

EMI Ferrite Bead



BBSJ Series



Overview

EMI ferrite beads are made of ferrite material, which can block high-frequency noise while allowing required signals to pass through, providing high impedance and noise attenuation to improve signal integrity/efficiency and reduce power loss.

Benefits

1. Compliance with EMI regulations.
2. Reduced power loss and improved system efficiency
3. Operating temperature range: -55 ~ +125°C
4. Improved signal integrity

Applications

1. Wearable Devices
2. Industrial
3. Communications
4. Consumer Electronics

Product Information

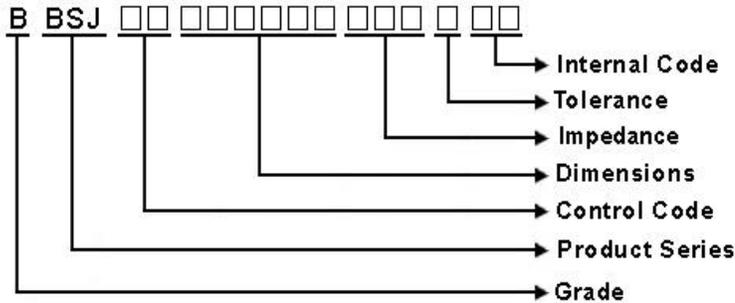
| Series | Size Code (JIS/EIA) | Impedance (Ω) |
|--------|-------------------------------------|------------------------|
| BBSJ | 0603/0201 1005/0402 1608/0603 | 30 ~ 2700 |



BBSJ00100505 Series Specification

1 **Scope:** This specification applies to MULTILAYER FERRITE CHIP BEADS

2 **Part Numbering:**



3 **Rating:**

Operating Temperature: - 5 5 °C ~ 1 2 5 °C (Including self - temperature rise)

Storage Temperature: - 5 5 °C ~ 1 2 5 °C (after PCB)

- 5 °C ~ 4 0 °C, Humidity 4 0 % ~ 7 0 % (before PCB)

4 **Marking:**

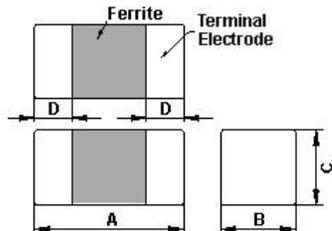
No Marking

5 **Standard Testing Condition**

| | Unless otherwise specified | In case of doubt |
|-------------|------------------------------------|------------------|
| Temperature | Ordinary Temperature (15 to 35 °C) | 20 to 30 °C |
| Humidity | Ordinary Humidity (25 to 85% RH) | 50 to 80 %RH |

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6 Configuration and Dimensions:



| Dimensions in mm | |
|------------------|----------|
| TYPE | 100505 |
| A | 1.00±0.1 |
| B | 0.50±0.1 |
| C | 0.50±0.1 |
| D | 0.25±0.1 |

Net Weight (grms)

| Size Code | Net Weight (grms) |
|-----------|-------------------|
| 100505 | 0.0014 |

7 Electrical Characteristics:

| Part No. | Impedance (Ω) | Test Freq. | RDC (Ω)Max. | Rated Current (mA)Max. |
|--------------------|---------------|----------------|-------------|------------------------|
| BBSJ00100505300□00 | 30 | 100 MHz,200 mV | 0.2 | 500 |
| BBSJ00100505600□00 | 60 | 100 MHz,200 mV | 0.2 | 500 |
| BBSJ00100505800□00 | 80 | 100 MHz,200 mV | 0.2 | 500 |
| BBSJ00100505121□00 | 120 | 100 MHz,200 mV | 0.25 | 500 |
| BBSJ00100505221□00 | 220 | 100 MHz,200 mV | 0.4 | 400 |
| BBSJ00100505301□00 | 300 | 100 MHz,200 mV | 0.5 | 300 |
| BBSJ00100505471□00 | 470 | 100 MHz,200 mV | 0.5 | 300 |
| BBSJ00100505481□00 | 480 | 100 MHz,200 mV | 0.5 | 300 |
| BBSJ00100505601□00 | 600 | 100 MHz,200 mV | 0.6 | 300 |
| BBSJ00100505102□00 | 1000 | 100 MHz,200 mV | 0.95 | 200 |
| BBSJ00100505152□00 | 1500 | 100 MHz,200 mV | 1.15 | 100 |
| BBSJ00100505182□00 | 1800 | 100 MHz,200 mV | 1.4 | 100 |
| BBSJ00100505252□00 | 2500 | 100 MHz,200 mV | 1.8 | 100 |

