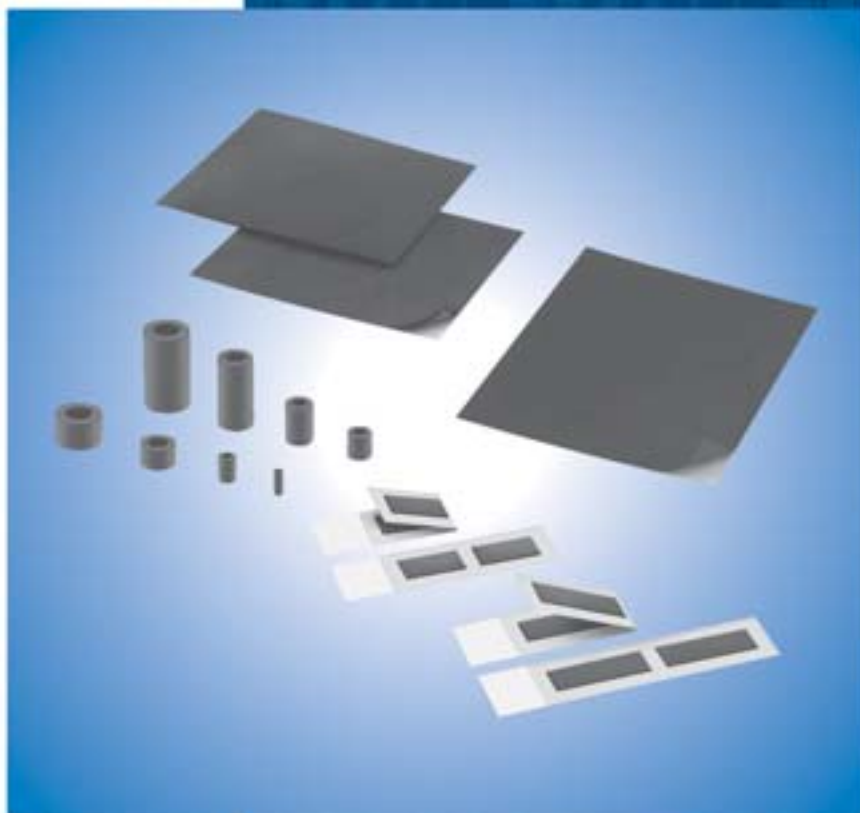


# Ferrite Core for EMI Suppression Microwave Absorber



### **EU RoHS Compliant**

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (<http://www.murata.com/info/rohs.html>).

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O63E.pdf  
Mar.12,2012

## Ferrite Core

|                                   |    |
|-----------------------------------|----|
| Part Numbering .....              | 4  |
| 1-1 Thin Type Sandwich Core ..... | 5  |
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| Standard Type .....               | 9  |
| Wide Type .....                   | 10 |
| 1-3 Beads Core .....              | 11 |
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| Data/Notice .....                 | 15 |

## ● Part Numbering

### Ferrite Core

(Part Number)

|    |    |    |   |     |    |    |   |   |
|----|----|----|---|-----|----|----|---|---|
| FS | RB | 12 | 1 | 060 | RT | B0 | 0 | T |
| ①  | ②  | ③  | ④ | ⑤   | ⑥  | ⑦  | ⑧ | ⑨ |

#### ① Product ID

| Product ID |         |
|------------|---------|
| FS         | Ferrite |

#### ② Series

| Code | Series         |
|------|----------------|
| RH   | Beads Core     |
| RB   | Ring Core      |
| RC   | for Flat Cable |
| SA   | Plate Core     |

#### ③ Dimensions (Example)

| Code | Dimensions         |
|------|--------------------|
| 12   | Approximately 12mm |
| 05   | Approximately 5mm  |

#### ④ Outer Dimension Supplement Code

| Code | Outer Dimension Supplement Code                                           |
|------|---------------------------------------------------------------------------|
| 0    | Serial number is added in case their internal diameters are not the same. |

#### ⑤ Length (Example)

| Code | Length |
|------|--------|
| 120  | 12.0mm |
| 050  | 5.0mm  |
| A50  | 1.50mm |
| B50  | 2.50mm |
| Z50  | 0.50mm |
| Z55  | 0.55mm |

Expressed by three figures or combination of a letter and two figures. A to J (except I) indicates one to nine. Z indicates Zero.

#### ⑥ Material

| Code | Material         |
|------|------------------|
| RN   | Ni-Zn $\mu=550$  |
| RT   | Ni-Zn $\mu=1600$ |
| RX   | Ni-Zn $\mu=750$  |

#### ⑦ Process

| Code  | Process                |
|-------|------------------------|
| 00    | Standard Type          |
| B0    | Barrel Type            |
| N0/N3 | Two or more cores Type |

#### ⑧ Individual Specification Code

| Code | Individual Specification Code |
|------|-------------------------------|
| 0    | Standard Type                 |

#### ⑨ Packaging

| Code | Packaging |
|------|-----------|
| B    | Bulk      |
| S    | Sheet     |
| T    | Tray      |

# Ferrite Core for EMI Suppression

**muRata**

1-1

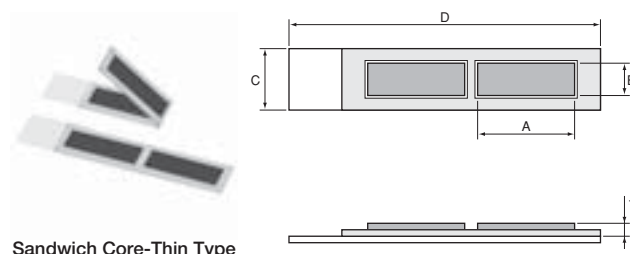
## Thin Type Sandwich Core

### ■ Features

1. Fifty percent thinner and eighty percent lighter than a conventional thin type flat cable core.
2. Effective noise suppression in a thin package.
3. Easy to attach to the data-line cable.
4. Shatterproof, with continuous noise reduction due to masking tape protection.

### ■ Applications

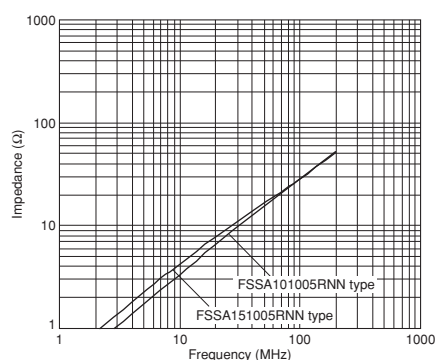
1. For data-processing equipment  
(PC, PDA, game machines, etc.),  
and peripheral equipment  
(Printer, HDD, Display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)



| Part Number             | A: Outer Dimension of Ferrite Core | B: Width Dimension | T: Thickness Dimension of Ferrite Core | C: Width of Adhesion Film | D: Length of Adhesion Film | Impedance at 100MHz | Note          |
|-------------------------|------------------------------------|--------------------|----------------------------------------|---------------------------|----------------------------|---------------------|---------------|
| <b>FSSA101005RNN00S</b> | 10.0mm $\pm$ 0.35mm                | 5.0mm $\pm$ 0.3mm  | 0.5mm $\pm$ 0.1mm                      | 9.5mm $\pm$ 0.5mm         | 35.0mm $\pm$ 0.5mm         | 28ohm (typ.)        | -             |
| <b>FSSA101005RNN30S</b> | 10.0mm $\pm$ 0.35mm                | 5.0mm $\pm$ 0.3mm  | 0.5mm $\pm$ 0.1mm                      | 9.5mm $\pm$ 0.5mm         | 35.0mm $\pm$ 0.5mm         | 28ohm (typ.)        | Tape: UL510FR |
| <b>FSSA151005RNN00S</b> | 15.0mm $\pm$ 0.35mm                | 5.0mm $\pm$ 0.3mm  | 0.5mm $\pm$ 0.1mm                      | 9.5mm $\pm$ 0.5mm         | 45.0mm $\pm$ 0.5mm         | 28ohm (typ.)        | -             |
| <b>FSSA151005RNN30S</b> | 15.0mm $\pm$ 0.35mm                | 5.0mm $\pm$ 0.3mm  | 0.5mm $\pm$ 0.1mm                      | 9.5mm $\pm$ 0.5mm         | 45.0mm $\pm$ 0.5mm         | 28ohm (typ.)        | Tape: UL510FR |

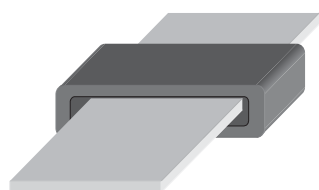
### ■ Impedance vs Frequency Characteristics

FSSA101/151RNN Type

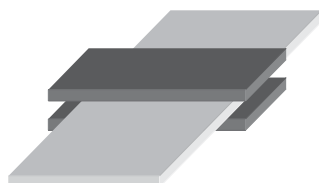


## ■ How to Use Thin Type Sandwich Core

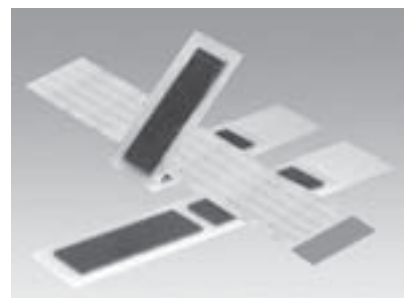
Thin Type Sandwich Core can be substituted for conventional Thin Type Flat Cable Core.



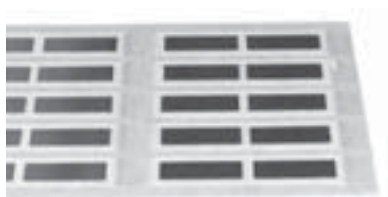
Flat Cable Core



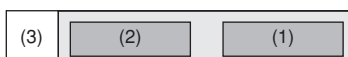
Thin Type Sandwich Cores



### Assembly Procedure Example



Suppliance form: Sheet  
 Multiple Sandwich Cores are positioned as set sticks on a provision form sheet, two cores per set. Each set can be easily removed from the sheet like a sticker.



Please attach (1) in the required place.  
 The adhesive tape allows for easy placement.



After turning up (2), the tape is affixed on both sides.  
 Once attached, (3) should be folded to complete assembly.

# Ferrite Core for EMI Suppression



## Core for Flat Cables

### Thin Type

#### ■ Features

Murata offers a wide variety of thin type small set cores providing solutions for many requirements.

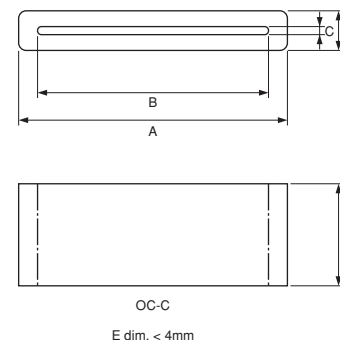
The flat ribbon cable core series has a thickness of less than 4mm, due to the core set becoming smaller and more lightweight.

The ultra-thin type core series is less than 2mm thick, making it suitable to meet various requirements.

When you require a thinner core, please choose "Thin Type Sandwich Core."



Thin Type



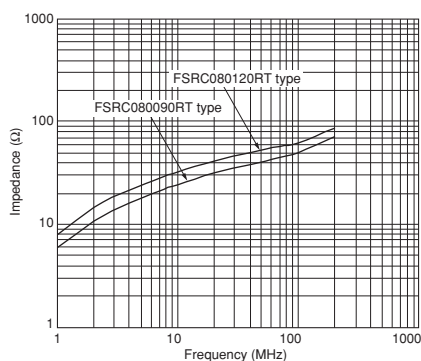
#### ■ Applications

1. For data-processing equipment  
(PC, PDA, game machine, etc.),  
and peripheral equipment  
(printer, HDD, display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)

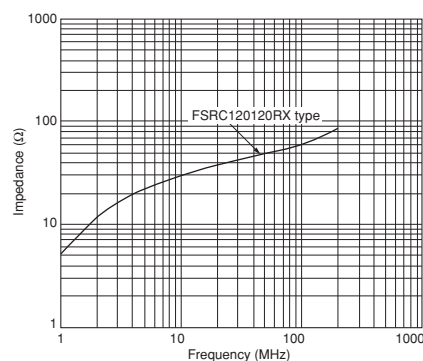
| Part Number             | A: Outer Dimension | B: Inner Dimension | H: Length Dimension | E: Width Dimension | C: Gap Dimension | Impedance at 100MHz | Number of Turns | Note      |
|-------------------------|--------------------|--------------------|---------------------|--------------------|------------------|---------------------|-----------------|-----------|
| <b>FSRC080090RTB00B</b> | 8.0mm ±0.3mm       | 6.0mm ±0.25mm      | 9.0mm ±0.25mm       | 2.7mm ±0.3mm       | 0.7mm ±0.25mm    | 51ohm (typ.)        | 1               | Thin Type |
| <b>FSRC080120RTB00B</b> | 8.0mm ±0.3mm       | 6.0mm ±0.25mm      | 12.0mm ±0.25mm      | 2.7mm ±0.3mm       | 0.7mm ±0.25mm    | 63ohm (typ.)        | 1               | Thin Type |
| <b>FSRC120120RXB00B</b> | 11.5mm ±0.5mm      | 8.0mm ±0.25mm      | 12.0mm ±0.25mm      | 3.0mm ±0.25mm      | 0.7mm ±0.25mm    | 59ohm (typ.)        | 1               | Thin Type |
| <b>FSRC171060RTB00T</b> | 17.0mm ±0.4mm      | 13.6mm ±0.4mm      | 6.0mm ±0.4mm        | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 37ohm (typ.)        | 1               | Thin Type |
| <b>FSRC171090RTB00T</b> | 17.0mm ±0.4mm      | 13.6mm ±0.4mm      | 9.0mm ±0.4mm        | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 44ohm (typ.)        | 1               | Thin Type |
| <b>FSRC171120RTB00T</b> | 17.0mm ±0.4mm      | 13.6mm ±0.4mm      | 12.0mm ±0.4mm       | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 53ohm (typ.)        | 1               | Thin Type |
| <b>FSRC222060RX000T</b> | 22.8mm ±0.5mm      | 18.7mm ±0.5mm      | 6.0mm ±0.4mm        | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 37ohm (typ.)        | 1               | Thin Type |
| <b>FSRC222090RX000T</b> | 22.8mm ±0.5mm      | 18.7mm ±0.5mm      | 9.0mm ±0.4mm        | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 46ohm (typ.)        | 1               | Thin Type |
| <b>FSRC222120RX000T</b> | 22.8mm ±0.5mm      | 18.7mm ±0.5mm      | 12.0mm ±0.4mm       | 2.8mm ±0.4mm       | 0.7mm ±0.3mm     | 53ohm (typ.)        | 1               | Thin Type |

## ■ Impedance vs Frequency Characteristics

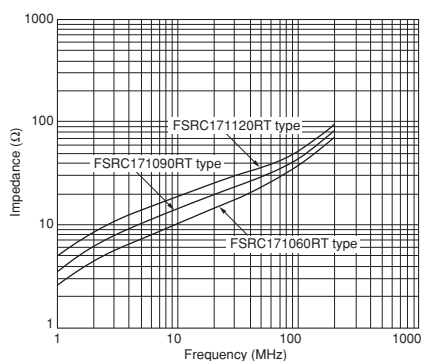
FSRC080 Type



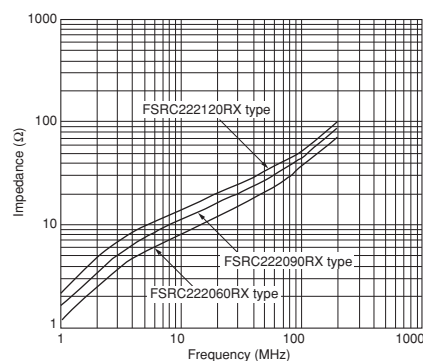
FSRC120 Type



FSRC171 Type



FSRC222 Type



## Standard Type

### ■ Features

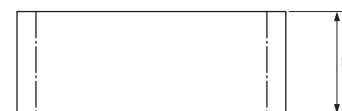
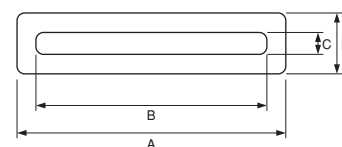
Murata offers the largest line-up of this type in the world. Our wide offering of core products enables us to meet many of today's application requirements.

### ■ Applications

1. For data-processing equipment  
(PC, PDA, game machine, etc.),  
and peripheral equipment  
(printer, HDD, display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)



Standard Type



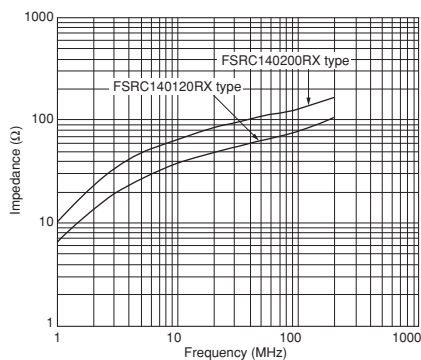
OC-B

Normal type

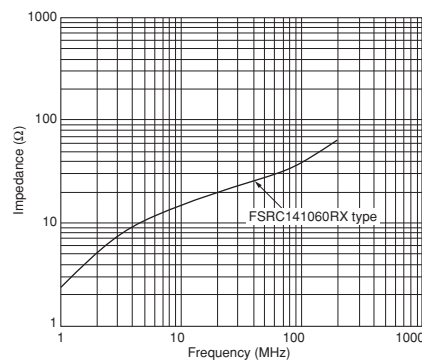
| Part Number             | A: Outer Dimension | B: Inner Dimension | H: Length Dimension | E: Width Dimension | C: Gap Dimension  | Impedance at 100MHz | Number of Turns | Note |
|-------------------------|--------------------|--------------------|---------------------|--------------------|-------------------|---------------------|-----------------|------|
| <b>FSRC140120RX000T</b> | 13.8mm $\pm$ 0.4mm | 9.6mm $\pm$ 0.4mm  | 12.0mm $\pm$ 0.4mm  | 5.0mm $\pm$ 0.4mm  | 0.8mm $\pm$ 0.4mm | 78ohm (typ.)        | 1               | -    |
| <b>FSRC140200RXB00T</b> | 13.8mm $\pm$ 0.4mm | 9.6mm $\pm$ 0.4mm  | 20.0mm $\pm$ 0.7mm  | 5.0mm $\pm$ 0.4mm  | 0.8mm $\pm$ 0.4mm | 126ohm (typ.)       | 1               | -    |
| <b>FSRC141060RXB00T</b> | 13.8mm $\pm$ 0.4mm | 10.8mm $\pm$ 0.4mm | 6.0mm $\pm$ 0.4mm   | 5.0mm $\pm$ 0.4mm  | 1.3mm $\pm$ 0.4mm | 39ohm (typ.)        | 1               | -    |
| <b>FSRC170090RTB00T</b> | 17.0mm $\pm$ 0.4mm | 13.0mm $\pm$ 0.4mm | 9.0mm $\pm$ 0.4mm   | 5.0mm $\pm$ 0.4mm  | 0.8mm $\pm$ 0.4mm | 53ohm (typ.)        | 1               | -    |
| <b>FSRC170120RT000T</b> | 17.0mm $\pm$ 0.4mm | 13.0mm $\pm$ 0.4mm | 12.0mm $\pm$ 0.4mm  | 5.0mm $\pm$ 0.4mm  | 0.8mm $\pm$ 0.4mm | 75ohm (typ.)        | 1               | -    |
| <b>FSRC240150RX000T</b> | 23.8mm $\pm$ 0.5mm | 18.8mm $\pm$ 0.5mm | 15.0mm $\pm$ 0.4mm  | 6.3mm $\pm$ 0.4mm  | 1.1mm $\pm$ 0.3mm | 76ohm (typ.)        | 1               | -    |

