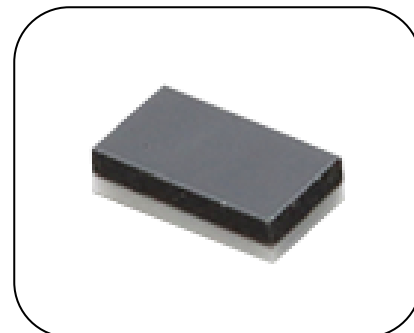


1, General Descriptions

Murata MAGICSTRAP® is an innovative RFID module which complies EPC global Gen2(v1.2.0).

This product can be used as an ultra small tag and this can be fit on any metal objects, non-metal objects, as well as embedding into any objects by glue or adhesive and so on.

This can be used globally with high performance and reliability.



[Features]

- 1-1. Compliant with ISO18000-63 and EPC global Gen2(v1.2.0)
- 1-2. Ultra small package (2.0 x 1.25 x 0.55mm)
- 1-3. Supports wide frequency range from 865MHz to 920MHz, allowing to cover all globally relevant UHF frequency bands
- 1-4. 100% green material for RoHS compliance
- 1-5. Internal 512bit user memory available.

2, MAGICSTRAP® Block Diagram

Figure.1 shows MAGICSTRAP® block diagram.

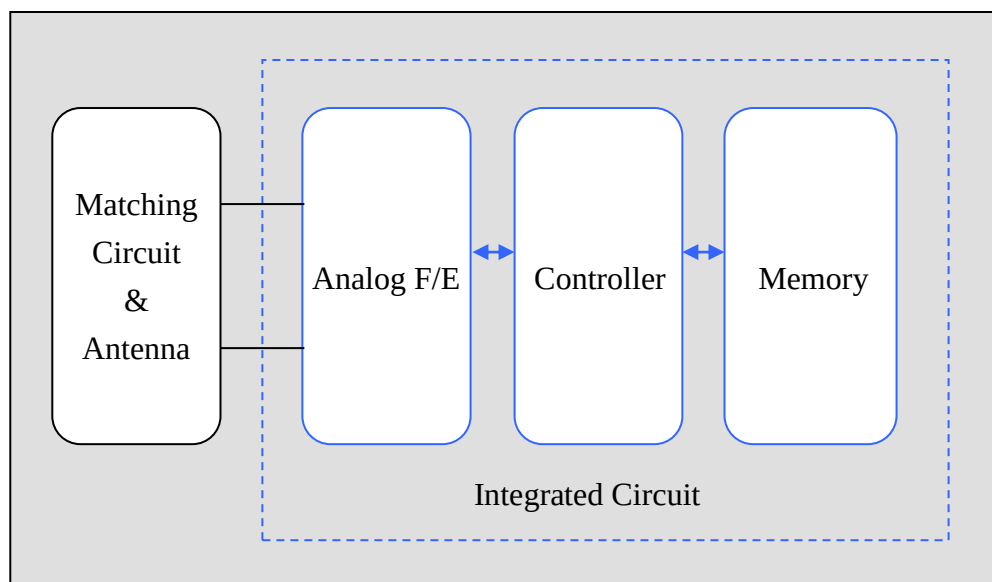


Fig.1 MAGICSTRAP®Block Diagram

3. Mechanical Information

[Dimension]

