FLEX SUPPRESSOR®
Magnetic Sheet for RFID
**Outline**

- Magnetic flux convergence is improved by increasing relative permeability ($\mu$) while keeping the magnetic loss ($\mu^*$) low.
- Prevents interference between a loop antenna and metallic objects, and effectively improves communication range of RFID.
- (Effective carrier frequency: 13.56MHz and below)

**Structural Diagram**

- Magnetic material layer

**Specifications**

<table>
<thead>
<tr>
<th>Features</th>
<th>High magnetic permeability type, Low magnetic loss type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>RM4A</td>
</tr>
<tr>
<td>Effective carrier frequency</td>
<td>13.56MHz 以下</td>
</tr>
<tr>
<td>Operating temperature ($^\circ$C)</td>
<td>-40 ~ +85</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>0.1, 0.2, 0.25, 0.3</td>
</tr>
<tr>
<td>Standard Dimensions (mm)</td>
<td>220x185</td>
</tr>
<tr>
<td>Specific gravity $^2$</td>
<td>3.6(typ)</td>
</tr>
<tr>
<td>Surface resistance (Ω)</td>
<td>1.0x1.0(μm)</td>
</tr>
<tr>
<td>Environment</td>
<td>Compliant</td>
</tr>
<tr>
<td>Relative magnetic permeability (13.56MHz)</td>
<td>Halogen Free, PVC Free, Lead Free</td>
</tr>
<tr>
<td>Remarks</td>
<td>Lowered impact to the environment. Halogen free.</td>
</tr>
</tbody>
</table>

$^1$ Above specifications are for FLEX SUPPRESSOR® alone, (adhesives and etc. not included) $^2$ Value in 25°C atmosphere.

**Classification**

- RM4A (01) 20 x 20 T08 00 S
  - precut type
  - Tape 2 type (With PET tape — 00: without PET tape)
  - Tape 1 type (Adhesive tape thickness — T08: 0.03mm, T15: 0.14mm, T36: 0.01mm)
  - Size (mm)
  - Thickness (01: 0.1mm, 02: 0.2mm, 025: 0.25mm, 03: 0.3mm)
  - Type

$^3$ Please contact local sales representative for detailed specification.

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- All specifications in this catalog and production status of products are subject to change without notice. Prior to the purchase, please contact TOKIN for updated product data.
- Please request for a specification sheet for detailed product data prior to the purchase.
- Before using the product in this catalog, please read “Precautions” and other safety precautions listed in the printed version catalog.
Application example

- Cell phone with RFID function
- Contactless IC card
- RFID reader/writer
- RFID tag

**Application example in the cell phone with RFID function**

- Communication distance enhancement
- Countermeasure for metal influence

**Communication distance evaluation of RFID antenna in the cell phone**

- RFID circuit board antenna for mobile phones (About 40mm×30mm)
  1. Circuit board antenna only (in open space)
  2. Circuit board antenna with a metal plate in its proximity
  3. RM4A installed between the circuit board and a metal plate
- ISO/IEC 18092 compatible Contactless reader/writer

Measurement of the maximum communication distance of both of the above (3 levels)

- Circuit board antenna only
- Circuit board antenna + metal plate
- Circuit board antenna + RM4A + metal plate

* This data does not represent guaranteed values.

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Precautions

- Avoid high-temperature, humidity and direct sunlight. Storage environment should be below 40°C and below 70% relative humidity.
- The surface resistance value listed in this catalog is a reference value of the circuit parameter to indicate noise suppression. The value does not mean the product's insulation characteristics. The value may become lower if an excess pressure is applied to the product.
- Products in this catalog are not insulators. Please handle them as conductors. When in actual use, please be careful so that conductive material does not contact the surface or the edge of FLEX SUPPRESSOR® sheet. Insulation process should be performed when contact to conductive material is probable.
- Depending upon the processing procedure, powdery substance may drop off from sheet surface or edge if the cutting of the sheet is performed at the customer side. Please be careful as this powder may effect the component's performance depending on the location.
- Clean away any dust, oil or moisture from the surface of the installing area when attaching the sheet using adhesive tape.

Guarantee of characteristic value
- Descriptions in this catalog regarding product characteristics and quality are based solely on discrete components. When using these components, be sure to check the specifications with the component in question mounted on the products.
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Information on environmentally influential substances

The FLEX SUPPRESSOR® does not contain substances listed below:

(1) Ozone depleting substance
- CFC (chlorofluorocarbon)
- Halon
- Chlorodifluoromethane
- 1,1,1-Trichloroethane
- HCFC (hydrochlorofluorocarbon)
- HBCF (hydrobromofluorocarbon)
- Methyl bromide

(2) Substances regulated by RoHS order
- Lead and lead compound
- Mercury and mercury compound
- Cadmium and cadmium compound
- (content of plastics are below 5ppm)
- Hexavalent chromium and hexavalent chromium compound
- PBB (polychlorinated biphenyl) and its kind
- PBB (polychlorinated diphenylether)

*Please contact our sales person for details.

(3) Other environmentally influential substances (examples)
- PCB (polychlorinated biphenyl)
- Polychlorinated naphthalene
- Hexachlorobenzene
- Organin compounds (tributytyl tin, triphenyl tin)
- Asbestos
- Azo compound
- Chlorinated paraffin and its kind
- Paraffin chloride, Chlorinated paraffin and chloroparaffin
- Radioactive substance
- PVC

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