2. Memory Capacity

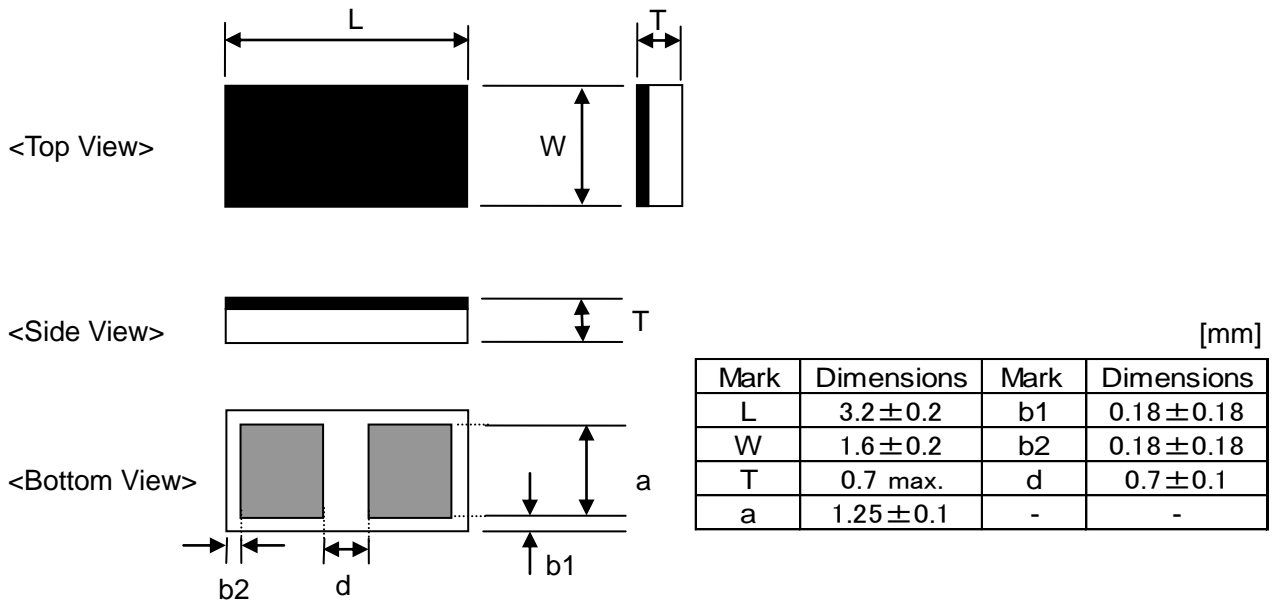
MAGICSTRAP® P/N \ Parameter	EPC Memory	User Memory	TID Memory
LXMS31ACNA – 009, 010, 011, 012	Up to 240 bits	512 bits	64 bits
LXMS31ACMD – 141, 142, 143, 144	Up to 128 bits	512 bits	96 bits

