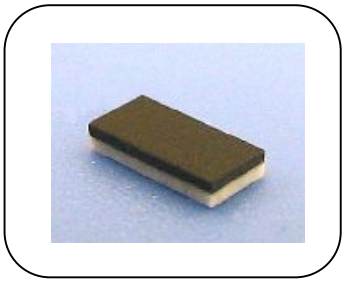
MAGICSTRAP® Technical Data Sheet

for the usage of antenna less ultra miniature tag -

Murata part number : LXMS31ACNA-012 / LXMS31ACNB-022

1. General Descriptions



Murata MAGICSTRAP® is an innovative RFID module with a wide range of RF features. It incorporates an industry standard IC. Additionally, MAGICSTRAP® also can be used as "antenna less" ultra miniature RFID tag.

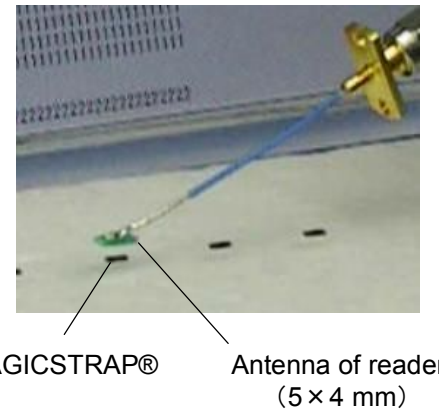
[Features]

1-1. "Antenna less" ultra miniature RFID tag.
1-2. Over 5mm read range at 1W of output.
1-3. Compliant to EPC global Class1Gen2
1-4. Ultra small package (3.2X1.6X0.55mm typ.) ensuring high durability
1-5. Supports wide frequency range from 860MHz to 960MHz, allowing to cover all globally relevant UHF frequency bands with one single design.
1-6. Compatible with plastic molding process (150°C max. over 2 hours)
1-7. Fully Compatible with conventional SMT process (Soldering/Reflow)
1-8. High ESD protection function up to 2kV (MM)
1-9. 100% green material for full RoHS compliance
1-10. Internal 512bit user memory available

[How to use]

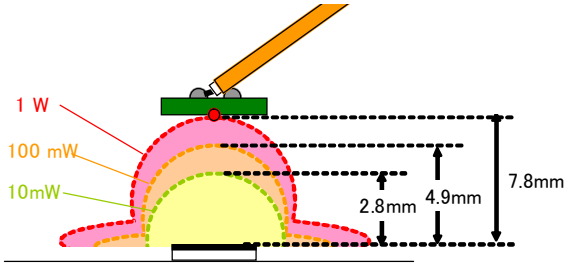
Murata channel @Youtube

→ http://www.youtube.com/watch?v=8L5WpRysSIE



MAGICSTRAP®　　Antenna of reader (5×4 mm)

Read range

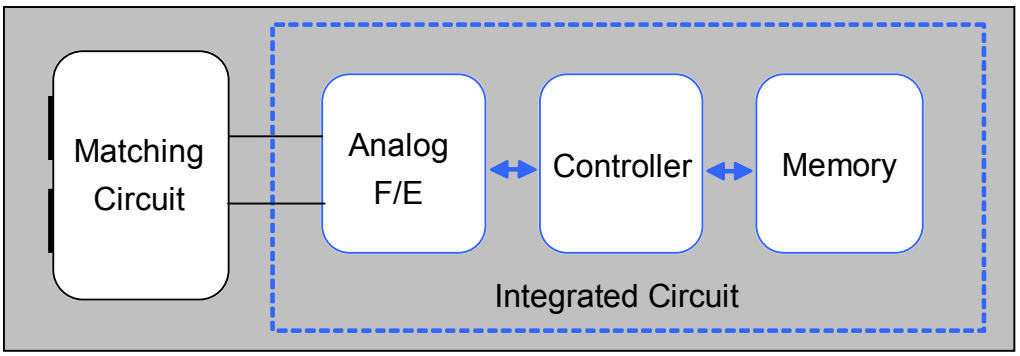


"5. electrical performance" for details.

