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1-1. Features

Size:
2.5 x 2.5 x 0.4 mm

Delivery Form

Tape & Reel
1-2. Features

【Small】【High Heat Resistance】 ⇒

Apply for Reagent Bottles

Built-in Semiconductor Package

Applicable for
- Very Small Products
- Plastic Molding
- Solder Reflow

Mounted on PCB
1-3. Features

Conductive Paste/Ink

- Ink
- Paper
- PKG Tag

Coil

- Coil
- PKG Tag

Conductive Yarn

- Gauze
- Yarn
- PKG Tag

Metallic Wire

- Wire
- PKG Tag

VIDEO 1 YouTube

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Evaluation Card

Ultra Small Package UHF Tag

Please place your conductive wire here!
Approximately 5" is best.

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www.hitachi-chem.co.jp/RFID/e

As seen on
THE RFID NETWORK
Stay Tuned
RFID.net

<= Package Tag
2. Antenna Design & Case Example

Notes:

- This Design Guideline shows just a basic concept and case example.

- Booster antenna should be optimized the size and figure for each material and conditions.

- If you need help to design booster antenna, Hitachi Chemical will support it.
2-1 Booster Antenna Design 1 (Dipole Antenna)

- Antenna pattern for Al foil, Conductive Paste/Ink
- Gap < 0.25mm Contact is Best

- Antenna should be located at a edge of Tag

- Conductive Wire/Yarn
- *Length of antenna depends on material and other conditions, and must be adjust at the site.

- Gap between tag and antenna
- Gap < 0.25mm Contact is Best

- Not Good

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2-2 Case Example for linen/Apparel

PKG Tag 【Small】
+ Yarn 【Flexible】
+ Non-directly connection
= High Durability
2-3 Case Example for Reagent Bottles

Attached at bottom

With external antenna

Single Read

Multi Read

Booster antenna
2-3 Case Example for Reagent Bottles

Booster antenna at bottom of case
2-4 Booster Antenna Design 2 (Coil type)

- **Reading Range**: ~ 30cm
- **Wire Length**: approximately 150mm*

*Length of antenna depends on material and other conditions, and must be adjusted at the site.

Resin molding

【Small】【Heat resistant】

Reading Range : ~ 30cm

*Length of antenna depends on material and other conditions, and must be adjusted at the site.
Concrete Tag

[Images of concrete tags and a spiral object]

VIDEO 3 YouTube
2-5 Booster Antenna Design 3 (On-Metal Antenna)

Double-side type

- Metal Plate/Sheet
- Spacer (non-conductive)
- PKG Tag
- Metal Plate/Sheet

Reading range: ~3m

Folding back type

- PKG Tag
- Spacer (non-conductive)
- Metal Plate/Sheet

Reading range: ~2m

*Size of antenna depends on material and other conditions, and must be adjust at the site.
2-6 Case Example for On-Metal Tag (Hard type)

Nameplate type

Weldable type

*Image

*Image
2-7 Booster Antenna Design 4 (Inverted L Antenna)

【Flexible】

<table>
<thead>
<tr>
<th>Antenna Material</th>
<th>Tag type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallic foil</td>
<td>Label</td>
</tr>
<tr>
<td>Vapor-deposited film</td>
<td></td>
</tr>
</tbody>
</table>

*Size of antenna depends on material and other conditions, and must be adjust at the site.

【Non-directivity】

Read range: ~1m

At least half of the slit should be located upper the metal surface

Metal
2-8 Booster Antenna Design 5 (Slit Antenna)

<table>
<thead>
<tr>
<th>Antenna Material</th>
<th>Tag type</th>
</tr>
</thead>
</table>
| Metallic foil
  Vapor-deposited film           | Flexible |
| Metallic plate                   | Rigid    |

Read range: ~3m

**VIDEO 4**  
YouTube

*Size of antenna depends on material and other conditions, and must be adjust at the site.*
2-9 Case Example On-Metal Tag (Label type)

For Steel can

VIDEO 5 YouTube
2-10 Case example for On-Metal Tag (Slit type)

For aluminum bag

For metallic plate/case

Screw Tag

PKG Tag

Slit

Concept Sample

Fastener Tag

*Image

For aluminum bag

PKG Tag

Slit

*Image

For metallic plate/case

Screw Tag

PKG Tag

Slit

Concept Sample

Fastener Tag

*Image
Any metal plate can be booster antenna

Memory Module cover of Notebook PC

Battery cover of Mobile phone

One side of Package Tag must contact with edge of metal plate.
Read range depends on figure of metal plate and condition of each products.
2-12 Case example for Metal

For metal can

VIDEO 7 YouTube
For water valve for under ground

VIDEO 8 YouTube