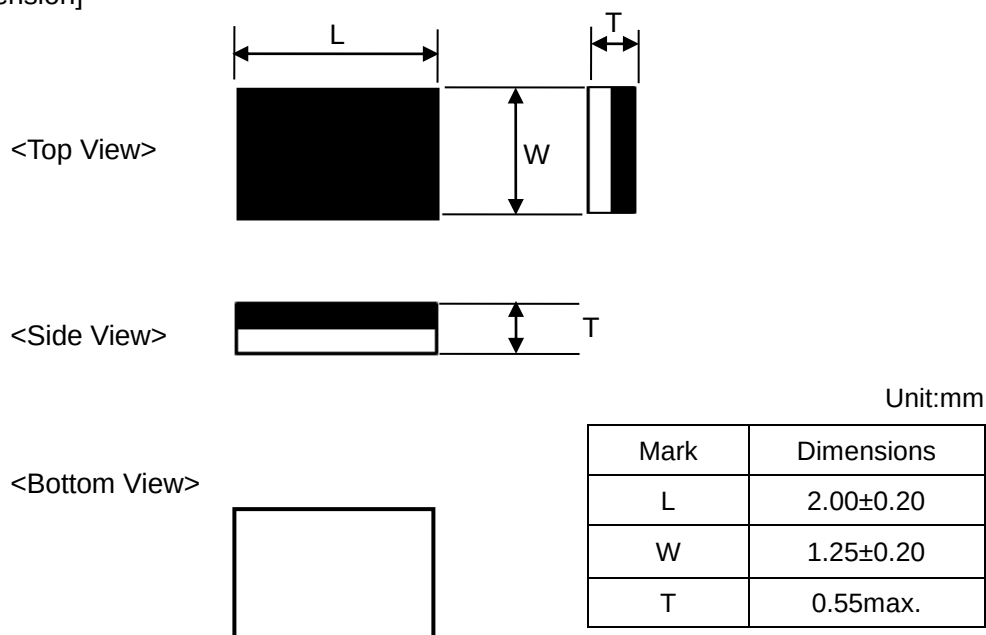


Fig.2 MAGICSTRAP® Package Dimension

4. Electrical Performance

4-1. Frequency range

865 – 928 MHz

4-2. Part number / IC / Memory size

Part number	IC	TID	EPC	User
LXMS21NCNH-147	NXP UCODE G2iM	96 bit	256 bit	512 bit

4-3. Memory characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{ret}	Retention time	$T_{amb} \leq 55^{\circ}\text{C}$	20	-	-	Year
$N_{endu(W)}$	Write endurance		1000	10000*	-	cycle

* $T_{amb} \leq 25^{\circ}\text{C}$

5. Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
T_{stg}	Storage temperature	-55	+125	$^{\circ}\text{C}$
T_a	Operating temperature	-40	+85	$^{\circ}\text{C}$

6. RoHS compliance

This product is compliant with RoHS directive

7. Reading range (reference only)

Reading range varies with Output Power of Reader/Writer and an antenna.