NOTE: □-tolerance Y=±25% / T=±30%

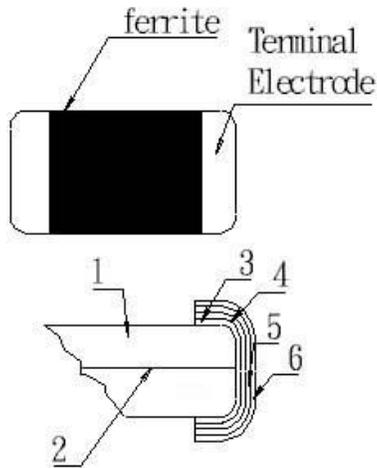
1.Operating temperature range - 5 5°C ~ 1 2 5°C(Including self - temperature rise)

2.Rate Current : Applied the current to coils, the temperature rise shall not be more than 30°C

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8 BBSJ00100505 Series

8.1 Construction:



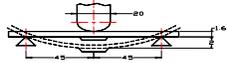
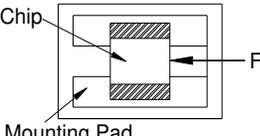
8.2 Material List:

| No | Part | Material |
|----|-------------------|---------------------|
| 1 | Ferrite Substance | NiO-CuO-ZnO-Ferrite |
| 2 | Silver electrode | Ag |
| 3 | Silver electrode | Ag |
| 4 | Cu plating | Cu |
| 5 | Ni plating | Ni |
| 6 | Sn plating | Sn |

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9 Reliability Of Ferrite Multilayer Chip Bead

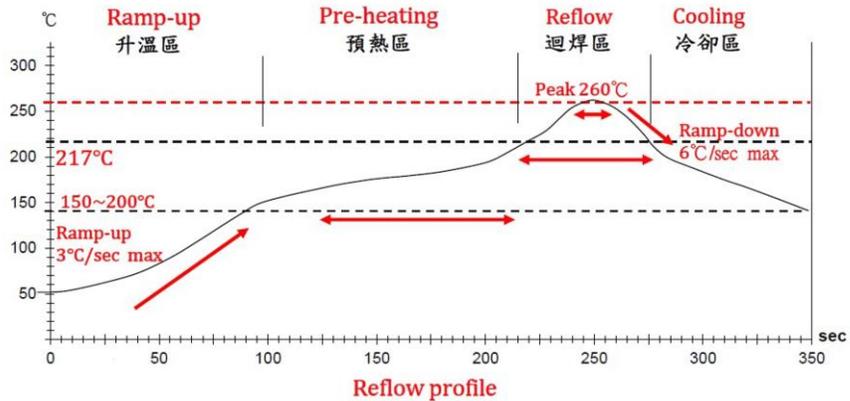
1-1.Mechanical Performance

| No | Item | Specification | Test Method |
|-------|------------------------------|---|--|
| 1-1-1 | Flexure Strength | The forces applied on the right conditions must not damage the terminal electrode and the ferrite | Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 30sec  *For 100505, substrate dimension is 100x40x0.8mm |
| 1-1-2 | Vibration | | Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs |
| 1-1-3 | Resistance to Soldering Heat | Appearance: No damage More than 75% of the terminal electrode should be covered with solder. Impedance : within $\pm 30\%$ of initial value | Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 260 ± 5 °C Immersion Time: 10 ± 1 sec |
| 1-1-4 | Solder ability | The electrodes shall be at least 95% covered with new solder coating | Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245 ± 5 °C (Pb-Free) Immersion Time: 4 ± 1 sec |
| 1-1-5 | Terminal Strength Test | No split termination  Chip Mounting Pad | Test device shall be soldered on the substrate, then apply a force in the direction of the arrow. Force : 5N Keeping Time: 10 ± 1 sec |

1-2.Environmental Performance

| No | Item | Specification | Test Method | | |
|-------|-----------------------------|--|---|------------------|------------|
| 1-2-1 | Temperature Cycle | Appearance: No damage Impedance: within $\pm 30\%$ of initial value | One cycle: | | |
| | | | Step | Temperature (°C) | Time (min) |
| | | | 1 | -55 ± 3 | 30 |
| | | | 2 | 25 ± 2 | 3 |
| | | | 3 | 125 ± 3 | 30 |
| 4 | 25 ± 2 | 3 | | | |
| | | | Total: 100cycles Measured after exposure in the room condition for 24hrs | | |
| 1-2-2 | Humidity Resistance | | Temperature: 40 ± 2 °C Relative Humidity: 90 ~ 95% / Time: 1000hrs Measured after exposure in the room condition for 24hrs | | |
| 1-2-3 | High Temperature Resistance | | Temperature: 125 ± 3 °C / Relative Humidity: 0% Applied Current: Rated Current /Time: 1000hrs Measured after exposure in the room condition for 24hrs | | |
| 1-2-4 | Low Temperature Resistance | | Temperature: -55 ± 3 °C Relative Humidity: 0% / Time: 1000hrs Measured after exposure in the room condition for 24hrs | | |