### ■ Impedance vs Frequency Characteristics

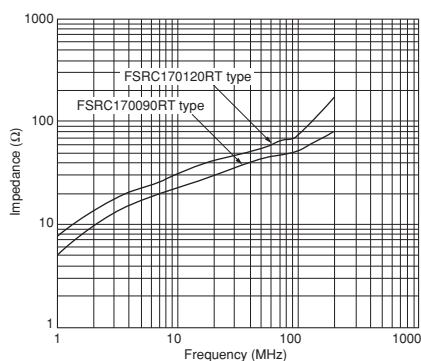
FSRC140 Type



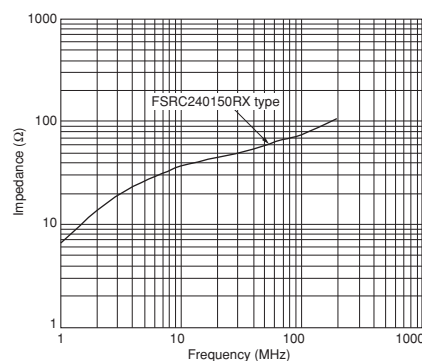
FSRC141 Type



FSRC170 Type



FSRC240 Type



## Wide Type

### ■ Features

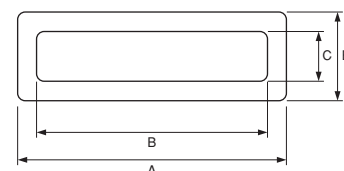
Murata offers a series of wide hold type cores as well. Flat cables are passed through and applied as a Ring core in a tiny space where the lead line and connector passes through.

### ■ Applications

1. For data-processing equipment  
(PC, PDA, game machine, etc.),  
and peripheral equipment  
(printer, HDD, display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)



Wide Hole Type



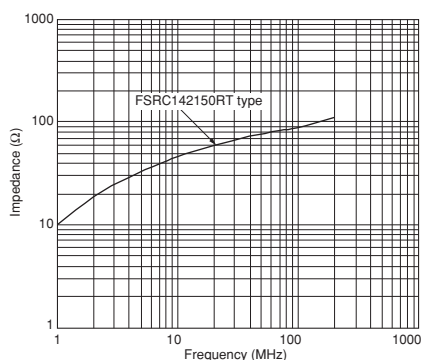
OC-A

C dim.  $\geq$  3mm

| Part Number             | A: Outer Dimension | B: Inner Dimension | H: Length Dimension | E: Width Dimension | C: Gap Dimension  | Impedance at 100MHz | Number of Turns | Note      |
|-------------------------|--------------------|--------------------|---------------------|--------------------|-------------------|---------------------|-----------------|-----------|
| <b>FSRC142150RTB00T</b> | 14.0mm $\pm$ 0.4mm | 9.0mm $\pm$ 0.4mm  | 15.0mm $\pm$ 0.5mm  | 9.0mm $\pm$ 0.4mm  | 4.0mm $\pm$ 0.4mm | 90ohm (typ.)        | 1               | Wide Type |

### ■ Impedance vs Frequency Characteristics

FSRC142 Type



# Ferrite Core for EMI Suppression

**muRata**

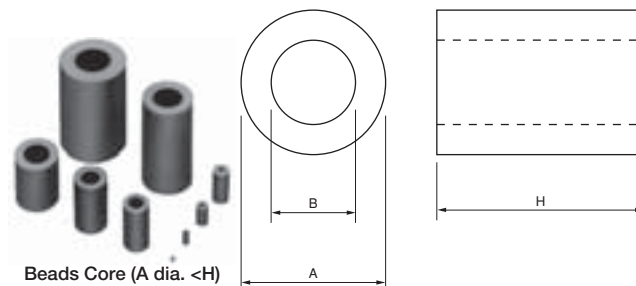
## Beads Core

### ■ Features

1. Ease of use and excellent noise suppression-data  
lines can be passed through the core or wound around several times.
2. Effective for suppressing noise at high frequencies.

### ■ Applications

1. For data-processing equipment  
(PC, PDA, game machine, etc.),  
and peripheral equipment  
(printer, HDD, display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)

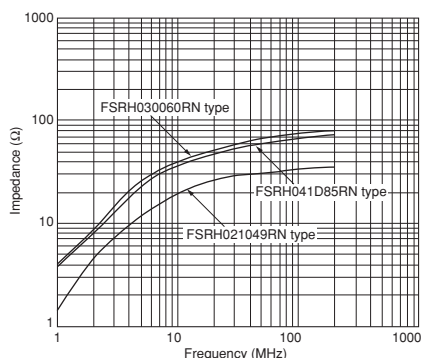


1-3

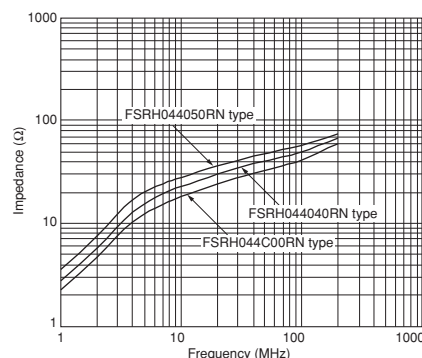
| Part Number      | Phi A: Outer Dimension | Phi B: Inner Dimension | H: Length Dimension | Impedance at 100MHz (1 turn) | Note             |
|------------------|------------------------|------------------------|---------------------|------------------------------|------------------|
| FSRH021049RNB01B | 1.95mm ±0.15mm         | 1.02mm ±0.15mm         | 4.9mm ±0.25mm       | 34ohm (typ.)                 | -                |
| FSRH030060RNB00B | 3.36mm ±0.15mm         | 1.1mm ±0.15mm          | 6.0mm ±0.2mm        | 74ohm (typ.)                 | -                |
| FSRH041D85RNB00B | 3.6mm ±0.2mm           | 1.0mm ±0.2mm           | 4.85mm ±0.2mm       | 66ohm (typ.)                 | -                |
| FSRH044C00RNB00B | 3.6mm ±0.1mm           | 1.5mm ±0.1mm           | 3.0mm ±0.15mm       | 40ohm (typ.)                 | -                |
| FSRH044040RNB00B | 3.6mm ±0.1mm           | 1.5mm ±0.1mm           | 4.0mm ±0.15mm       | 50ohm (typ.)                 | -                |
| FSRH044050RNB00B | 3.6mm ±0.1mm           | 1.5mm ±0.1mm           | 5.0mm ±0.15mm       | 53ohm (typ.)                 | -                |
| FSRH050050RN000B | 4.7mm ±0.3mm           | 1.4mm ±0.2mm           | 5.0mm ±0.3mm        | 64ohm (typ.)                 | -                |
| FSRH070080RN000B | 7.0mm ±0.3mm           | 4.0mm ±0.2mm           | 8.0mm ±0.5mm        | 59ohm (typ.)                 | -                |
| FSRH070140RN000B | 7.0mm ±0.3mm           | 4.0mm ±0.2mm           | 14.0mm ±0.5mm       | 82ohm (typ.)                 | -                |
| FSRH090100RN000B | 9.0mm ±0.3mm           | 5.0mm ±0.3mm           | 10.0mm ±0.5mm       | 72ohm (typ.)                 | For USB/IEEE1394 |
| FSRH090160RN000B | 9.0mm ±0.3mm           | 5.0mm ±0.3mm           | 16.0mm ±0.5mm       | 100ohm (typ.)                | For USB/IEEE1394 |
| FSRH090200RN000T | 9.0mm ±0.3mm           | 5.0mm ±0.3mm           | 20.0mm ±0.8mm       | 135ohm (typ.)                | For USB/IEEE1394 |
| FSRH091100RN000B | 9.0mm ±0.3mm           | 4.3mm ±0.2mm           | 10.0mm ±0.5mm       | 94ohm (typ.)                 | For USB/IEEE1394 |
| FSRH091160RN000T | 9.0mm ±0.3mm           | 4.3mm ±0.2mm           | 16.0mm ±0.5mm       | 145ohm (typ.)                | For USB/IEEE1394 |

### ■ Impedance vs Frequency Characteristics

FSRH021/030/041 Type



FSRH044 Type

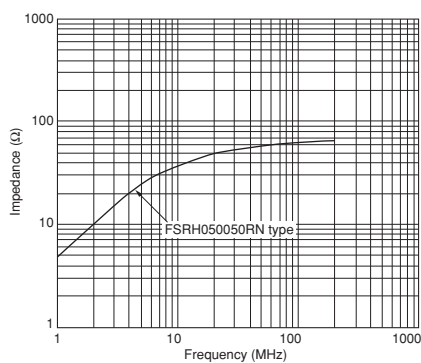


Continued on the following page. ➤

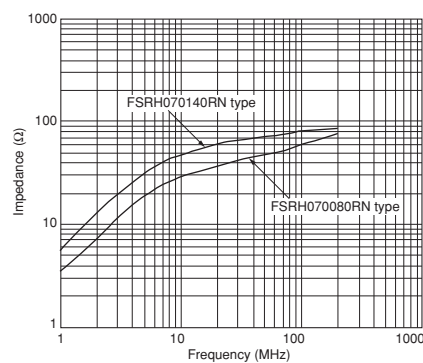
Continued from the preceding page.

## Impedance vs Frequency Characteristics

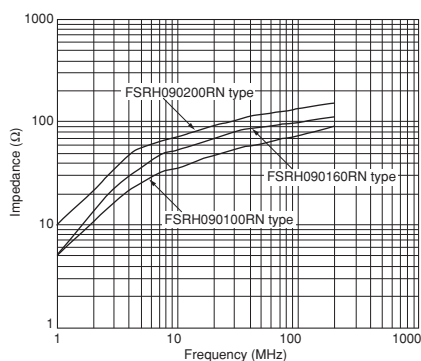
FSRH050 Type



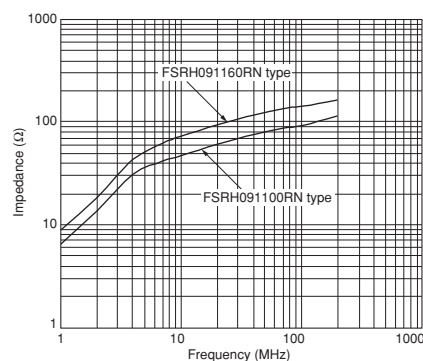
FSRH070 Type



FSRH090 Type



FSRH091 Type



# Ferrite Core for EMI Suppression

**muRata**

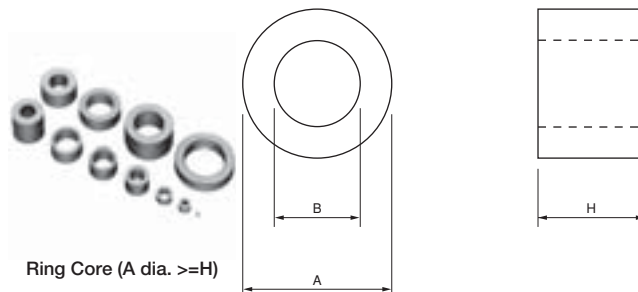
## Ring Core

### ■ Features

1. Ease of use and excellent noise suppression-data  
lines can be passed through the core or wound around several times.
2. Effective for suppressing noise at high frequencies.

### ■ Applications

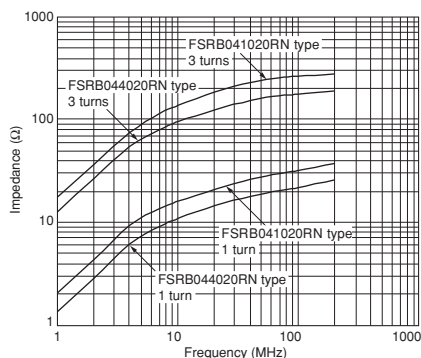
1. For data-processing equipment  
(PC, PDA, game machine, etc.),  
and peripheral equipment  
(printer, HDD, display, etc.)
2. For digital equipment  
(DSC, DVC, DVD recorder, mobile phone,  
digital audio, optical drive, PDP/LCD/FED,  
facsimile, etc.)



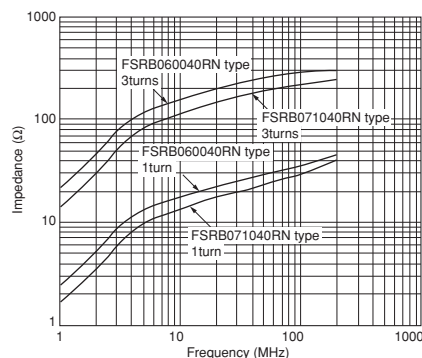
| Part Number             | Phi A: Outer Dimension | Phi B: Inner Dimension | H: Length Dimension | Impedance at 100MHz (3 turns) | Note             |
|-------------------------|------------------------|------------------------|---------------------|-------------------------------|------------------|
| <b>FSRB041020RNB00B</b> | 3.6mm $\pm 0.15$ mm    | 1.0mm $\pm 0.15$ mm    | 2.0mm $\pm 0.2$ mm  | 267ohm (typ.)                 | -                |
| <b>FSRB044020RNB00B</b> | 3.6mm $\pm 0.15$ mm    | 1.5mm $\pm 0.15$ mm    | 2.0mm $\pm 0.15$ mm | 178ohm (typ.)                 | -                |
| <b>FSRB060040RNB00B</b> | 5.5mm $\pm 0.2$ mm     | 2.7mm $\pm 0.2$ mm     | 4.0mm $\pm 0.3$ mm  | 290ohm (typ.)                 | -                |
| <b>FSRB071040RNB00B</b> | 7.0mm $\pm 0.3$ mm     | 4.0mm $\pm 0.2$ mm     | 4.0mm $\pm 0.2$ mm  | 222ohm (typ.)                 | -                |
| <b>FSRB090060RNB00B</b> | 9.0mm $\pm 0.3$ mm     | 5.0mm $\pm 0.3$ mm     | 6.0mm $\pm 0.5$ mm  | 356ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB090080RNB00B</b> | 9.0mm $\pm 0.3$ mm     | 5.0mm $\pm 0.3$ mm     | 8.0mm $\pm 0.5$ mm  | 466ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB091060RNB00B</b> | 9.0mm $\pm 0.3$ mm     | 4.3mm $\pm 0.2$ mm     | 6.0mm $\pm 0.5$ mm  | 451ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB091080RNB00B</b> | 9.0mm $\pm 0.3$ mm     | 4.3mm $\pm 0.2$ mm     | 8.0mm $\pm 0.5$ mm  | 582ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB100030RTB00B</b> | 10.0mm $\pm 0.3$ mm    | 6.0mm $\pm 0.2$ mm     | 3.0mm $\pm 0.3$ mm  | 170ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB100060RTB00B</b> | 10.0mm $\pm 0.3$ mm    | 6.0mm $\pm 0.2$ mm     | 6.0mm $\pm 0.5$ mm  | 316ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB100080RTB00B</b> | 10.0mm $\pm 0.3$ mm    | 6.0mm $\pm 0.2$ mm     | 8.0mm $\pm 0.5$ mm  | 388ohm (typ.)                 | For USB/IEEE1394 |
| <b>FSRB100100RTB00B</b> | 10.0mm $\pm 0.3$ mm    | 6.0mm $\pm 0.2$ mm     | 10.0mm $\pm 0.5$ mm | 475ohm (typ.)                 | For USB/IEEE1394 |

### ■ Impedance vs Frequency Characteristics

FSRB041/044 Type



FSRB060/071 Type

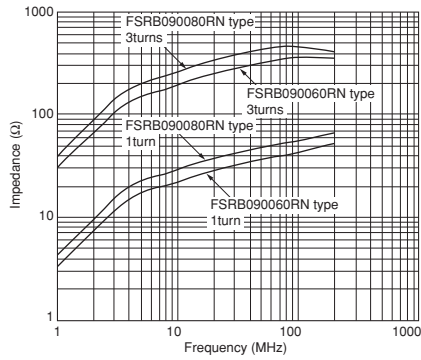


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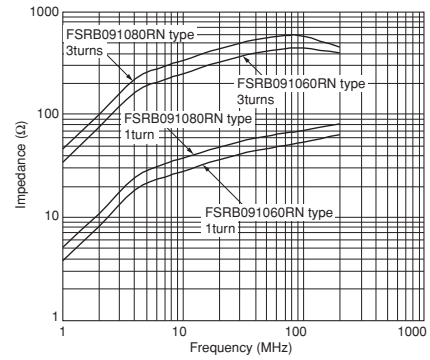
Continued from the preceding page.

## ■ Impedance vs Frequency Characteristics

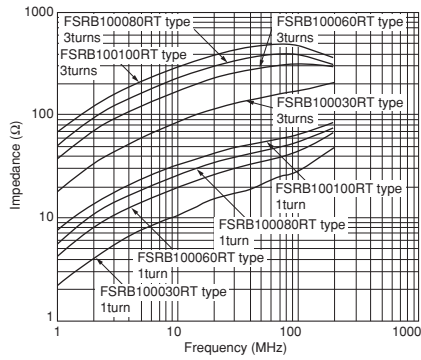
FSRB090 Type



FSRB091 Type



FSRB100 Type



1-4

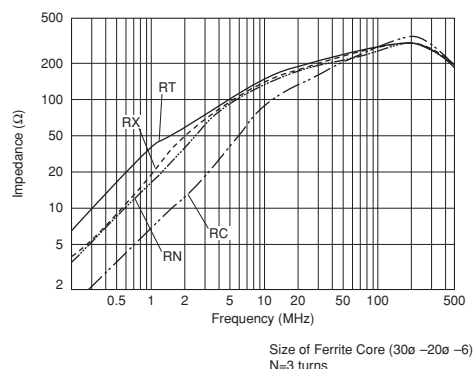
## Data/Notice

### ■ Standard Characteristics of Ferrite Materials

| Material | $\mu$ i | Bs (mT) | Tc (°C)    | $\rho$ ( $\Omega$ -m) |
|----------|---------|---------|------------|-----------------------|
| RT       | 1600    | 290     | $\geq 110$ | $>10^5$               |
| RX       | 750     | 330     | $\geq 110$ | $>10^5$               |
| RN       | 550     | 310     | $\geq 130$ | $>10^5$               |
| RC       | 250     | 320     | $\geq 140$ | $>10^5$               |

Size of Ferrite Core (30 $\phi$  - 20 $\phi$  - 6)

### ■ Ferrite Material Comparison



### ■ Notice (Storage and Operating Condition)

This product is designed for use in the following environment:

FSRH/FSRB/FSRC

Operating Temperature: -25 to 85°C

Storage Temperature: -25 to 125°C

FSSA\_S

Operating Temperature: -25 to 85°C

Storage Temperature: -25 to 85°C

Do not use in the following environments or under the following conditions:

1. Ambient air containing corrosive gas  
 (Chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxide gas, etc.)
2. In liquid
3. Other environments similar to 1 through 2

### ■ Notice (Handling)

1. Protect product from damage that may occur in transit such as cracking of the core.
2. Handle product with care. Do not drop or throw.
3. Do not apply excessive force to the product.

FSSA\_S Storage:

Store in manufacturer's package or tightly re-closed box with following conditions.

Temperature: -10 to +35°C

Humidity: 15 to 85% RH

Use this product within 6 months after receipt.

Storage in high temperature, high humidity or quick temperature change will damage the function of the tape.





|                            |    |
|----------------------------|----|
| Part Numbering .....       | 18 |
| EA10/20/21/30 Series ..... | 19 |
| EA10 Series .....          | 19 |
| EA20/21 Series .....       | 20 |
| EA30 Series .....          | 21 |
| Notice .....               | 22 |

## ● Part Numbering

### Microwave Absorber

(Part Number) 

|    |      |   |     |   |     |     |
|----|------|---|-----|---|-----|-----|
| EA | 1026 | A | 160 | M | 200 | 200 |
|----|------|---|-----|---|-----|-----|

  
1234567

#### ① Product ID

| Product ID |                    |
|------------|--------------------|
| EA         | Microwave Absorber |

#### ② Sheet Type

| Code | Sheet Type                                               |
|------|----------------------------------------------------------|
| 10□□ | Iron carbonyl type (UL certified type/Halogen Free type) |
| 2070 | Metal Flake Powder (Halogen Free type)                   |
| 2100 | Metal Flake Powder (UL certified type)                   |
| 3008 | Magnetic material (UL certified type/Halogen Free type)  |

#### ③ Adhesive Tape Type

| Code | Adhesive Tape Type                          |
|------|---------------------------------------------|
| A    | Standard tape type (Halogen Free type)      |
| B    | Thin Adhesive tape type (Halogen Free type) |
| L    | No tape type                                |
| U    | UL certified type (Halogen Free type)       |

#### ④ Outer Dimension Supplement Code

Expressed by 3 digits including the second decimal place in mm.

Ex.)

| Code | Sheet Thickness |
|------|-----------------|
| 020  | 0.20mm          |

#### ⑤ Unit of Dimension

One capital letter expresses Unit of Dimension (⑥) and Dimensions Length (⑦).

| Code | Unit of Dimension |
|------|-------------------|
| M    | in mm (Standard)  |
| C    | in cm (Standard)  |

Standard shape is a rectangle.

Please contact us for other shapes.

#### ⑥ Dimension (Length)

Expressed by 3 digits including the first decimal place.

#### ⑦ Dimension (Width)

Expressed by 3 digits including the first decimal place.

Ex.)

| Code    | Dimension (Length × Width) |
|---------|----------------------------|
| M300150 | 30.0 × 15.0 mm             |
| C150100 | 15.0 × 10.0 cm             |

"Halogen Free" is defined to satisfy following condition for Microwave Absorber listed in this catalog.

1. Chlorine will not exceed 900ppm.
2. Bromine will not exceed 900ppm.
3. The total amount of chlorine and bromine will not exceed 1500ppm.

# Microwave Absorber

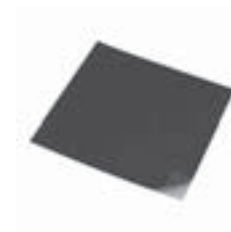


## EA10/20/21/30 Series

### EA10 Series

#### ■ Features

1. Excellent elasticity and durability with silicon rubber
2. Suitable for prevention of abnormal oscillation in high frequency modules, suppression of spurious spectra and prevention of interference between circuits
3. Holds easily in equipment with adhesive tape

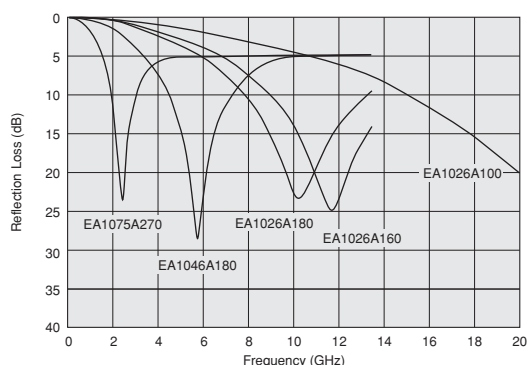


EA10 Series

When inquiring, please contact us with size code, referring to "Part Numbering."

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Resistance | Halogen      | Operating Temperature Range |
|-------------|-----------------------------|------------------|------------------|--------------|-----------------------------|
| EA1026A100  | 20.0GHz                     | 1.0mm            | UL94V-0          | Halogen Free | -40 to +80°C                |
| EA1026A160  | 11.5GHz                     | 1.6mm            | UL94V-0          | Halogen Free | -40 to +80°C                |
| EA1026A180  | 10.0GHz                     | 1.8mm            | UL94V-0          | Halogen Free | -40 to +80°C                |
| EA1046A180  | 5.8GHz                      | 1.8mm            | UL94V-0          | Halogen Free | -40 to +80°C                |
| EA1075A270  | 2.5GHz                      | 2.7mm            | UL94V-0          | Halogen Free | -40 to +80°C                |

#### ■ Reflection Loss



## EA20/21 Series

### ■ Features

1. Magnetically shielded high-micro and high-loss characteristics can suppress noise in a wide frequency band for digital equipment.
2. Thin (0.2mm-1.0mm) and flexible sheet provides easy handling in assembly process.
3. Holds easily in equipment with adhesive tape
4. EA20xx series: Halogen Free type  
EA21xx series: UL94V-0 certified material is used

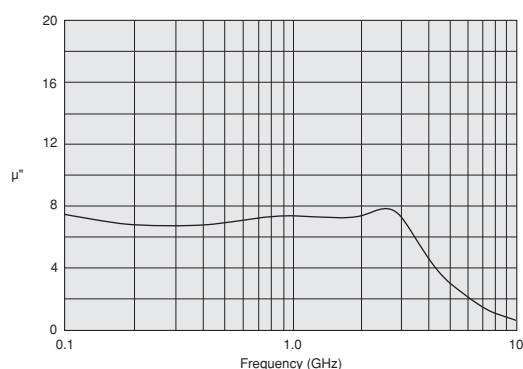


EA20/21 Series

When inquiring, please contact us with size code, referring to "Part Numbering."

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Resistance | Halogen      | Operating Temperature Range |
|-------------|-----------------------------|------------------|------------------|--------------|-----------------------------|
| EA2070A020  | 0.1 to 3.0GHz               | 0.20mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070A050  | 0.1 to 3.0GHz               | 0.50mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070A100  | 0.1 to 3.0GHz               | 1.00mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070B005  | 0.1 to 3.0GHz               | 0.05mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070B010  | 0.1 to 3.0GHz               | 0.10mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070B013  | 0.1 to 3.0GHz               | 0.13mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070B020  | 0.1 to 3.0GHz               | 0.20mm           | -                | Halogen Free | -40 to +120°C               |
| EA2070B050  | 0.1 to 3.0GHz               | 0.50mm           | -                | Halogen Free | -40 to +120°C               |
| EA2100A020  | 0.1 to 3.0GHz               | 0.20mm           | UL94V-0          | -            | -40 to +120°C               |
| EA2100A050  | 0.1 to 3.0GHz               | 0.50mm           | UL94V-0          | -            | -40 to +120°C               |
| EA2100A100  | 0.1 to 3.0GHz               | 1.00mm           | UL94V-0          | -            | -40 to +120°C               |
| EA2100B020  | 0.1 to 3.0GHz               | 0.20mm           | UL94V-0          | -            | -40 to +120°C               |
| EA2100B050  | 0.1 to 3.0GHz               | 0.50mm           | UL94V-0          | -            | -40 to +120°C               |
| EA2100B100  | 0.1 to 3.0GHz               | 1.00mm           | UL94V-0          | -            | -40 to +120°C               |

### ■ Magnetic Permeability - Reluctance (Typical)



EA30 Series

■ Features

1. EMC Absorber magnetically shields and suppresses noise of digital equipment.
2. Flexible sheet allows easy handling in assembly process.
3. Holds easily in equipment with adhesive tape.
4. Halogen free and UL94V-0 certified materials are used.

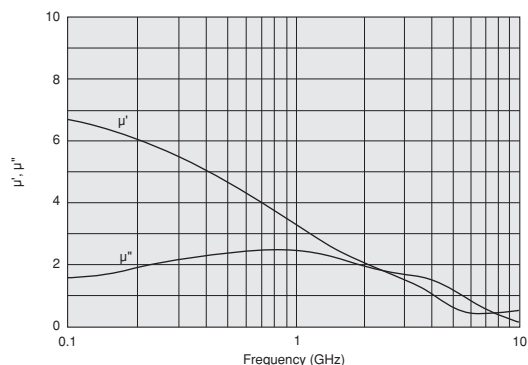


EA30 Series

When inquiring, please contact us with size code, referring to "Part Numbering."

| Part Number | Applicable Frequency (Typ.) | Thickness (Typ.) | Flame Resistance | Halogen      | Operating Temperature Range |
|-------------|-----------------------------|------------------|------------------|--------------|-----------------------------|
| EA3008U025  | 0.1 to 3.0GHz               | 0.25mm           | UL94V-0          | Halogen Free | -40 to +120°C               |
| EA3008U035  | 0.1 to 3.0GHz               | 0.35mm           | UL94V-0          | Halogen Free | -40 to +120°C               |
| EA3008U050  | 0.1 to 3.0GHz               | 0.50mm           | UL94V-0          | Halogen Free | -40 to +120°C               |
| EA3008U100  | 0.1 to 3.0GHz               | 1.00mm           | UL94V-0          | Halogen Free | -40 to +120°C               |
| EA3008U250  | 0.1 to 3.0GHz               | 2.50mm           | UL94V-0          | Halogen Free | -40 to +120°C               |

■ Magnetic Permeability - Reluctance (Typical)



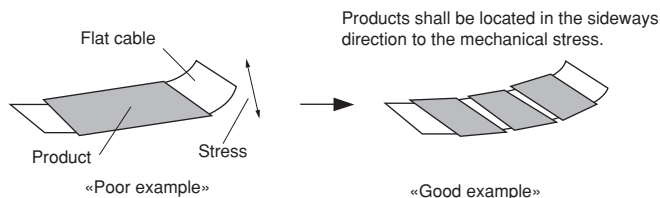
## Notice

### ■ Notice (Storage and Operating Conditions)

#### 1. Adhesive Tape Stress

This product is designed to use adhesive tape to hold itself to the object.

And please avoid causing mechanical stress by bending or variation of the object.



#### 2. Cleaning

Avoid cleaning this product.

#### 3. Handling of the product

Adhesive tape must be clean to maintain the quality of adhesion. Please wipe off any dirt, dust and any kind of oil from the surface of the object before use.

#### 4. Storage Conditions

##### (1) Storage period

Products that were inspected by Murata over 6 months ago should be examined and used. This can be confirmed by the inspection No. marked on the container. Adhesiveness should be checked if this period is exceeded.

##### (2) Storage conditions

- Products should be stored in the warehouse in the following conditions:
  - Temperature: -10 to 40°C
  - Humidity: 30 to 70% relative humidity
  - No rapid change of temperature or humidity
- Products should be stored in the warehouse without heat shock condition, vibration, direct sunlight and so on.

⚠Note:

1. Export Control

<For customers outside Japan>

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<For customers in Japan>

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- |                             |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| ① Aircraft equipment        | ② Aerospace equipment                                                                                |
| ③ Undersea equipment        | ④ Power plant equipment                                                                              |
| ⑤ Medical equipment         | ⑥ Transportation equipment (vehicles, trains, ships, etc.)                                           |
| ⑦ Traffic signal equipment  | ⑧ Disaster prevention / crime prevention equipment                                                   |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

3. Product specifications in this catalog are as of January 2012. They are 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. If there are any questions, please contact our sales representatives or product engineers.

4. Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

6. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.



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| <a href="#"><u>FSRH090100RN000B</u></a> | <a href="#"><u>FSRH090160RN000B</u></a> | <a href="#"><u>FSRH090200RN000T</u></a> | <a href="#"><u>FSRH091100RN000B</u></a> | <a href="#"><u>FSRH091160RN000T</u></a> |
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| <a href="#"><u>FSRH121200RT000T</u></a> | <a href="#"><u>FSRH121250RT000T</u></a> | <a href="#"><u>FSRH142150RX000T</u></a> | <a href="#"><u>FSRH142200RX000T</u></a> | <a href="#"><u>FSRH142280RX000T</u></a> |
| <a href="#"><u>FSRH162200RN000T</u></a> | <a href="#"><u>FSRH162280RN000T</u></a> | <a href="#"><u>FSRH190285RT000T</u></a> | <a href="#"><u>FSRB041020RNB00B</u></a> | <a href="#"><u>FSRB060040RNB00B</u></a> |
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| <a href="#"><u>FSRC080120RTB00B</u></a> | <a href="#"><u>FSRC100030RTB00B</u></a> | <a href="#"><u>FSRC100040RTB00B</u></a> | <a href="#"><u>FSRC100050RTB00B</u></a> | <a href="#"><u>FSRC100060RTB00B</u></a> |
| <a href="#"><u>FSRC120020RXB00B</u></a> | <a href="#"><u>FSRC120050RXB00B</u></a> | <a href="#"><u>FSRC120060RXB00B</u></a> | <a href="#"><u>FSRC120090RXB00B</u></a> | <a href="#"><u>FSRC120120RXB00B</u></a> |
| <a href="#"><u>FSRC140030RXB00T</u></a> | <a href="#"><u>FSRC140060RXB00T</u></a> | <a href="#"><u>FSRC140090RXB00T</u></a> | <a href="#"><u>FSRC140120RX000T</u></a> | <a href="#"><u>FSRC141060RXB00T</u></a> |
| <a href="#"><u>FSRC141120RXB00T</u></a> | <a href="#"><u>FSRC142150RTB00T</u></a> | <a href="#"><u>FSRC150030RTB00B</u></a> | <a href="#"><u>FSRC150040RTB00B</u></a> | <a href="#"><u>FSRC150050RTB00B</u></a> |
| <a href="#"><u>FSRC150060RTB00B</u></a> | <a href="#"><u>FSRC160040RTB00T</u></a> | <a href="#"><u>FSRC170030RTB00T</u></a> | <a href="#"><u>FSRC170060RTB00T</u></a> | <a href="#"><u>FSRC170090RTB00T</u></a> |