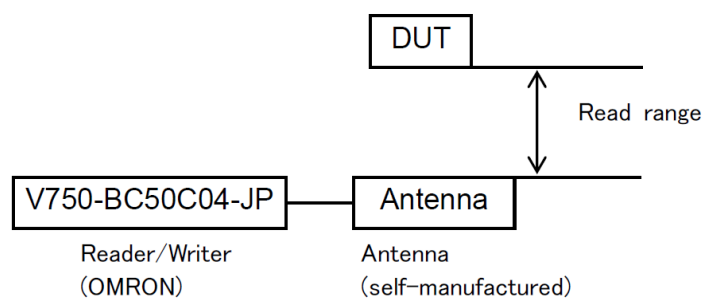
7-1. EU band

10mm

7-2. US band

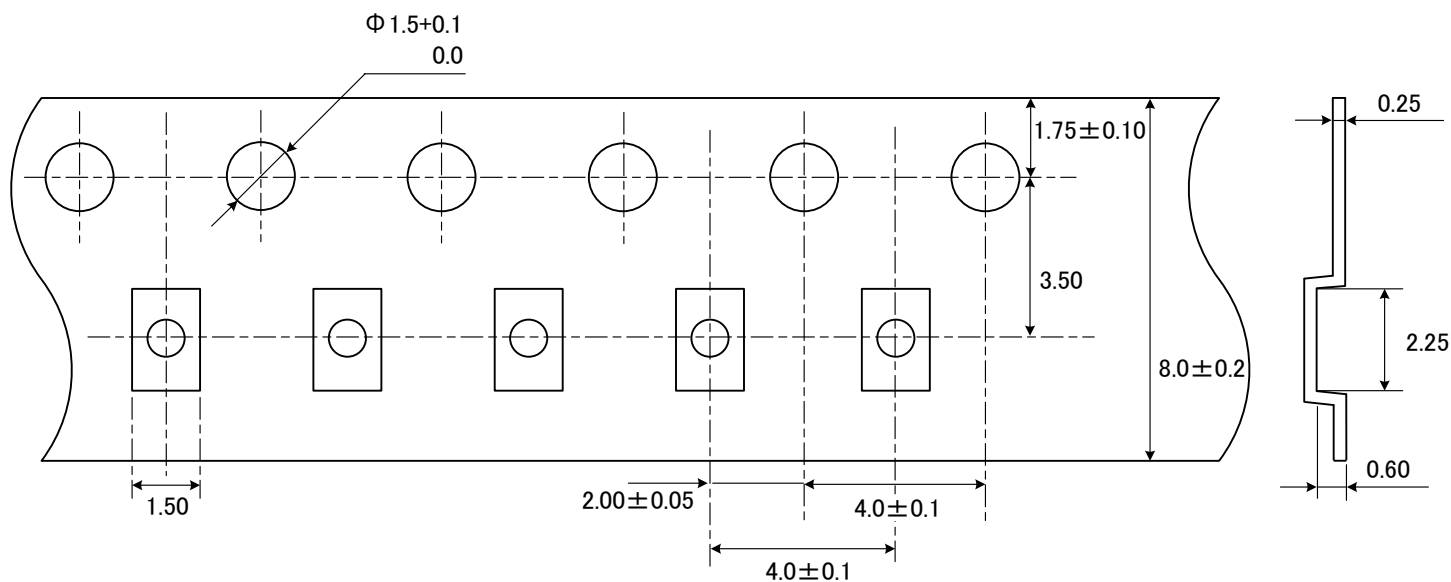
10mm

*Measurement setup



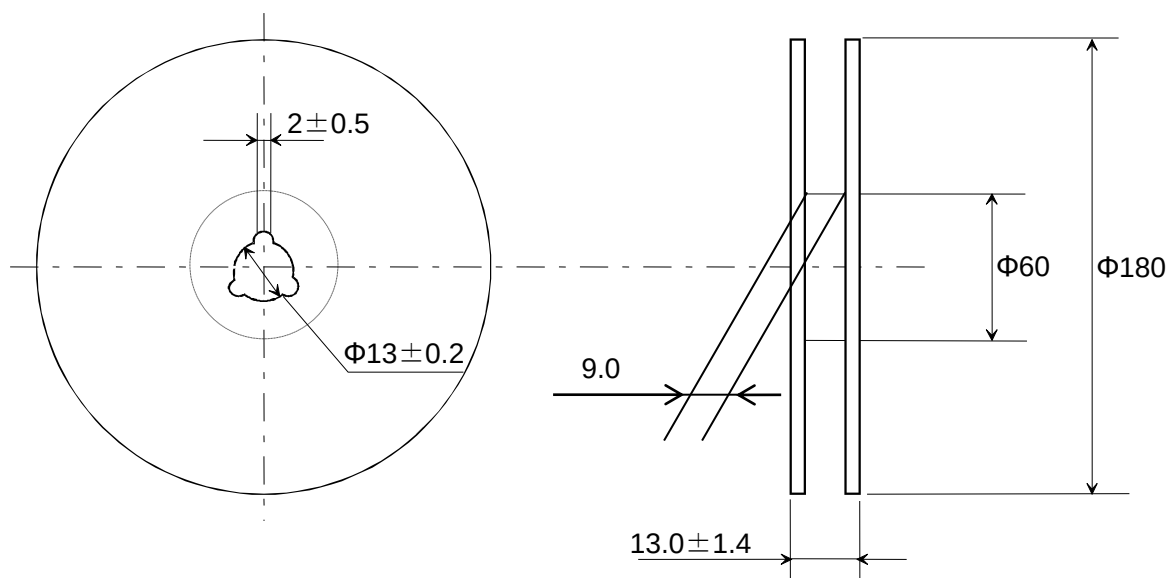
8. Packaging

8-1. Dimensions of tape (plastic tape)