### 3. Block Diagram

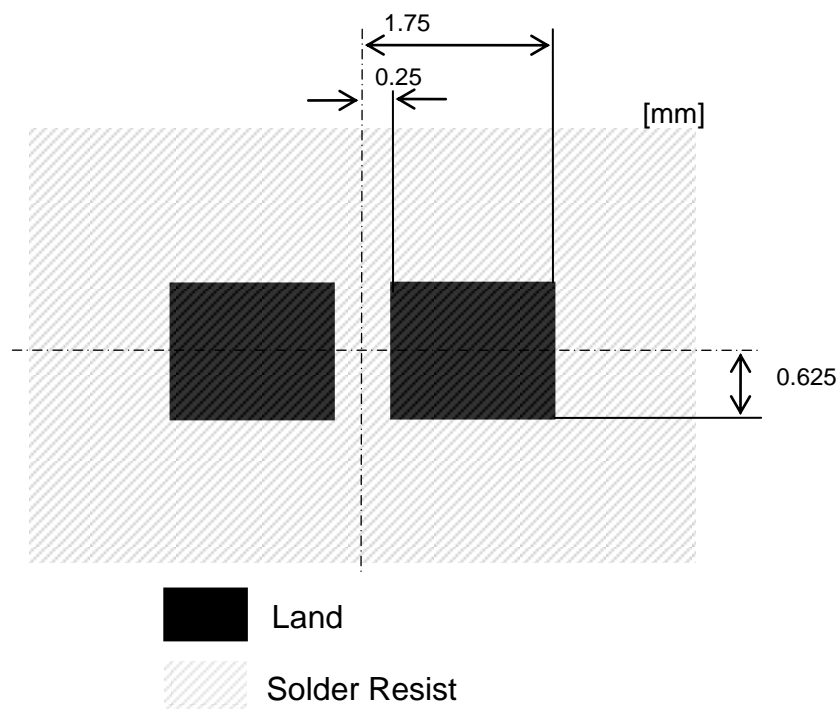


**4. Mechanical Information**

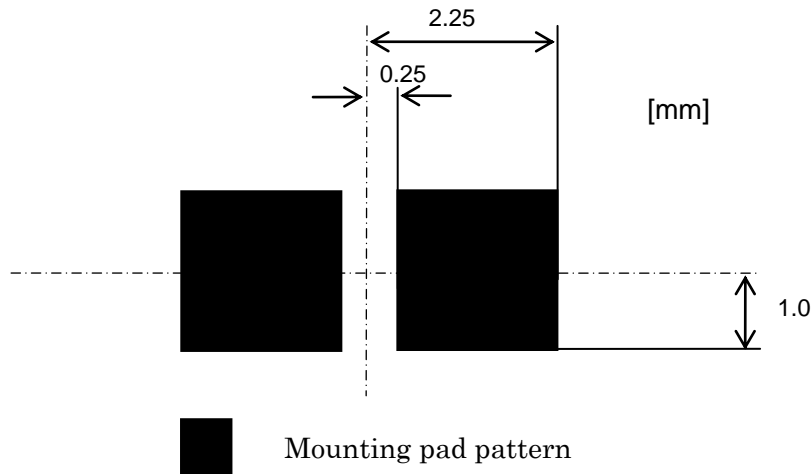
4-1. Dimensions



4-2. Recommended mounting pattern at antenna side for reflow soldering



4-3. Recommended mounting pattern at antenna side for the attachment by adhesive



## 5. Electrical Performance

5-1. Frequency range

865 – 955 MHz

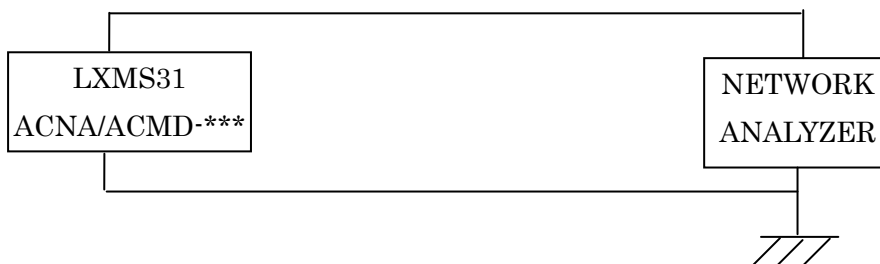
5-2. Minimum operating power

-8dBm

5-3. Electrical characteristics at minimum operating power (Ta=25°C, Unit : Ohm)

MAGICSTRAP® P/N			LXMS31ACNA	LXMS31ACNA	LXMS31ACNA	LXMS31ACNA
			- 009	- 010	- 011	- 012
Parameter			LXMS31ACMD	LXMS31ACMD	LXMS31ACMD	LXMS31ACMD
			- 141	- 142	- 143	- 144
Impedance value	@866.5 MHz	R	15	12	25	80
		X	-45	-107	-200	-405
	@915.0 MHz	R	25	12	25	80
		X	-45	-107	-200	-420
	@953.0 MHz	R	30	9	20	60
		X	-48	-105	-195	-425

#### 5-4. Impedance Measurement Method



#### 5-5. IC incorporated

NXP G2XM (PNs LXMS31ACNA-009 to -012)

Impinj Monza4QT (PNs LXMS31ACMD-141 to -144)

## 6. OPERATING TEMPERATURE

-40 °C ~ +85 °C

## 7. RoHS compliance

MAGICSTRAP® is compliant to RoHS directive.