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Lead-Free(LF)標準溫度分析範圍

Refer to J-STD-020C

| 管制項目 Item. | 升温區 Ramp-up | 預熱區 Pre-heating | 迴焊區 Reflow | Peak Temp | 冷卻區 Cooling |
|---------------------|----------------|--------------------|---------------|-------------|------------------|
| 溫度範圍 Temp.scope | R.T ~ 150°C | 150°C ~ 200°C | Above 217°C | 260±5°C | Peak Temp.~150°C |
| 標準時間 Time spec. | - | 60 ~ 180 sec | 60 ~ 150 sec | 20 ~ 40 sec | - |
| 實際時間 Time result | - | 75 ~ 100 sec | 90 ~ 120 sec | 20 ~ 35 sec | - |

NOTE :

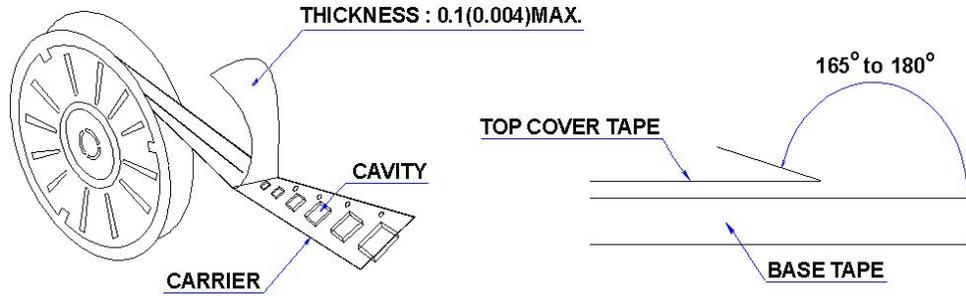
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

BBSJ00100505 Series Specification

10 Packaging:

10.1 Packaging -Cover Tape

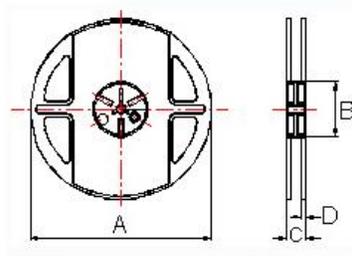
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

| TYPE | PCS/REEL |
|--------|----------|
| 060303 | 15000 |
| 100505 | 10000 |
| 160808 | 4000 |

10.3 Reel Dimensions

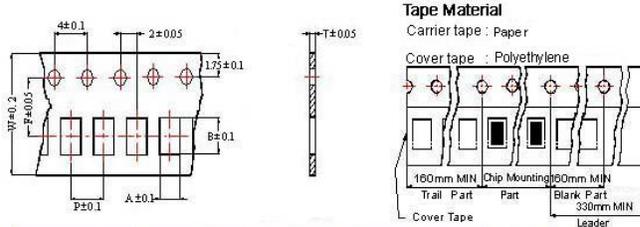


| TYPE | A | B | C | D |
|--------|-----|----|----|-----|
| 060303 | 178 | 60 | 12 | 1.5 |
| 100505 | 178 | 60 | 12 | 1.5 |
| 160808 | 178 | 60 | 12 | 1.5 |

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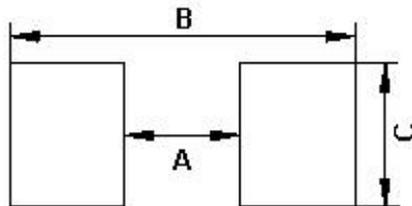
10 Packaging:

10.4 Tape Dimensions in mm



| TYPE | A | B | T | W | P | F |
|--------|------|------|------|---|---|-----|
| 060303 | 0.37 | 0.67 | 0.42 | 8 | 2 | 3.5 |
| 100505 | 0.62 | 1.12 | 0.60 | 8 | 2 | 3.5 |
| 160808 | 1.05 | 1.85 | 0.95 | 8 | 4 | 3.5 |