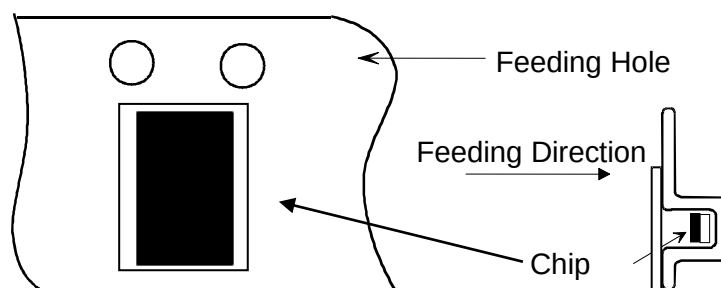
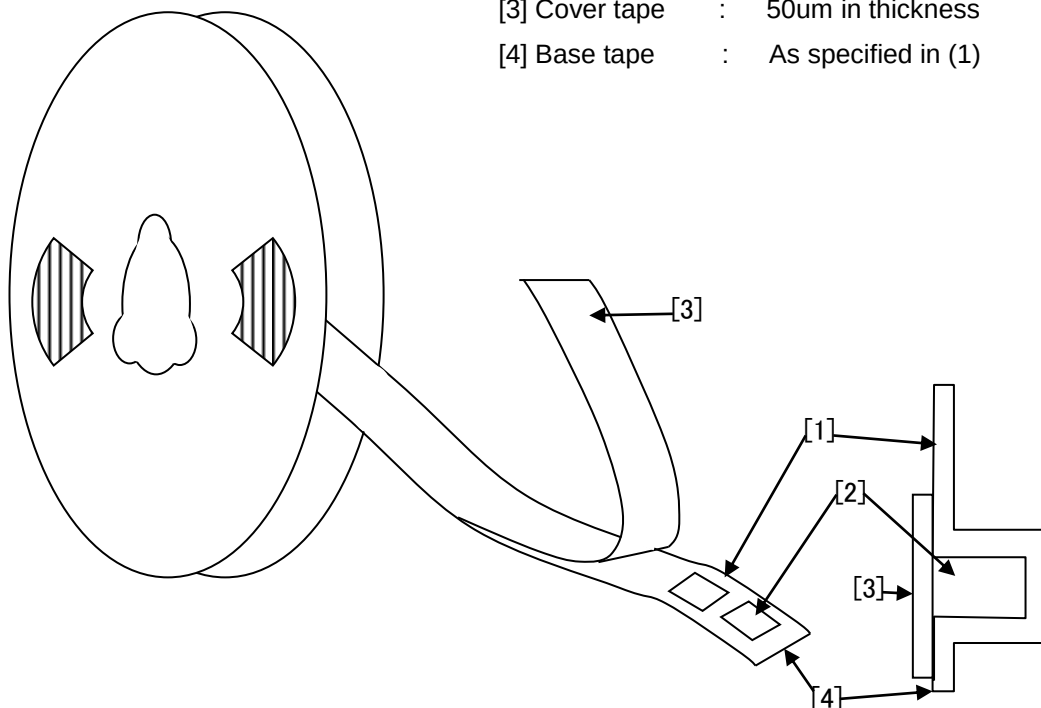
8-2. Dimensions of reel

Unit: mm



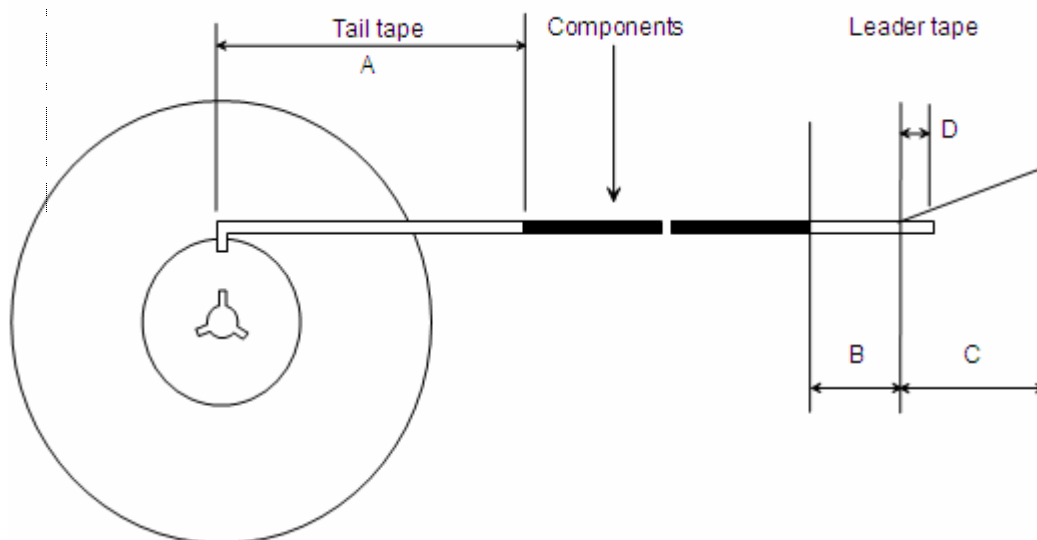
8-3.Taping Diagrams

- [1] Feeding Hole : As specified in (1)
- [2] Hole for chip : As specified in (1)
- [3] Cover tape : 50um in thickness
- [4] Base tape : As specified in (1)