## 8. Attachment of MAGICSTRAP®

MAGICSTRAP® has electrodes at the bottom side which enable an inductive coupling with the antenna pad when using a non-conductive adhesive as well as making a conductive connection with antenna.

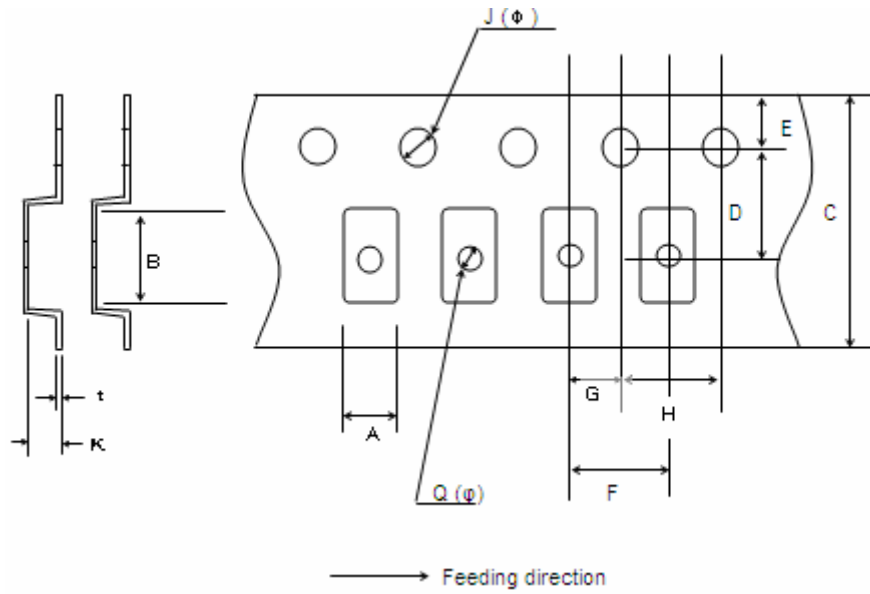
## 9. Tape and Reel Packing

9-1. Dimensions of Tape ( Plastic tape )

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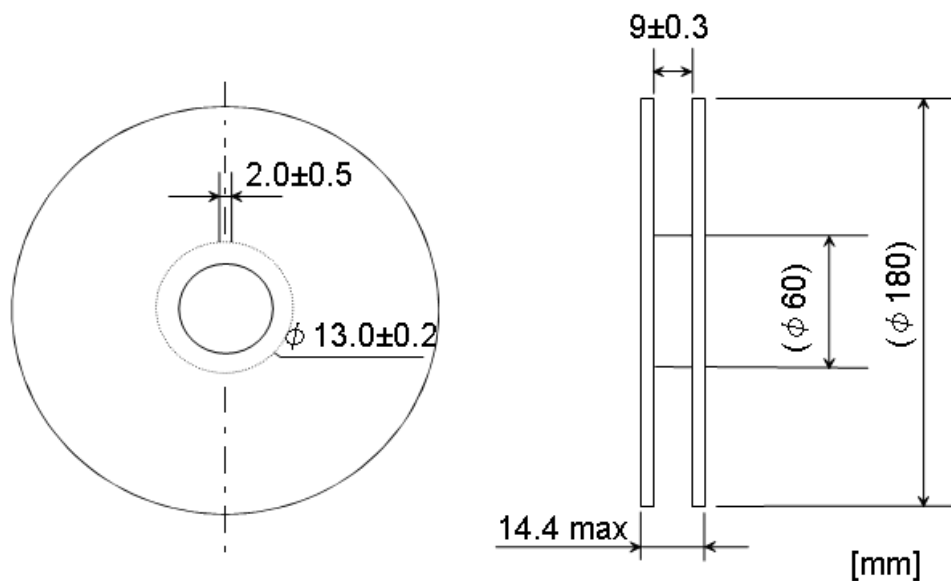
Mark	A <sup>(2)</sup>	B <sup>(2)</sup>	C	D	E	F <sup>(1)</sup>
Dimension	1.9	3.5	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1

Mark	G	H	J	K	Q	t
Dimension	2.0±0.05	4.0±0.1	1.5 <sup>+0.1</sup> <sub>0</sub>	0.85 max.	1.0 <sup>+0.2</sup> <sub>0</sub>	0.25±0.05

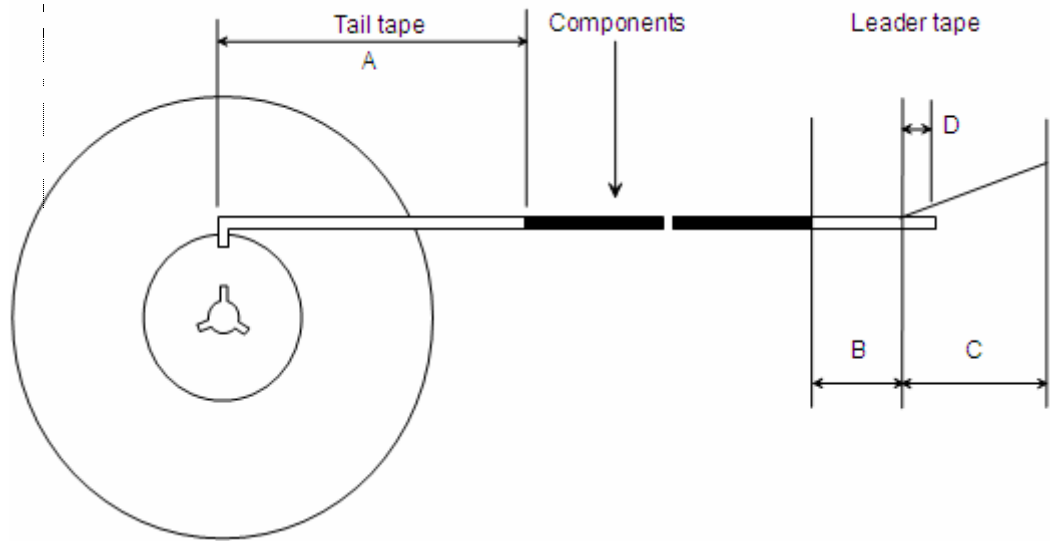
[Unit: mm]

- \*1. Maximum cumulative tolerance ± 0.15 every 10 pitches
- \*2. Reference value

9-2. Dimensions of Reel



9-3. Leader and Tail tape



[mm]			
Tail tape Part	A	No components	160 ~ 190
Leader tape part	B	No components (adhered cover tape)	150 ~ 200
	C	Cover tape part (including D)	250 ~ 300
	D	Not adhered cover tape	20 ~ 40

9-4 Taping direction

The tape for chips are wound clockwise, the feeding holes to the right side as the tape is pulled toward the user.

9-5 Quantity per reel

Packaging unit :4000 pcs./ reel

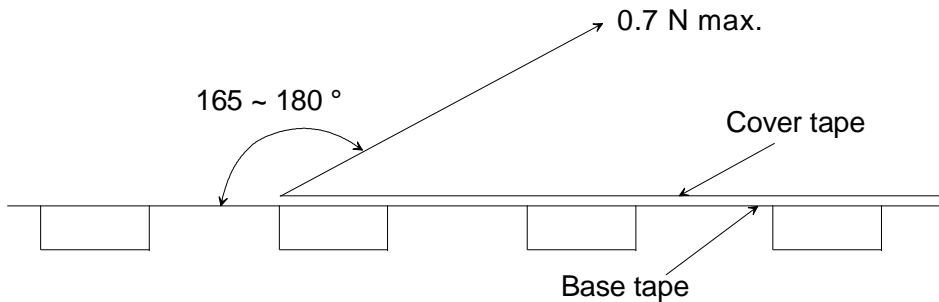
9-6 Material

material : Base tape .....Plastic  
 Reel .....Plastic

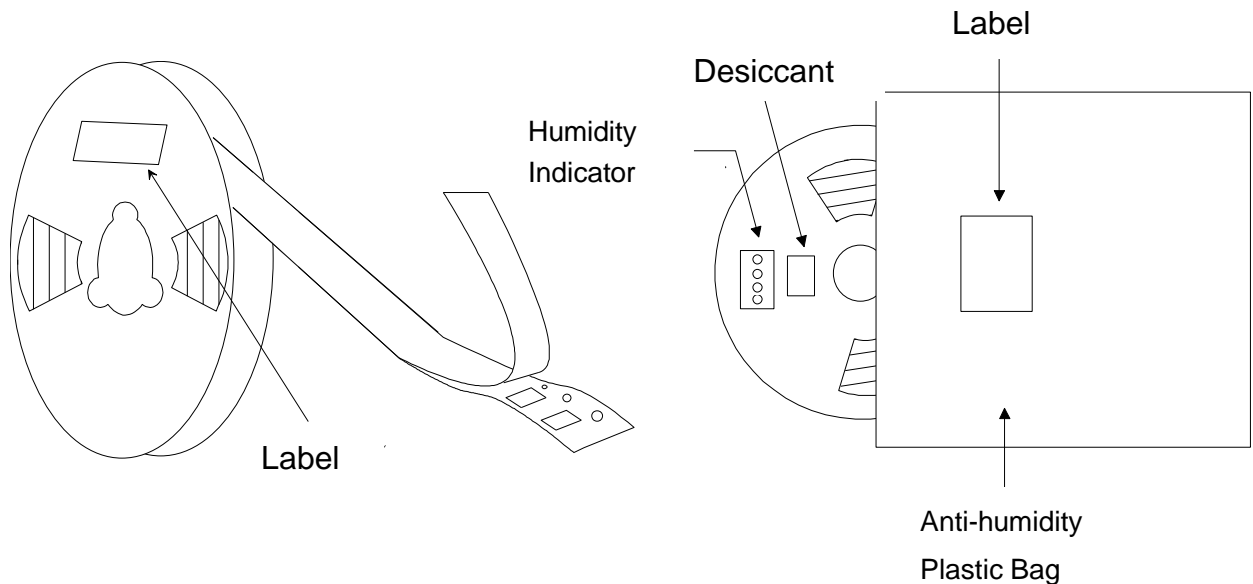
Cover tape and cavity tape are made the anti-static processing.

9-7 Strength/Peeling force

Tear off strength against pulling of cover tape : 5 N min.  
 Peeling of force : 0.7 N max. in the direction of peeling as shown below.



**9-8 PACKAGE (Humidity proof Packing)**



Tape and reel must be sealed with the anti-humidity plastic bag. The bag contains the desiccant and the humidity inductor.

**10. Ordering part number**

IC	NXP G2XM	Impinj Monza4QT
User Memory Size	512 bits	512 bits
Part number	LXMS31ACNA-009 LXMS31ACNA-010 LXMS31ACNA-011 LXMS31ACNA-012	LXMS31ACMD-141 LXMS31ACMD-142 LXMS31ACMD-143 LXMS31ACMD-144

Each part number has different impedance value. Please refer “5-3. Electrical characteristics”.

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< Note >

- This document is subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
- Please refer to following URL for other usage of MAGICSTRAP® and our company RFID related products.

URL : <http://www.murata.com/products/rfid/index.html>

- For any inquiries/queries, please feel free to contact us.

e-mail : [magicstrap@ml.murata.co.jp](mailto:magicstrap@ml.murata.co.jp)