2. Standard & Memory Capacity

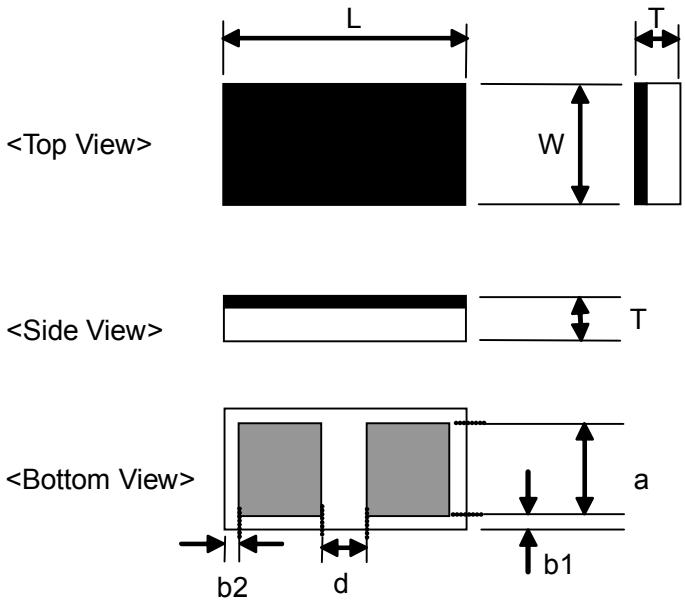
Parameter / Part Number	EPC Memory	User Memory	TID Memory
LXMS31ACNA –012	Up to 240 bits	512 bits	64 bits inc. 32 bits serial #
LXMS31ACNB –022	Up to 240 bits	-	64 bits inc. 32 bits serial #

3. Block Diagram



4. Mechanical Information

4-1. Dimensions



[mm]

Mark	Dimensions	Mark	Dimensions
L	3.2±0.2	b1	0.18±0.18
W	1.6±0.2	b2	0.18±0.18
T	0.7 max.	d	0.7±0.1
a	1.25±0.1	-	-

5. Electrical Performance

5-1. Frequency range

865 – 955 MHz

5-2. IC incorporated

NXP UCODE G2XM (PN LXMS31ACNA-012)

NXP UCODE G2XL (PN LXMS31ACNB-022).

5-3. Read area (EU band)

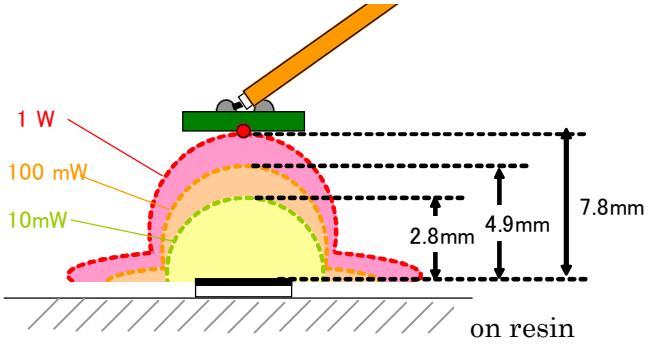
Reader/Writer：CSL-461（made by CSL）EU band

with specific antenna (refer “6. Reference Design of Antenna for Reader/Writer”)

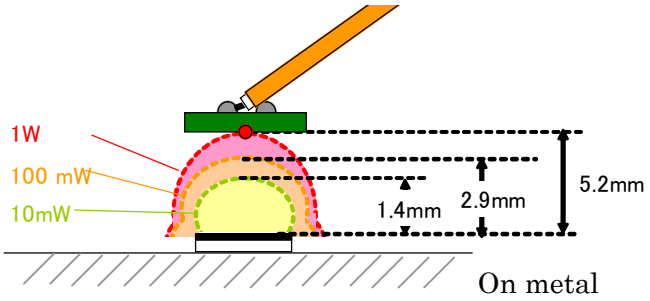
FM0 modulated

10mW (10dBm) is a value in which the attenuator of 5dB is put in output 15dBm.

＜On resin substrate＞



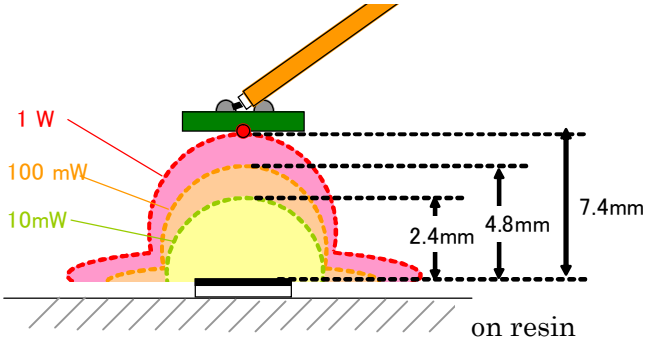
＜On metal＞



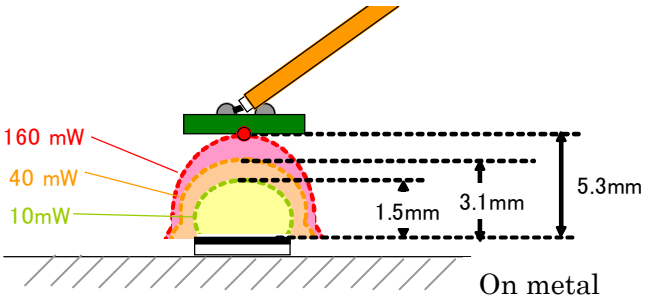
5-4. Read area (US band)

Reader/Writer：CSL-461（made by CSL）US band
with specific antenna (refer “6. Reference Design of Antenna for Reader/Writer”)
FM0 modulated
10mW (10dBm) is a value in which the attenuator of 5dB is put in output 15dBm.

＜On resin substrate＞



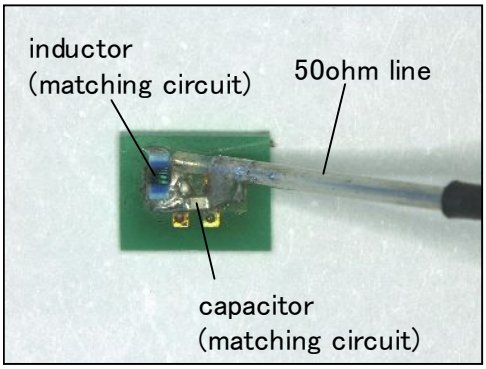
＜On metal＞

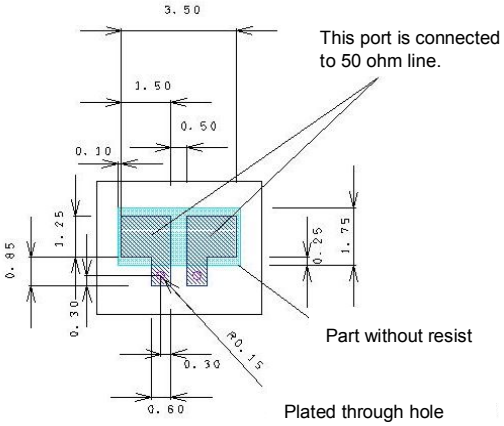


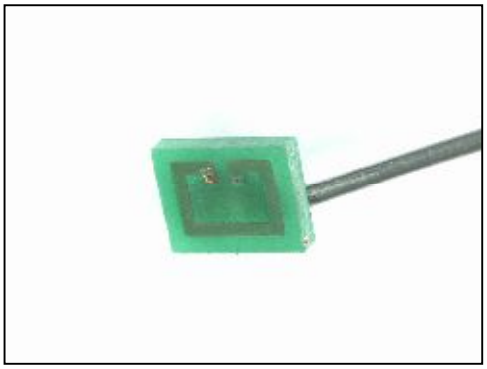
6. Reference Design of Antenna for Reader/Writer

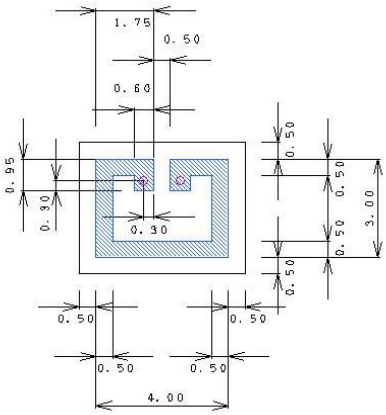
Small loop type

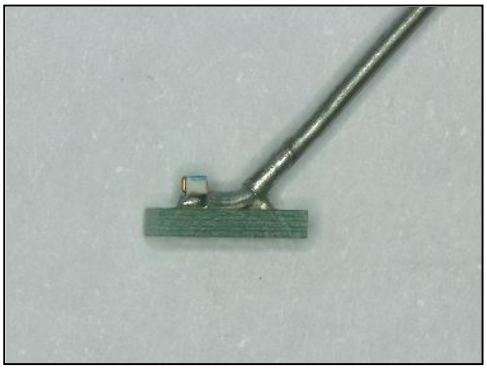
6-1. Dimension

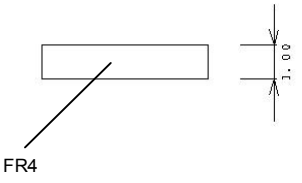






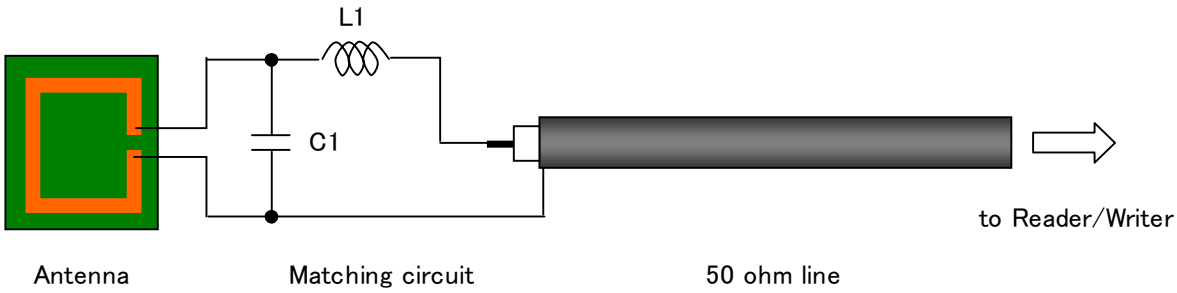






[mm]

6-2. Matching circuit



Frequency	C1	L1
866.5MHz EU	6.8pF	39nH
915MHz US	6.0pF	39nH
953MHz JP	5.6pF	39nH

Above C1 & L1 are just references. In actual setting, these values are recommend to be adjusted according to actual antenna characteristics. The best tuning balance will show the minimum return from antenna.

7. Attachment of MAGICSTRAP®

・MAGICSTRAP® can be attached with non-conductive adhesives, epoxy etc…
・Adhesion strength depends on the adhesive and the condition of surfaces.
・When following adhesives are used, please check risks of damaging MAGICSTRAP® before attachement.
  - Adhesive with large shrinking percentage
  - Adhesive that melts epoxy resin
・ Compatible with plastic molding process (150°C max. over 2 hours)
・ MAGICSTRAP® can be sensed even molded into the resin.
・ In case to be attached on metal, put bottom side of MAGICSTRAP® on the side of metal surface

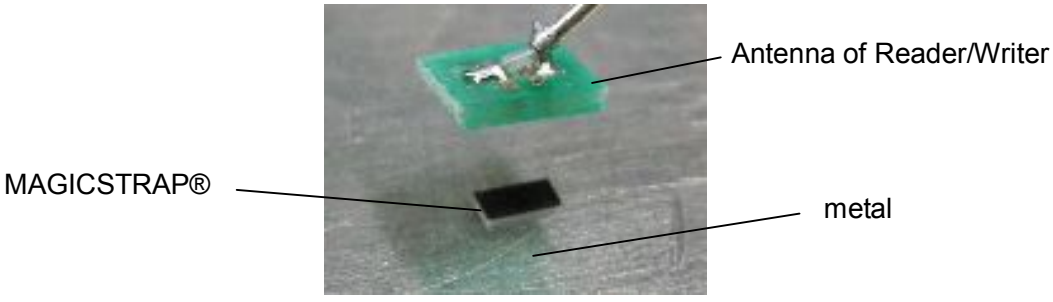


Fig. MAGICSTRAP® on metal

・When MAGICSTRAP® is covered with metal, please form the opening on the black resin side and confirm the read range. Because MAGICSTRAP® cannot be read when it is covered with metal perfectly.

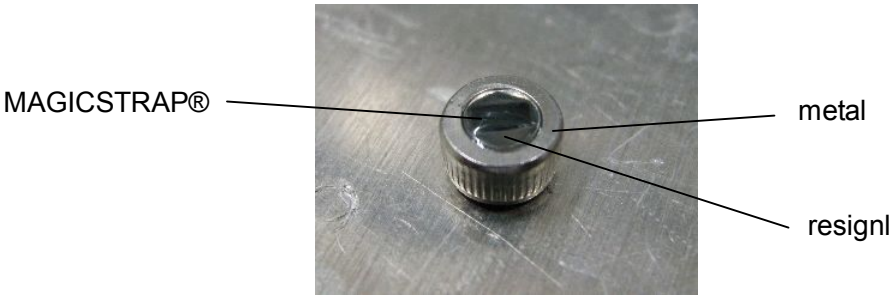


Fig. MAGICSTRAP® covered with metal

・MAGICSTRAP® has electrodes, so MAGICSTRAP® can be attached on the PCB substrate by reflow soldering in the SMT process with recommended mounting land pattern shown below.

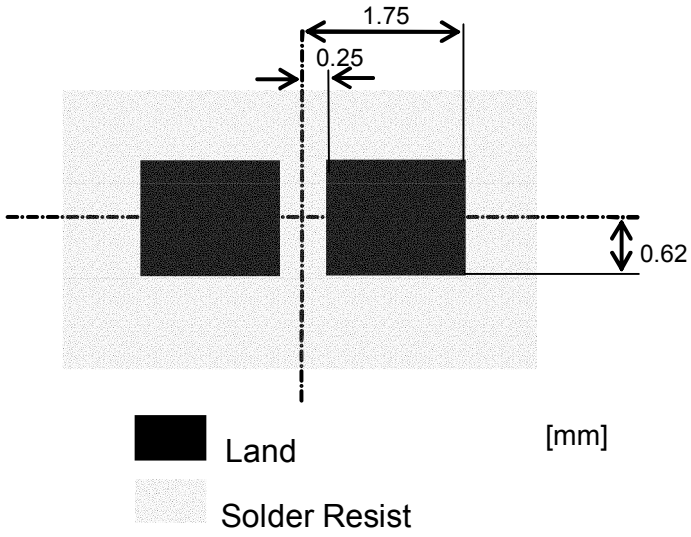


Fig. Recommended Land Pattern

8. Operating Temperature

-40 °C ~ +85 °C

9. RoHS compliance

MAGICSTRAP® is compliant to RoHS directive.

10. Tape and Reel Packing

MAGICSTRAP® is supplied by taping reel package.

10-1 Quantity per reel

Packaging unit :4000 pcs./ reel

< 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.

Contact
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Technology & Business Development Unit
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