

MAGICSTRAP® Technical Data Sheet

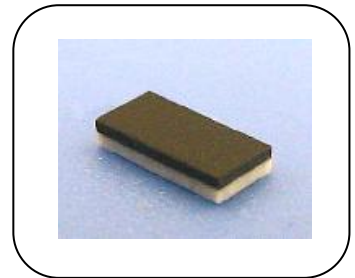
Murata part number : LXMS31ACNA / LXMS31ACMD



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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.



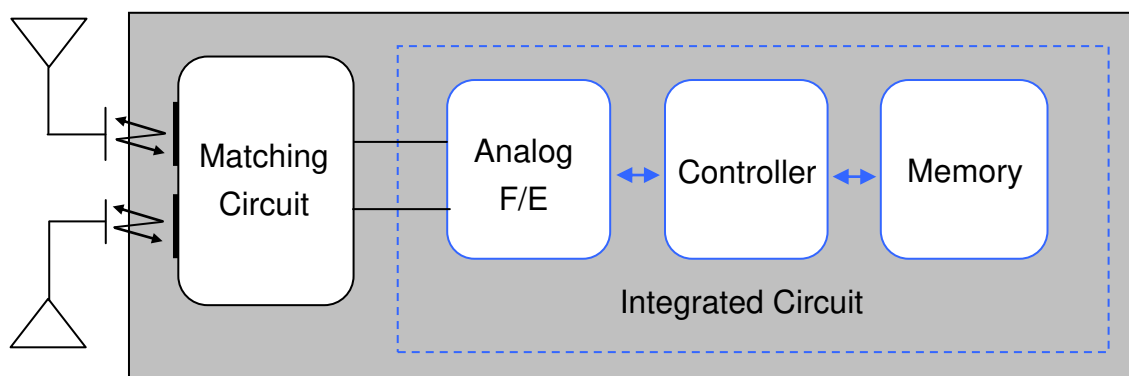
[Features]

- 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

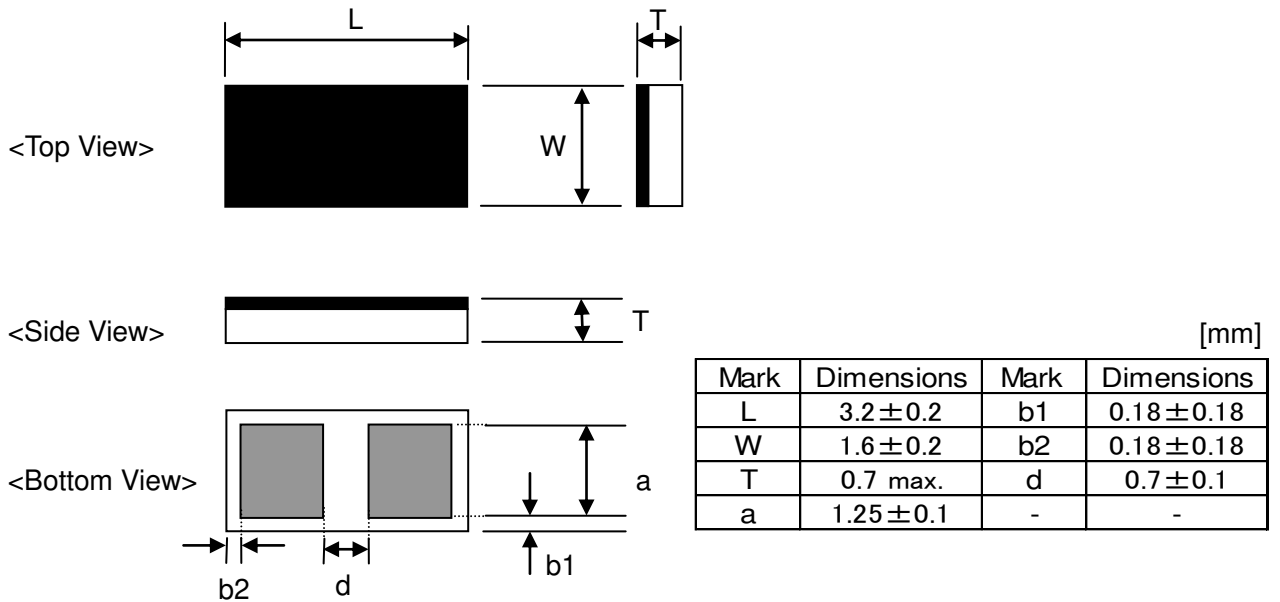
MAGICSTRAP® P/N \ Parameter	EPC Memory	User Memory	TID Memory
LXMS31ACNA – 009, 010, 011, 012	Up to 240 bits	512 bits	64 bits
LXMS31ACMD – 141, 142, 143, 144	Up to 128 bits	512 bits	96 bits

3. Block Diagram

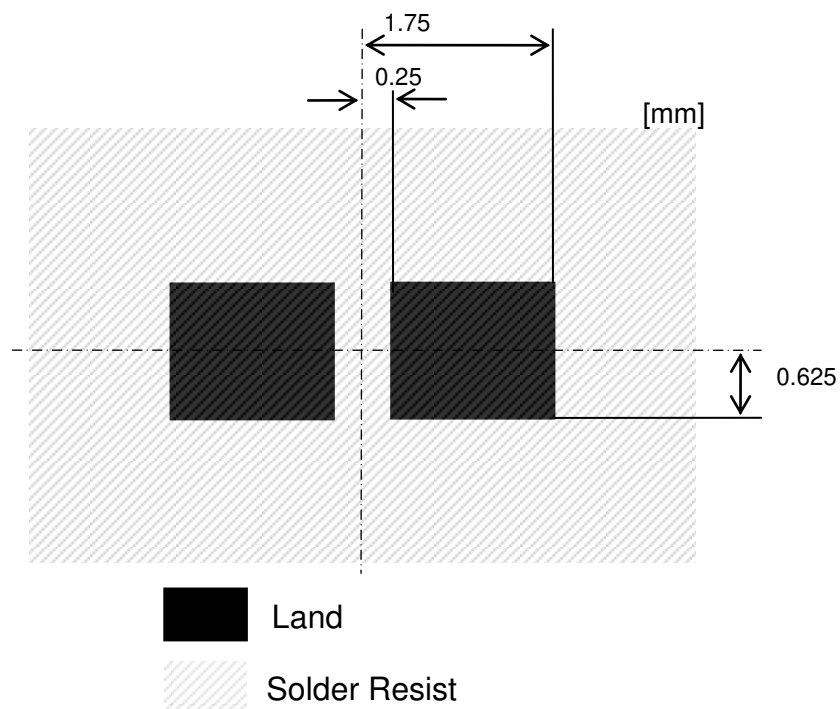


4. Mechanical Information

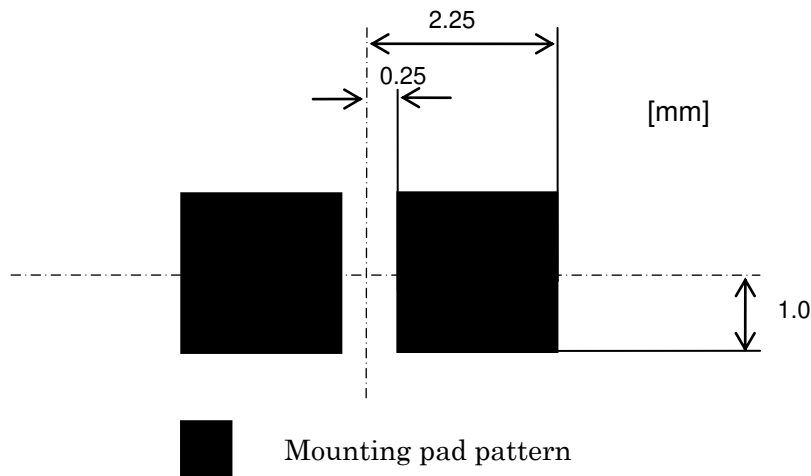
4-1. Dimensions



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

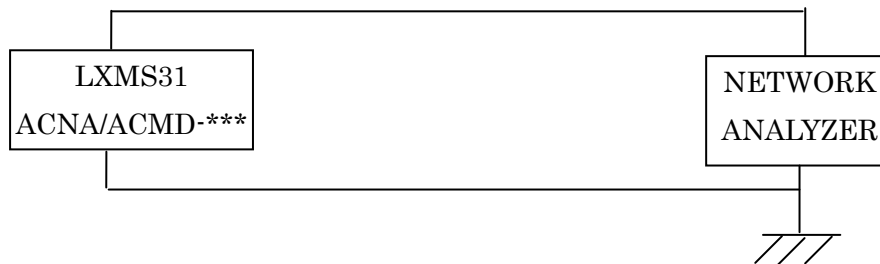
5-2. Minimum operating power

-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.

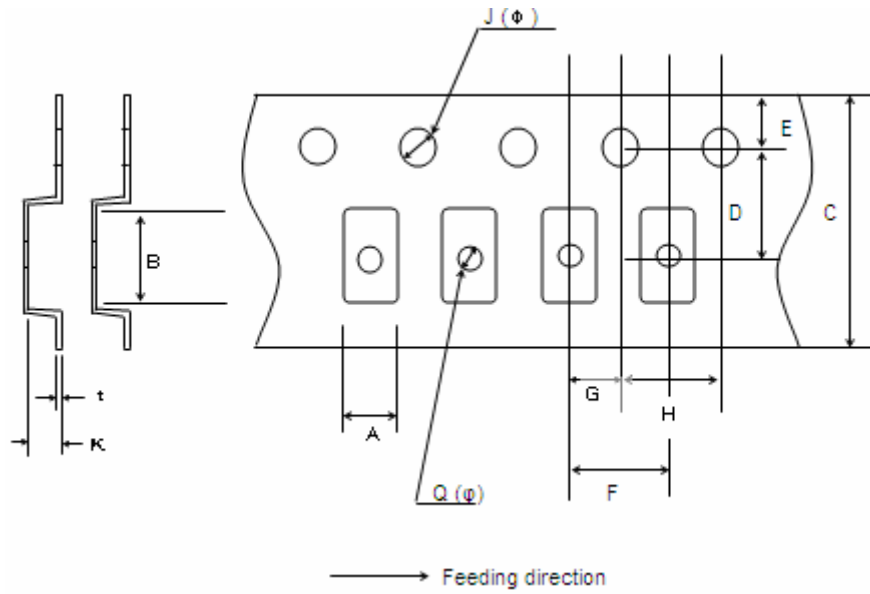
9. Tape and Reel Packing

9-1. Dimensions of Tape (Plastic tape)

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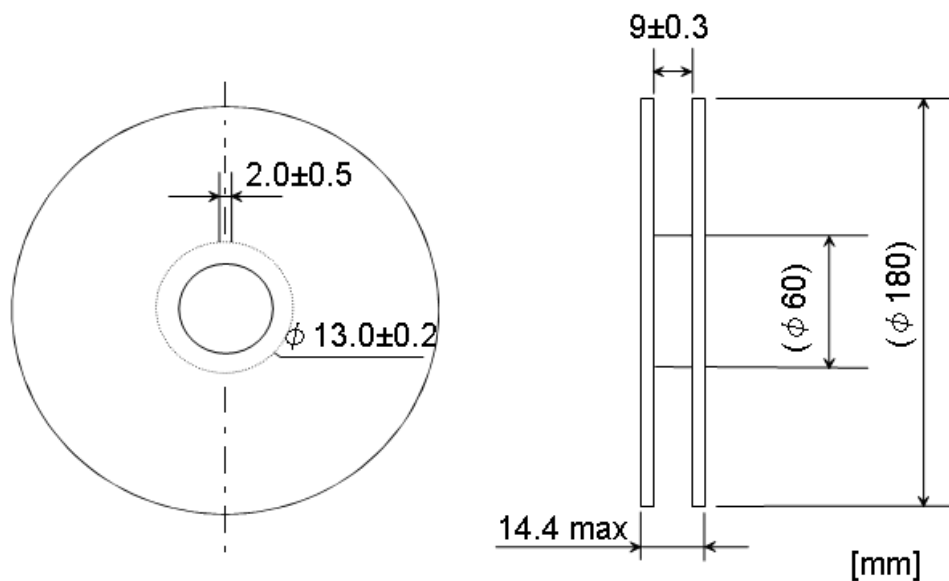
Mark	A ⁽²⁾	B ⁽²⁾	C	D	E	F ⁽¹⁾
Dimension	1.9	3.5	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1

Mark	G	H	J	K	Q	t
Dimension	2.0±0.05	4.0±0.1	1.5 ^{+0.1} ₀	0.85 max.	1.0 ^{+0.2} ₀	0.25±0.05

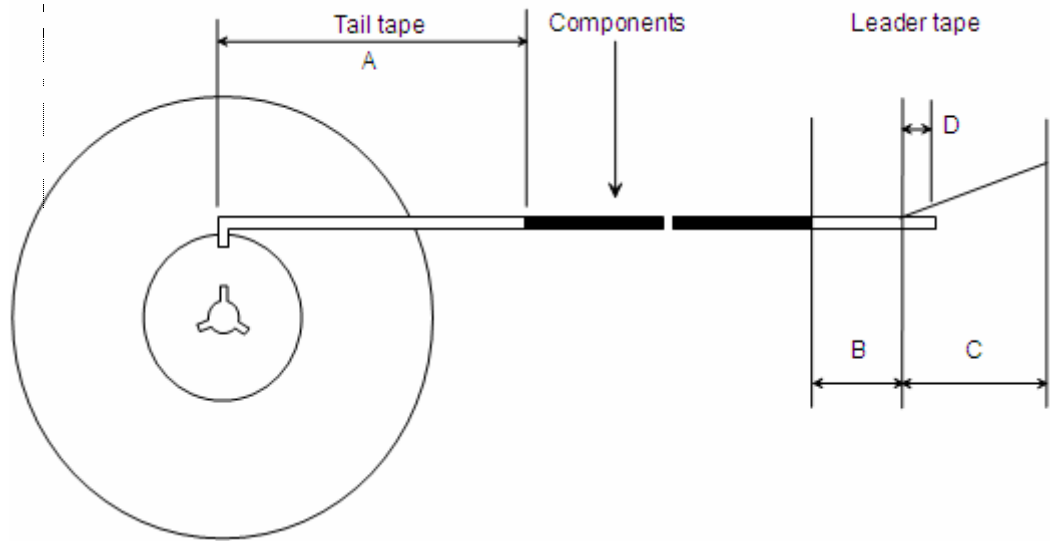
[Unit: mm]

- *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

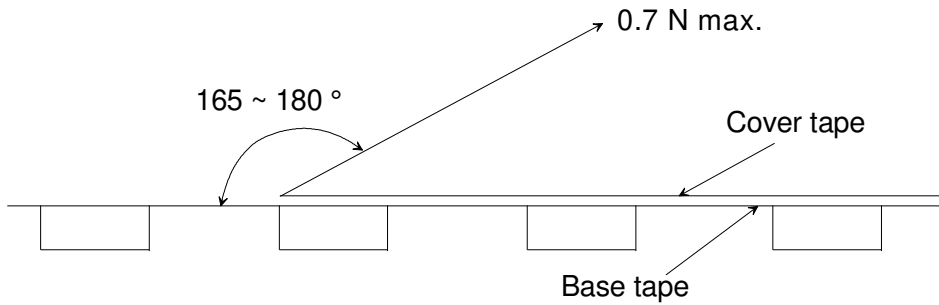
9-6 Material

material : Base tapePlastic
 ReelPlastic

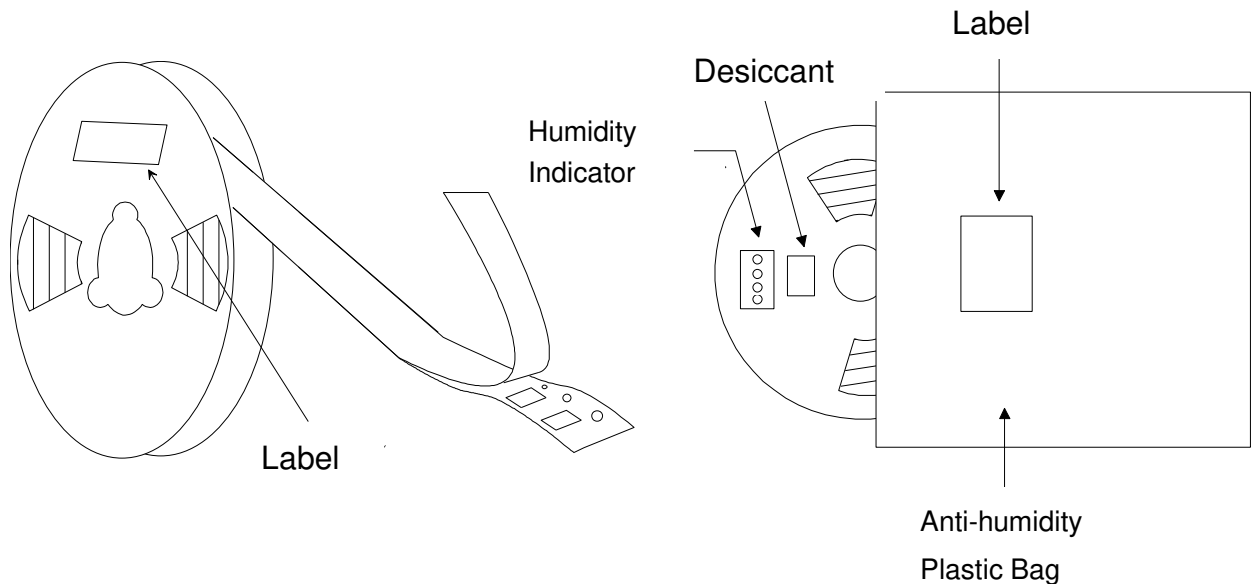
Cover tape and cavity tape are made the anti-static processing.

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