Package chips

8-4. 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

8-5. Taping direction

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

8-6. Quantity per reel

5,000pcs

8-7. Minimum order quantity

5,000pcs

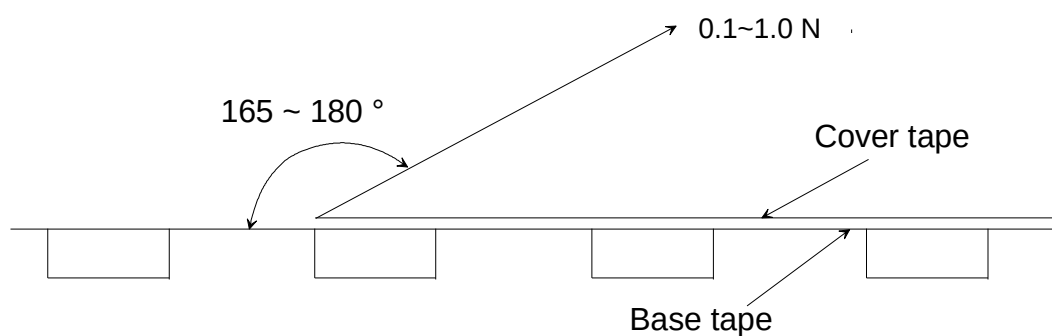
8-8. Material

Base tape: Plastic

Reel: Plastic

8-9. Peeling force

0.1~1.0 N in the direction of peeling as shown below.



9. Contact window

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

" MAGICSTRAP® " is the registered trademark of Murata Manufacturing. Co., Ltd. in Japan.

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

NOTICE

1. Storage Conditions:

To avoid damaging, be sure to observe the following points.

- Store products where the ambient temperature is 15 to 35 °C and humidity 45 to 75% RH.
(Packing materials, In particular, may be deformed at the temperature over 40 °C.).
- Store products in non corrosive gas (Cl₂, NH₃, SO₂, NO_x, etc.).
- Stored products should be used within 6 months of receipt.

This product is applicable to MSL1 (Based on IPC/JEDEC J-STD-020)

2. Handling Conditions:

Be careful in handling or transporting products because excessive stress or mechanical shock may break products due to the nature of ceramics structure.

3. Cleaning Conditions:

Any cleaning is not permitted.

4. Operational Environment Conditions:

Products are designed to work for electronic products under normal environmental conditions (ambient temperature, humidity and pressure). Therefore, products have no problems to be used under the similar conditions to the above-mentioned. However, if products are used under the following circumstances, it may damage products and leakage of electricity and abnormal temperature may occur.

- In an atmosphere containing corrosive gas (Cl₂, NH₃, SO_x, NO_x etc.).
- In an atmosphere containing combustible and volatile gases.
- In a dusty environment.
- Direct sunlight
- Water splashing place.
- Humid place where water condenses.
- In a freezing environment.

If there are possibilities for products to be used under the preceding clause, consult with Murata before actual use.

If product malfunctions may result in serious damage, including that to human life, sufficient fail-safe measures must be taken, including the following:

- (1) Installation of protection circuits or other protective device to improve system safety
- (2) Installation of redundant circuits in the case of single-circuit failure

5. Input Power Capacity:

Products shall be used in the input power capacity as specified in this specification.

Inform Murata beforehand, in case that the components are used beyond such input power capacity range.

6. Limitation of Applications:

The products are designed and produced for application in ordinary electronic equipment (AV equipment, OA equipment, telecommunication, etc). If the products are to be used in devices requiring extremely high reliability following the application listed below, you should consult with the Murata staff in advance.

- Aircraft equipment.
- Aerospace equipment
- Undersea equipment.
- Power plant control equipment.
- Medical equipment.
- Transportation equipment (vehicles, trains, ships, etc.).
- Traffic signal equipment.
- Disaster prevention / crime prevention equipment.
- Data-processing equipment.
- Application which malfunction or operational error may endanger human life and property of assets.
- Application which related to occurrence the serious damage
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.



Note:

Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.

All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.

We consider it not appropriate to include other terms and conditions for transaction warranty in product specifications, drawings or other technical documents. Therefore, even if your original part of this product specification includes such terms and conditions as warranty clause, product liability clause, or intellectual property infringement liability clause, we are not able to accept such terms and conditions in this product specification unless they are based on the governmental regulation or what we have agreed otherwise in a separate contact. We would like to suggest that you propose to discuss them under negotiation of contract.