11 Recommended Land Pattern:



Dimensions in mm

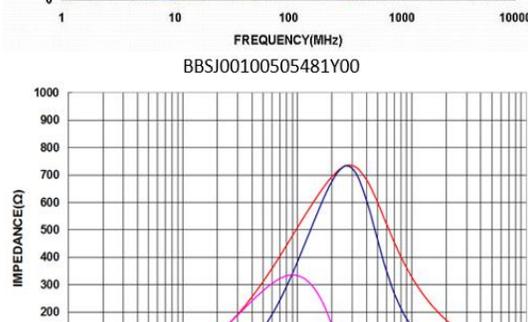
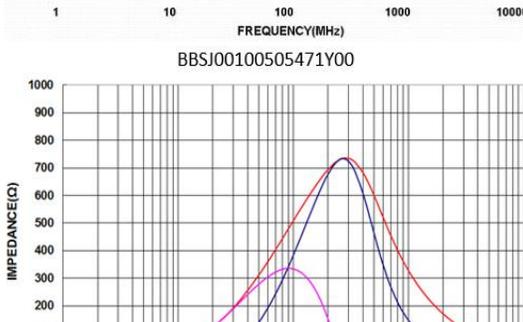
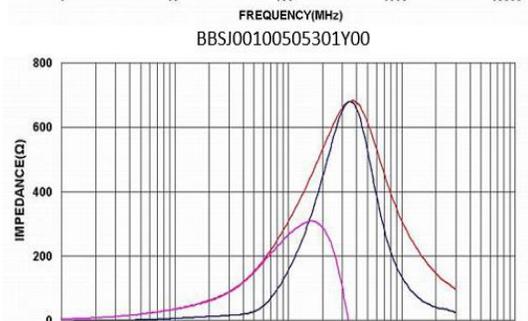
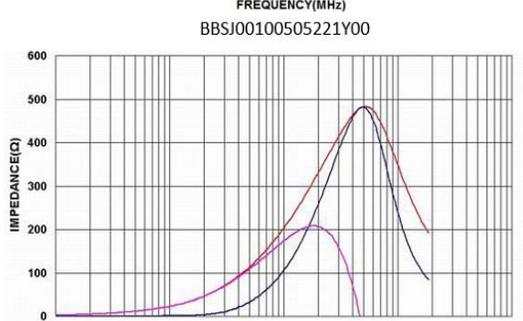
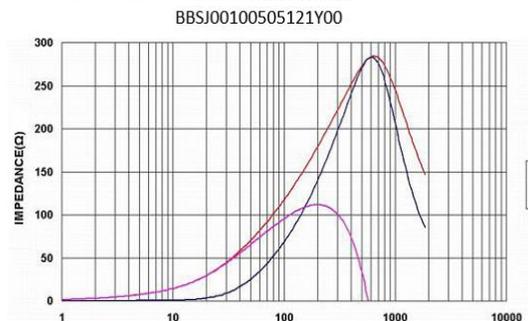
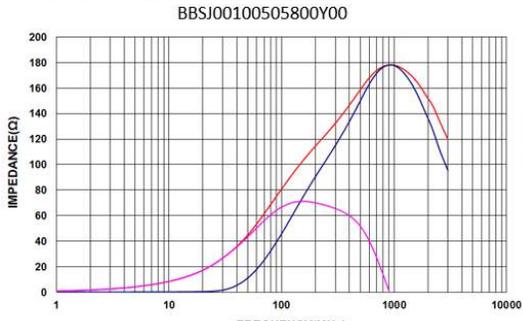
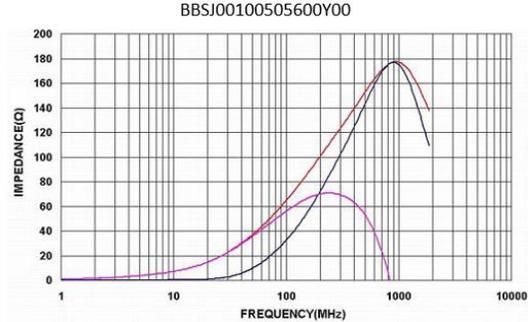
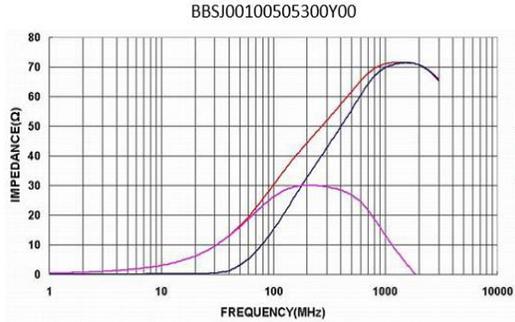
| TYPE | A | B | C |
|--------|-----|-----------|-----|
| 100505 | 0.4 | 1.2 ~ 1.4 | 0.5 |

12 Note:

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock nor drop.
3. 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.
4. Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)
5. The moisture sensitivity level (MSL) of products is classified as level 1.

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13 Graph:



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13 Graph:

