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# RF Inductor

## BSCH Series

### Overview

RF inductors are designed to operate at high frequencies, typically in the MHz to GHz range. Unlike power inductors, RF inductors are optimized for signal processing in radio frequency (RF) circuits. They play a vital role in tuning, filtering and impedance matching in communication and signal transmission systems.

### Benefits

1. High frequency performance, for efficient operation at radio frequencies with minimal loss.
2. It can reduce noise and distortion and maintain the integrity of radio frequency signals.
3. Space-saving, suitable for constrained designs in portable devices and IoT applications.
4. Can be customized with specific requirements such as frequency range, impedance and size.

### Applications

1. Communication Systems: Mobile phones, Wi-Fi routers, and 5G equipment.
2. Antenna Matching Networks
3. IoT and Smart Devices
4. Medical Devices
5. Consumer Electronics

### Product Information

| Series | Size Code (JIS/EIA) | Inductance (nH) |
|---|---|---|
| BSCH | 0603/0201<br>1005/0402<br>1608/0603 | 1 ~ 390 |



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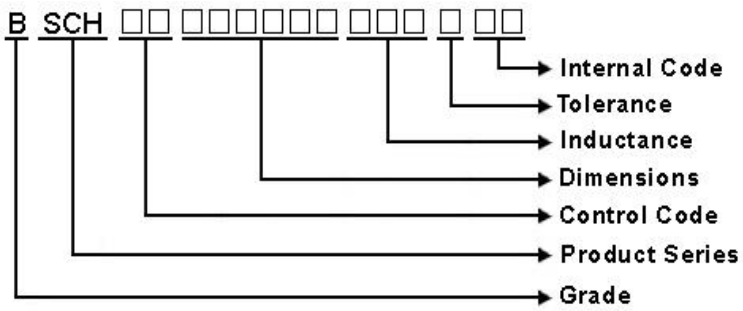
# BSCH00100505 Series Specification

## 1 Scope:
This specification applies to Multilayer ceramic chip inductors

## 2 Part Numbering:

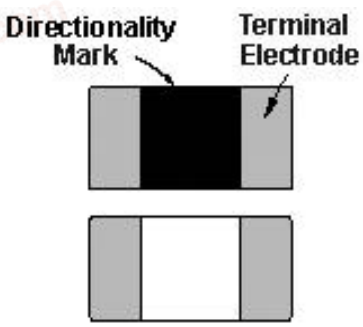



## 3 Rating:

Operating Temperature: - 55℃ ~ 125℃(Including self - temperature rise)

Storage Temperature: - 55℃ ~ 125℃(after PCB)
- 5℃~40℃,Humidity 40%~70%(before PCB)

## 4 Marking:




## 5 Standard Testing Condition

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

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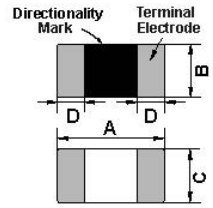
# BSCH00100505 Series Specification

## 6 Configuration and Dimensions:




Dimensions in mm

| TYPE | 100505 |
|---|---|
| A | 1.00±0.10 |
| B | 0.50±0.10 |
| C | 0.50±0.10 |
| D | 0.25±0.10 |

Net Weight (grms)

| Size Code | Net Weight (grms) |
|---|---|
| BSCH00100505 | 0.00081 |

## 7 Electrical Characteristics:

| Part No. | Inductance (nH) | L,Q Test Freq. | Q Min. | SRF (MHz)Typ. | RDC (Ω)Max. | Rated Current (mA)Max. | Tolerance |
|---|---|---|---|---|---|---|---|
| BSCH001005051N0□CP | 1 | 100 MHz,200 mV | 8 | 10000 | 0.07 | 400 | S |
| BSCH001005051N1□CP | 1.1 | 100 MHz,200 mV | 8 | 10000 | 0.1 | 300 | S |
| BSCH001005051N2□CP | 1.2 | 100 MHz,200 mV | 8 | 10000 | 0.09 | 400 | S |
| BSCH001005051N3□CP | 1.3 | 100 MHz,200 mV | 8 | 9000 | 0.1 | 300 | S |
| BSCH001005051N5□CP | 1.5 | 100 MHz,200 mV | 8 | 9000 | 0.1 | 400 | S |
| BSCH001005051N6□CP | 1.6 | 100 MHz,200 mV | 8 | 8700 | 0.1 | 400 | S |
| BSCH001005051N8□CP | 1.8 | 100 MHz,200 mV | 8 | 8700 | 0.1 | 400 | S |
| BSCH001005052N0□CP | 2 | 100 MHz,200 mV | 8 | 8100 | 0.1 | 400 | S |
| BSCH001005052N2□CP | 2.2 | 100 MHz,200 mV | 8 | 8100 | 0.12 | 400 | S |
| BSCH001005052N4□CP | 2.4 | 100 MHz,200 mV | 8 | 7700 | 0.15 | 400 | S |
| BSCH001005052N7□CP | 2.7 | 100 MHz,200 mV | 8 | 7700 | 0.15 | 400 | S |
| BSCH001005053N0□CP | 3 | 100 MHz,200 mV | 8 | 6300 | 0.15 | 400 | S |
| BSCH001005053N3□CP | 3.3 | 100 MHz,200 mV | 8 | 6300 | 0.15 | 400 | S |
| BSCH001005053N6□CP | 3.6 | 100 MHz,200 mV | 8 | 6100 | 0.15 | 400 | S |
| BSCH001005053N9□CP | 3.9 | 100 MHz,200 mV | 8 | 6100 | 0.18 | 400 | S |
| BSCH001005054N3□CP | 4.3 | 100 MHz,200 mV | 8 | 6000 | 0.18 | 400 | S |
| BSCH001005054N7□CP | 4.7 | 100 MHz,200 mV | 8 | 6000 | 0.18 | 400 | S |
| BSCH001005055N1□CP | 5.1 | 100 MHz,200 mV | 8 | 5300 | 0.2 | 400 | S |
| BSCH001005055N6□CP | 5.6 | 100 MHz,200 mV | 8 | 5100 | 0.2 | 400 | S |
| BSCH001005056N2□CP | 6.2 | 100 MHz,200 mV | 8 | 4500 | 0.22 | 400 | S,J,K |
| BSCH001005056N8□CP | 6.8 | 100 MHz,200 mV | 8 | 4550 | 0.24 | 400 | J,K |
| BSCH001005057N5□CP | 7.5 | 100 MHz,200 mV | 8 | 4200 | 0.24 | 300 | J,K |
| BSCH001005058N2□CP | 8.2 | 100 MHz,200 mV | 8 | 4100 | 0.24 | 300 | J,K |
| BSCH001005059N1□CP | 9.1 | 100 MHz,200 mV | 8 | 3900 | 0.26 | 300 | J,K |
| BSCH0010050510N□CP | 10 | 100 MHz,200 mV | 8 | 3900 | 0.26 | 300 | J,K |

**NOTE: □-tolerance J=±5% / K=±10% / C=±0.2nH / S=±0.3nH**

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

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

3.Residual impedance of short chip : 0nH

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# BSCH00100505 Series Specification

| Part No. | Inductance (nH) | L,Q Test Freq. | Q Min. | SRF (MHz)Typ. | RDC (Ω)Max. | Rated Current (mA)Max. | Tolerance |
|---|---|---|---|---|---|---|---|
| BSCH0010050512N□CP | 12 | 100 MHz,200 mV | 8 | 3000 | 0.28 | 300 | J,K |
| BSCH0010050515N□CP | 15 | 100 MHz,200 mV | 8 | 2500 | 0.32 | 300 | J,K |
| BSCH0010050518N□CP | 18 | 100 MHz,200 mV | 8 | 2200 | 0.36 | 300 | J,K |
| BSCH0010050522N□CP | 22 | 100 MHz,200 mV | 8 | 1900 | 0.42 | 300 | J,K |
| BSCH0010050527N□CP | 27 | 100 MHz,200 mV | 8 | 1700 | 0.46 | 300 | J,K |
| BSCH0010050533N□CP | 33 | 100 MHz,200 mV | 8 | 1600 | 0.58 | 200 | J,K |
| BSCH0010050539N□CP | 39 | 100 MHz,200 mV | 8 | 1200 | 0.65 | 200 | J,K |
| BSCH0010050547N□CP | 47 | 100 MHz,200 mV | 8 | 1000 | 0.72 | 200 | J,K |
| BSCH0010050556N□CP | 56 | 100 MHz,200 mV | 8 | 800 | 0.82 | 200 | J,K |
| BSCH0010050568N□CP | 68 | 100 MHz,200 mV | 8 | 800 | 0.92 | 180 | J,K |
| BSCH0010050582N□CP | 82 | 100 MHz,200 mV | 8 | 700 | 1.2 | 150 | J,K |

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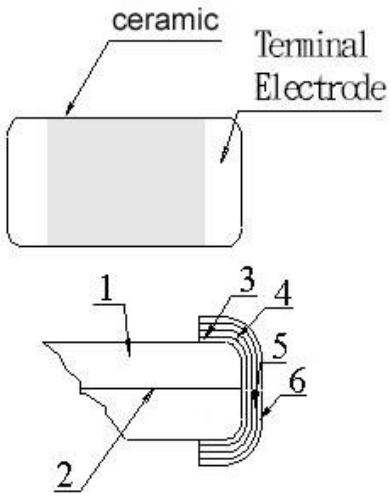
# BSCH00100505 Series Specification

## 8 BSCH00100505 Series

### 8.1 Construction:




### 8.2 Material List:

| No | Part | Material |
|---|---|---|
| 1 | **Main Substance** | Al2O3-B2O3-SiO2 |
| 2 | **Silver electrode** | **Ag** |
| 3 | **Silver electrode** | **Ag** |
| 4 | **Cu plating** | **Cu** |
| 5 | **Ni plating** | **Ni** |
| 6 | **Sn plating** | **Sn** |

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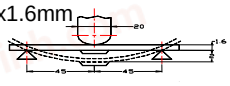
# BSCH00100505 Series Specification

## 9 Reliability Of Ceramic Multilayer Chip Inductor For High Freq.

### 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 Ceramic. | Test device shall be soldered on the substrate<br>Substrate Dimension: 100x40x1.6mm<br>Deflection: 2.0mm<br>Keeping Time: 30sec<br>*For 100505, substrate dimension is 100x40x0.8mm<br> |
| 1-1-2 | Vibration | | Test device shall be soldered on the substrate<br>Oscillation Frequency: 10 to 55 to 10Hz for 1min<br>Amplitude: 1.5mm<br>Time: 2hrs for each axis (X, Y & Z), total 6hrs |
| 1-1-3 | Resistance to Soldering Heat | Appearance: No damage | Pre-heating: 150℃, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free)<br>Solder Temperature: 260±5℃<br>Immersion Time: 10±1sec |
| 1-1-4 | Solder ability | The electrodes shall be at least 95% covered with new solder coating | Pre-heating: 150℃, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free)<br>Solder Temperature: 245±5℃(Pb-Free)<br>Immersion Time: 4±1sec |

### 1-2.Environmental Performance

| No | Item | Specification | Test Method |
|---|---|---|---|
| 1-2-1 | Temperature Cycle | Appearance: No damage<br>Inductance:within±10% of initial value<br>Q change:within±30% of initial value | One cycle:<br>Step / Temperature (℃) / Time (min)<br>1 / -55±3 / 30<br>2 / 25±2 / 3<br>3 / 125±3 / 30<br>4 / 25±2 / 3<br>Total: 100cycles<br>Measured after exposure in the room condition for 24hrs |
| 1-2-2 | Humidity Resistance | | Temperature: 40±2℃<br>Relative Humidity: 90 ~ 95%<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |
| 1-2-3 | High Temperature Resistance | | Temperature: 125±3℃<br>Relative Humidity: 0%<br>Applied Current: Rated Current / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |
| 1-2-4 | Low Temperature Resistance | | Temperature: -55±3℃<br>Relative Humidity: 0% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |

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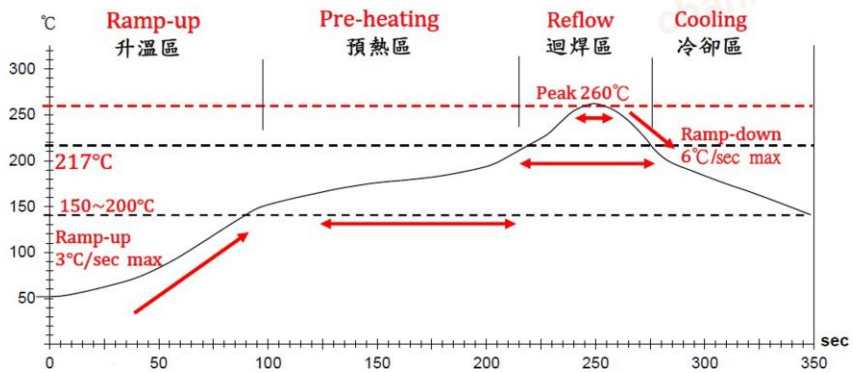
# BSCH00100505 Series Specification




Reflow profile

**Lead-Free(LF)標準溫度分析範圍** **Refer to J-STD-020C**

| 管制項目<br>Item. | 升溫區<br>Ramp-up | 預熱區<br>Pre-heating | 迴焊區<br>Reflow | Peak Temp | 冷卻區<br>Cooling |
|---|---|---|---|---|---|
| 溫度範圍<br>Temp.scope | R.T ~ 150℃ | 150℃ ~ 200℃ | Above 217℃ | 260±5℃ | Peak Temp.~150℃ |
| 標準時間<br>Time spec. | - | 60 ~ 180 sec | 60 ~ 150 sec | 20 ~ 40 sec | - |
| 實際時間<br>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

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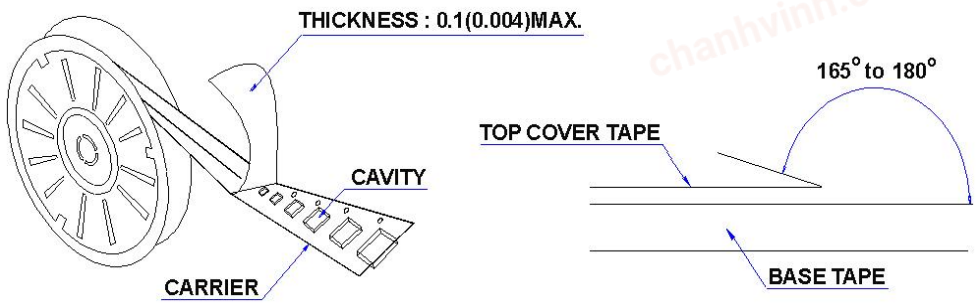
# BSCH00100505 Series Specification

## 11 Packaging:

### 11.1 Packaging -Cover Tape

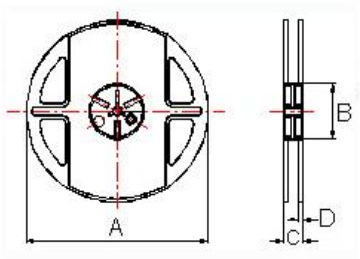
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.




### 11.2 Packaging Quantity

| TYPE | PCS/REEL |
|---|---|
| 100505 | 10000 |

### 11.3 Reel Dimensions




Dimensions in mm

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

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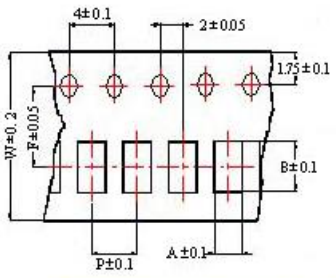
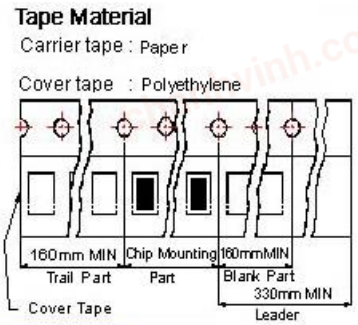
# BSCH00100505 Series Specification

## 11 Packaging:

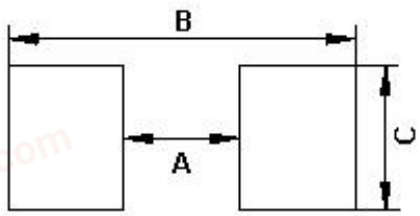
### 11.4 Tape Dimensions in mm




| TYPE | A | B | T | W | P | F |
|---|---|---|---|---|---|---|
| 100505 | 0.62 | 1.12 | 0.60 | 8 | 2 | 3.5 |

## 12 Recommended Land Pattern:




Dimensions in mm

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

## 13 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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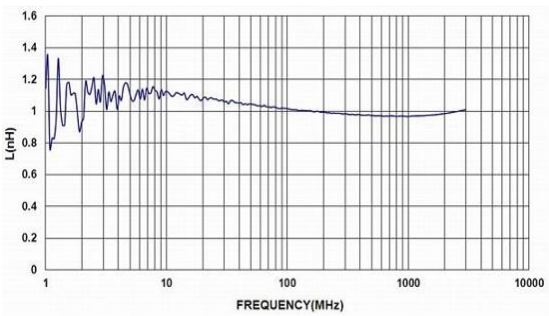
# BSCH00100505 Series Specification

## 14 Graph:

BSCH001005051N0SCP

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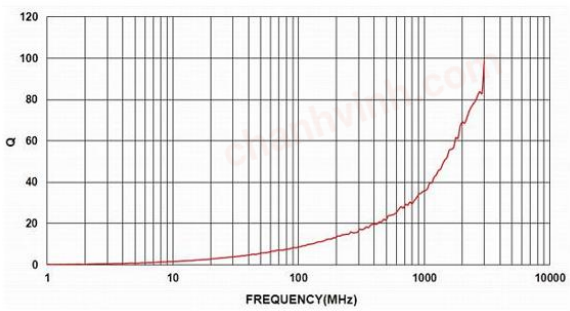


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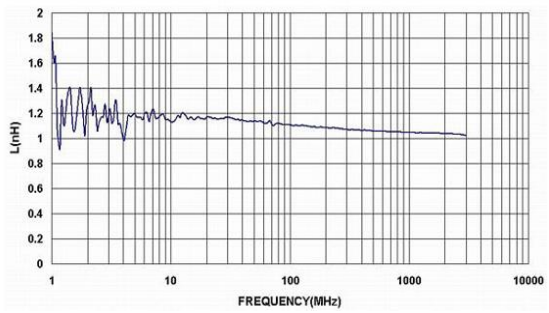


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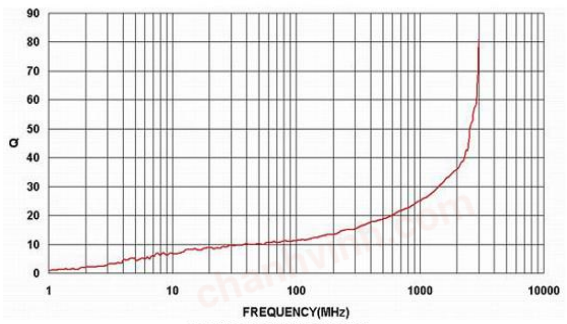


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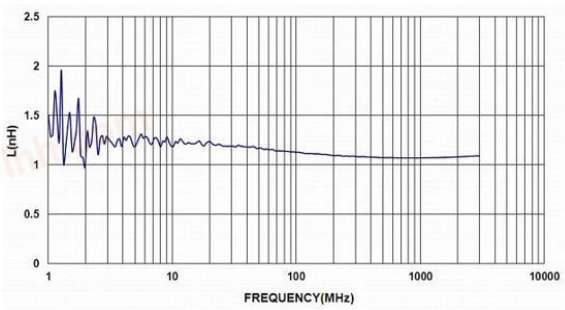


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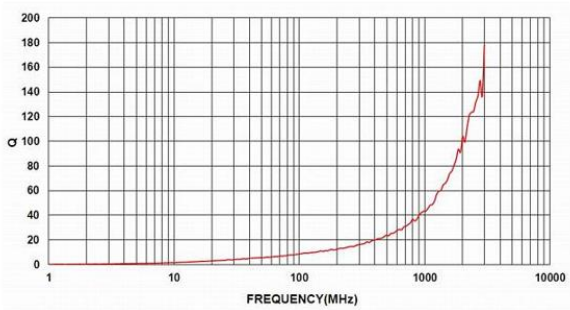
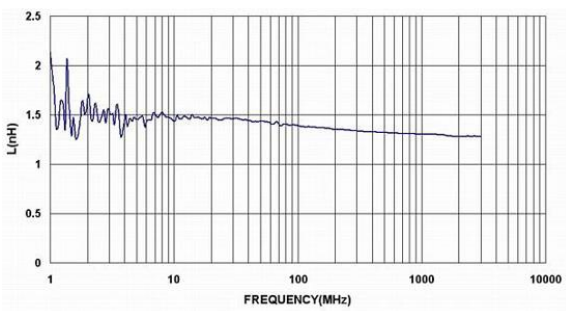
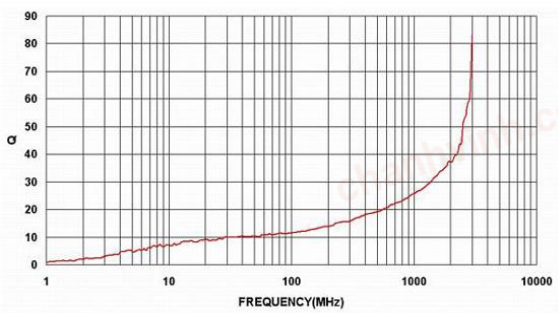



BSCH001005051N3SCP




BSCH001005051N3SCP



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# BSCH00100505 Series Specification

## 14 Graph:

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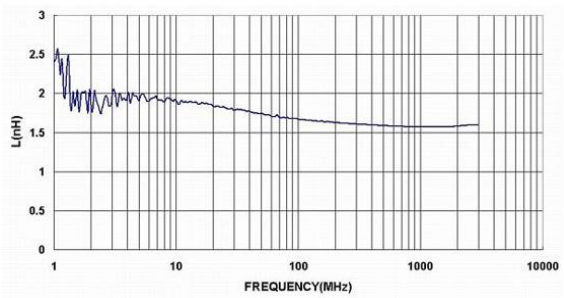
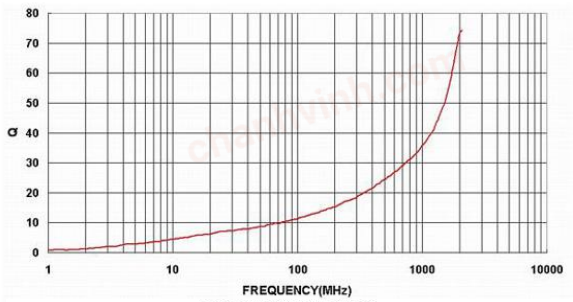
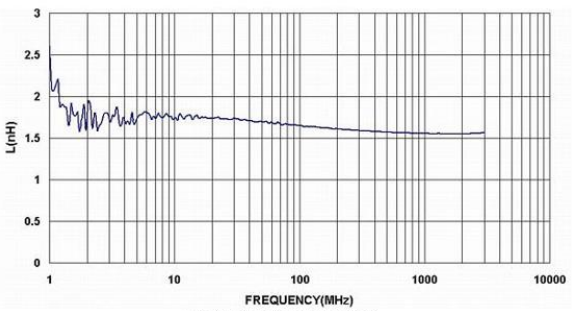



BSCH001005051N5SCP




BSCH001005051N6SCP

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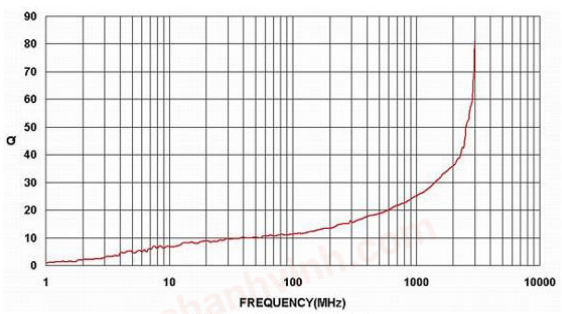
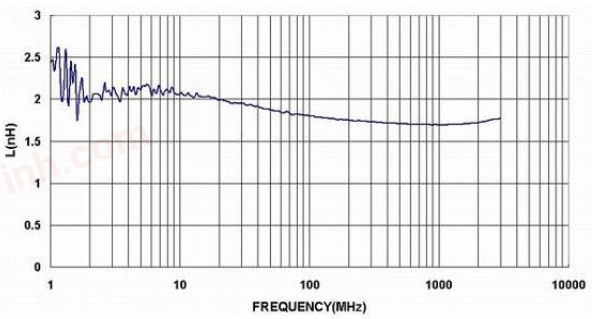



BSCH001005051N8SCP

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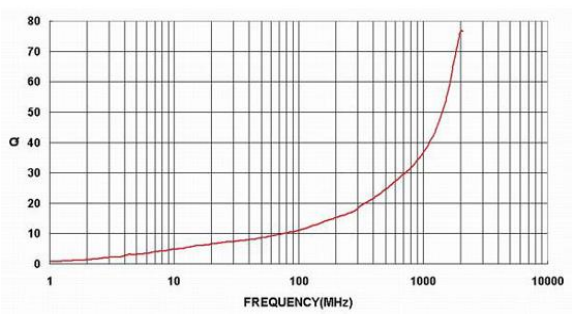


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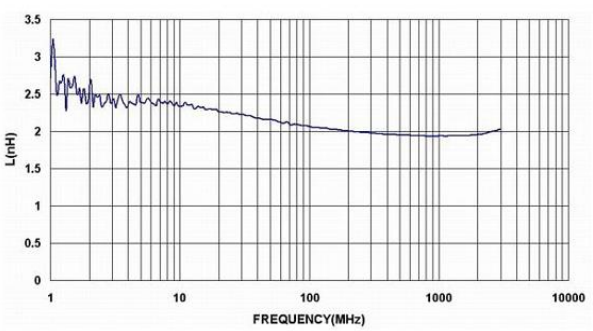


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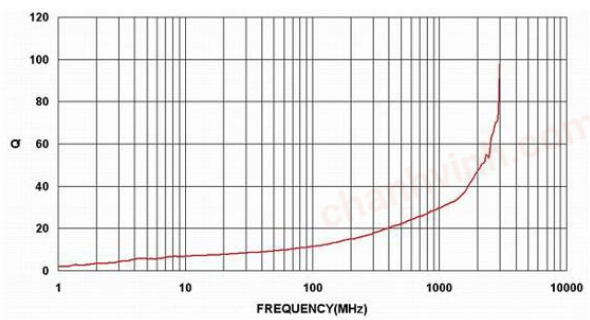

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# BSCH00100505 Series Specification

## 14 Graph:

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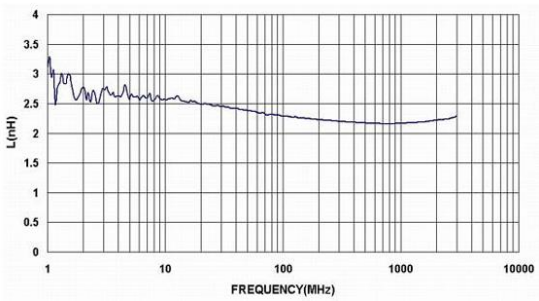


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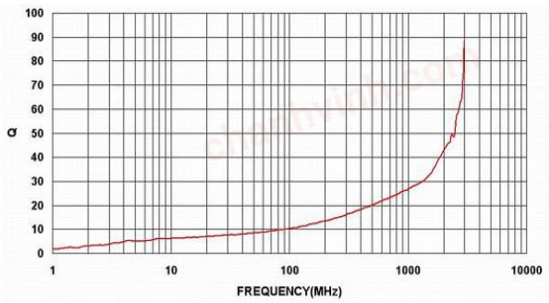


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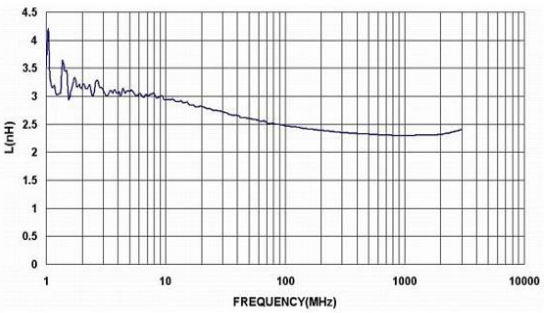
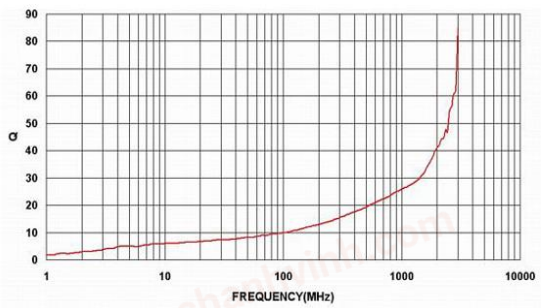



BSCH001005052N4SCP

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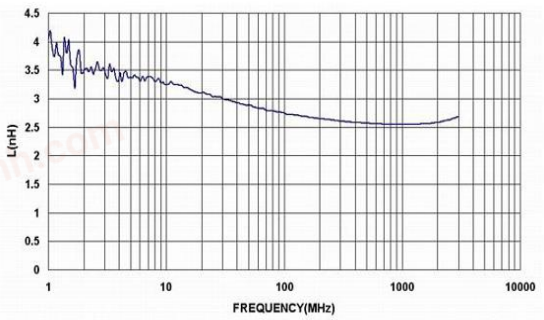


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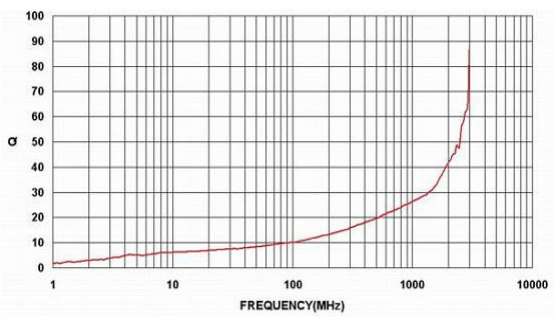


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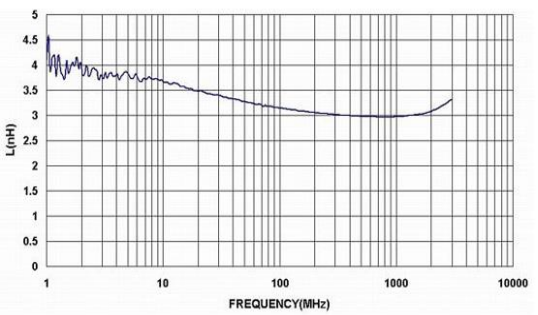


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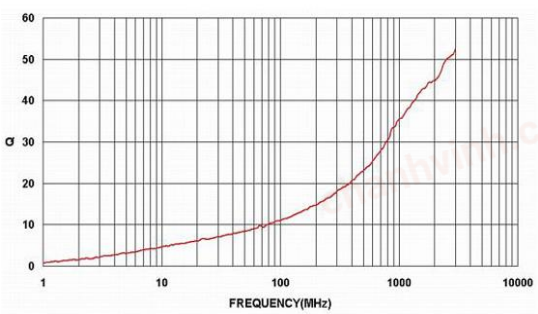

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# BSCH00100505 Series Specification

## 14 Graph:

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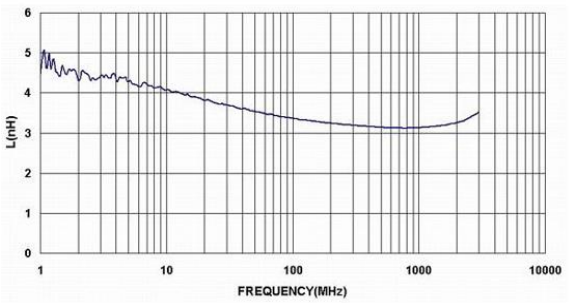


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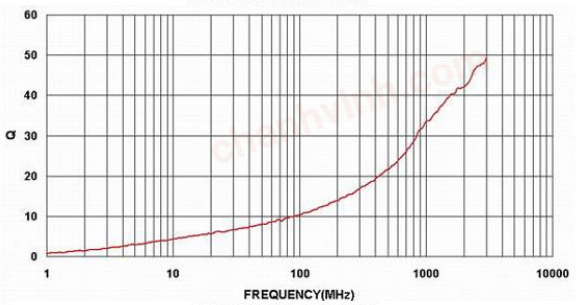


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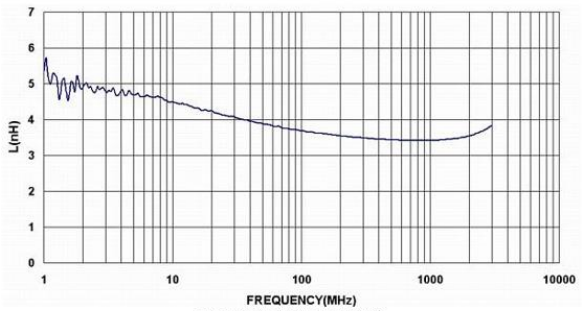


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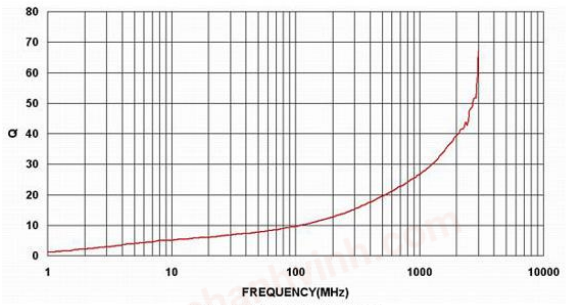


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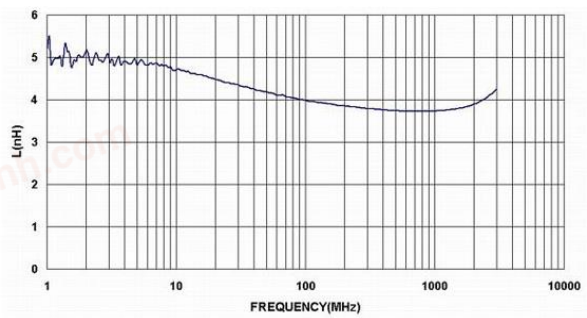


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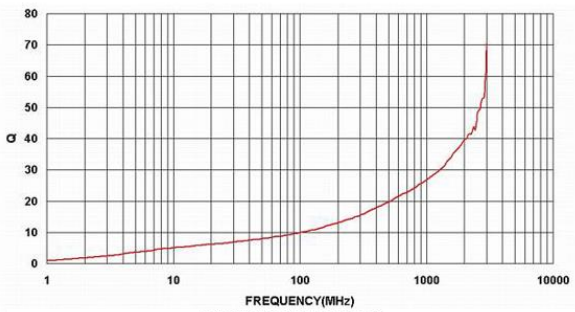


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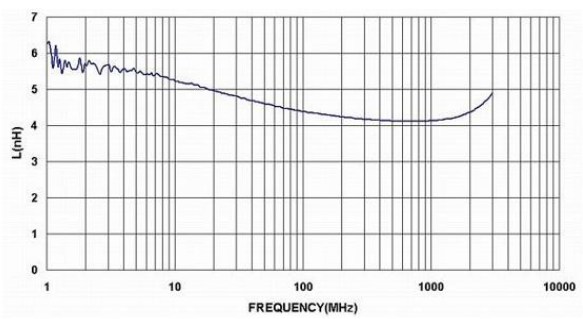


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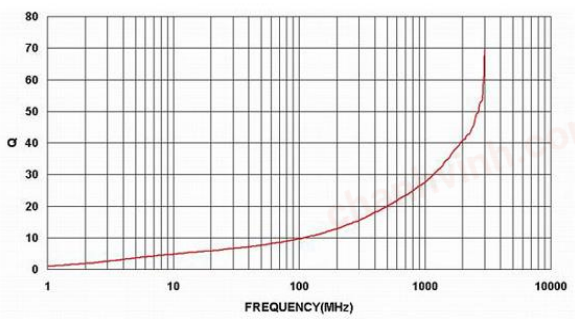

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# BSCH00100505 Series Specification

## 14 Graph:

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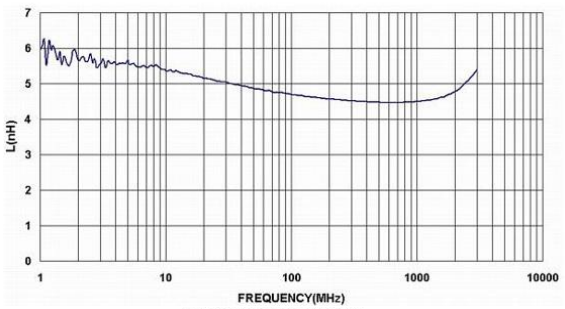


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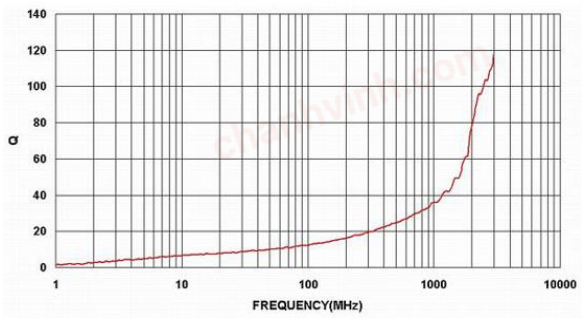


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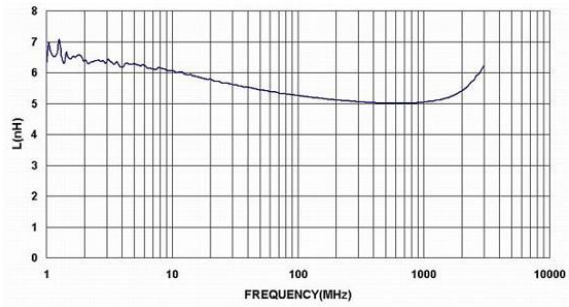


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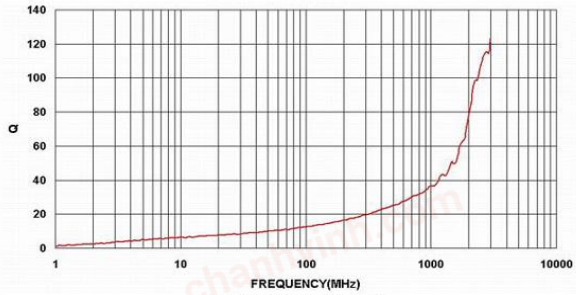


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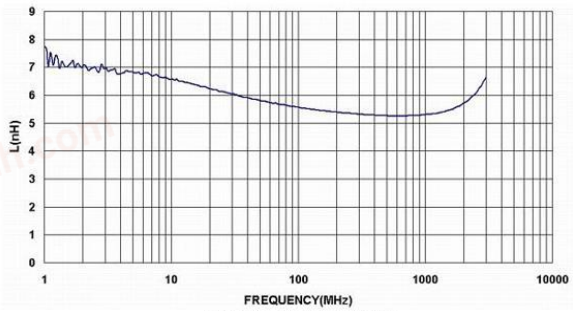


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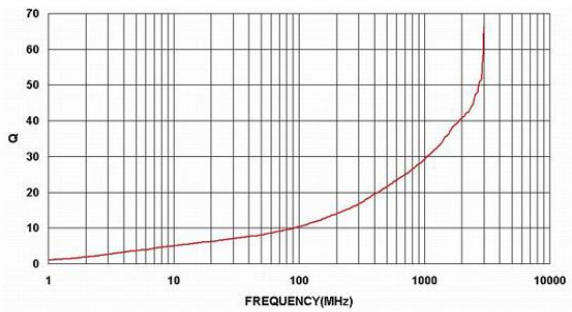


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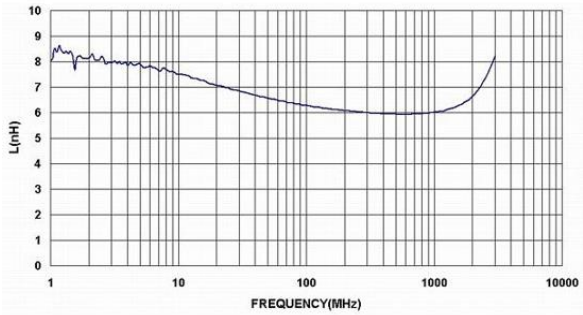


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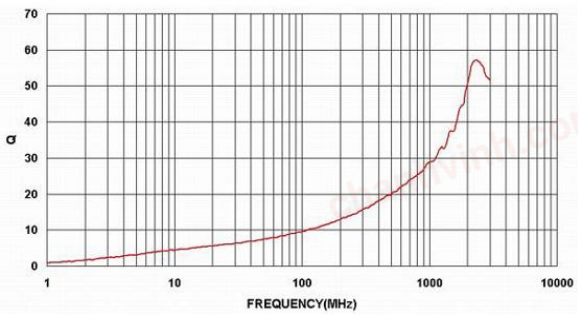

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# BSCH00100505 Series Specification

## 14 Graph:

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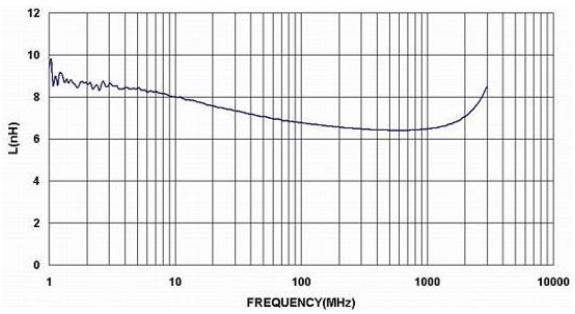


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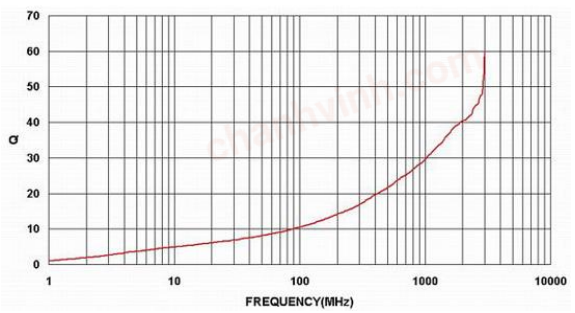


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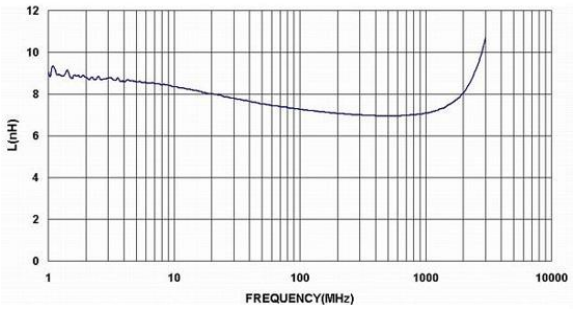


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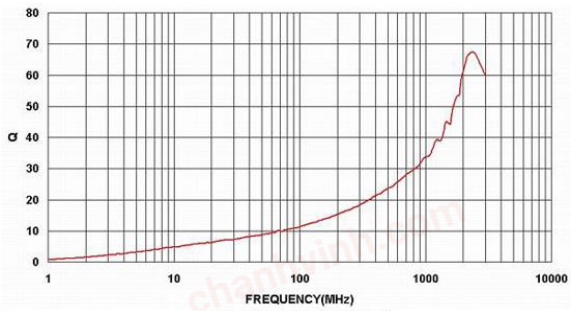


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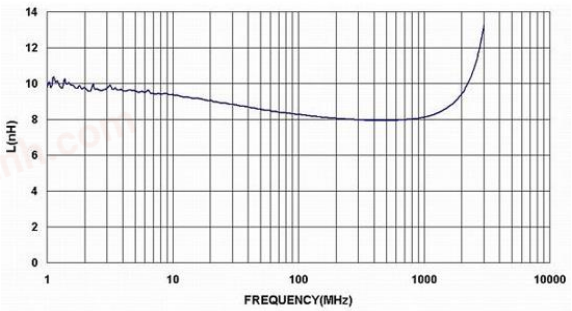


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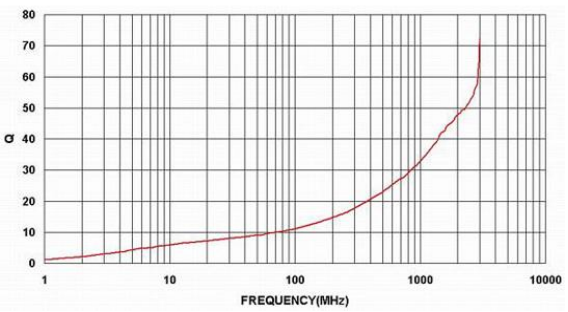


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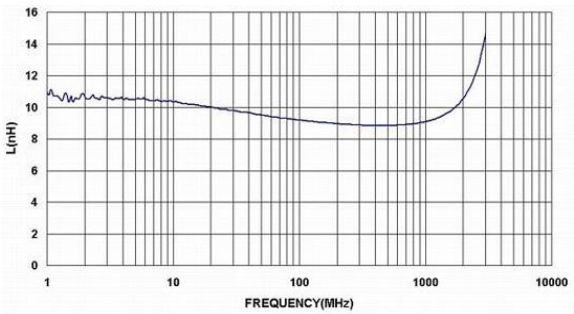


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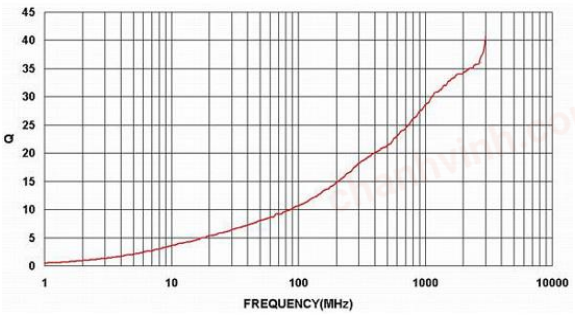

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# BSCH00100505 Series Specification

## 14 Graph:

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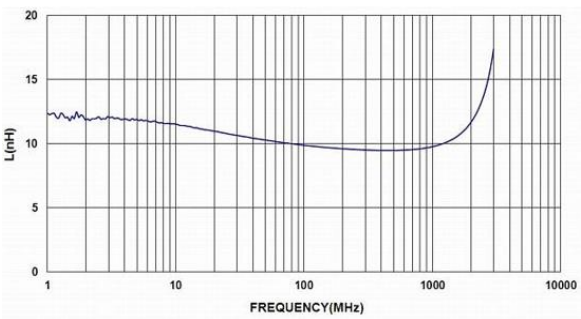


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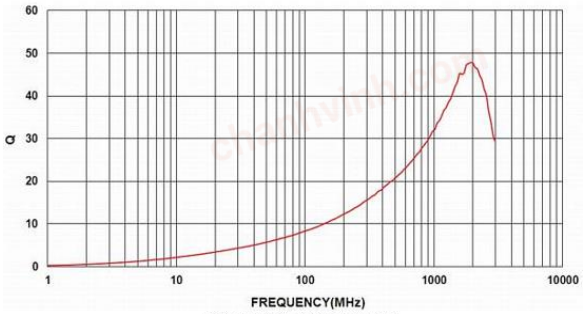


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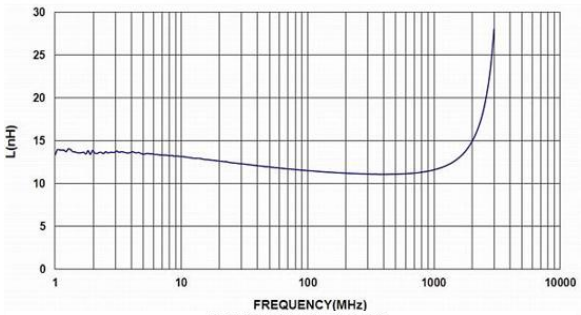


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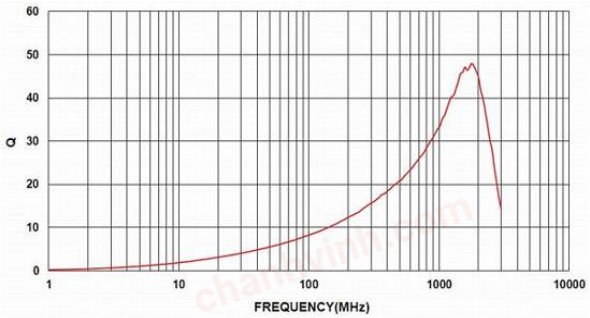


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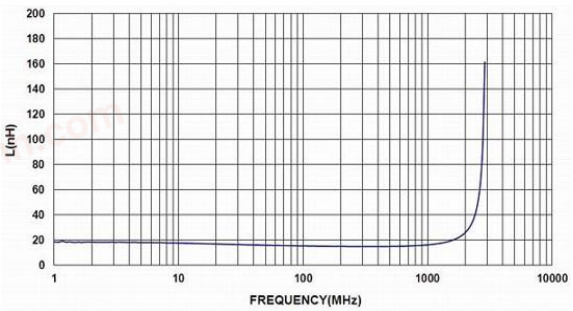


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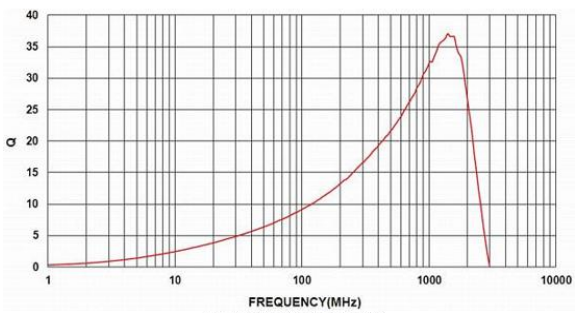


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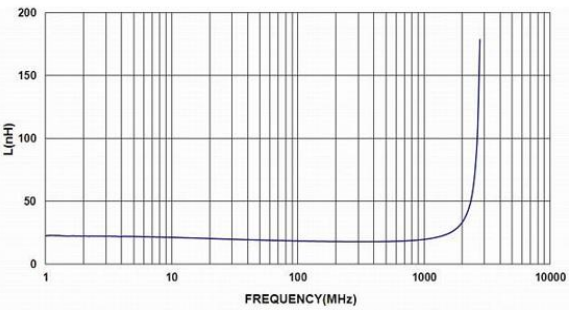


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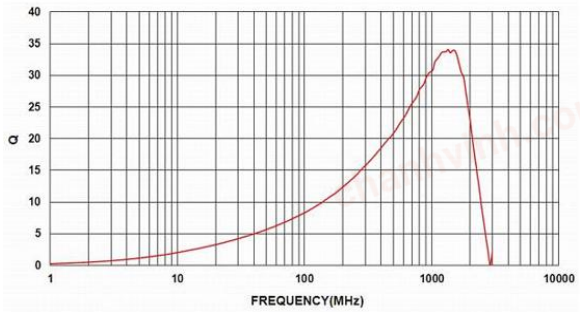

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# BSCH00100505 Series Specification

## 14 Graph:

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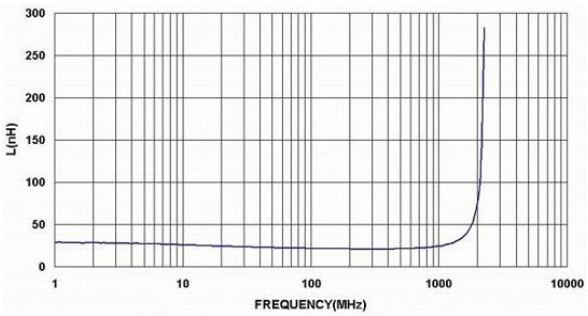


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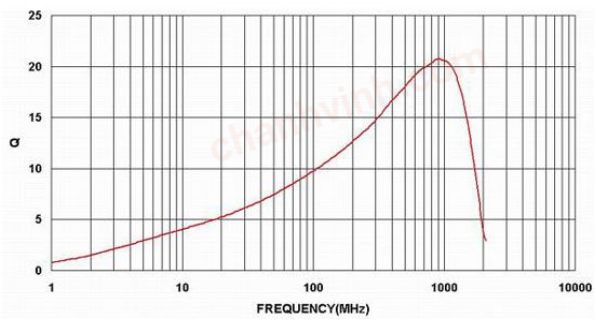


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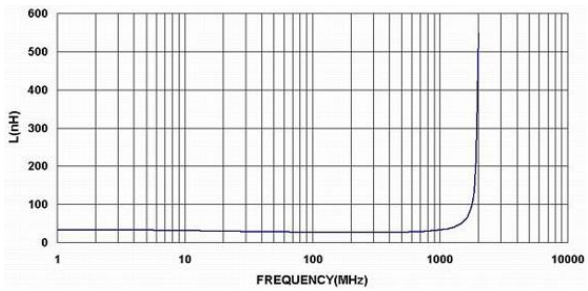


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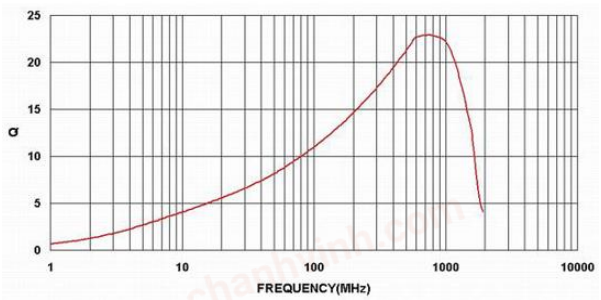


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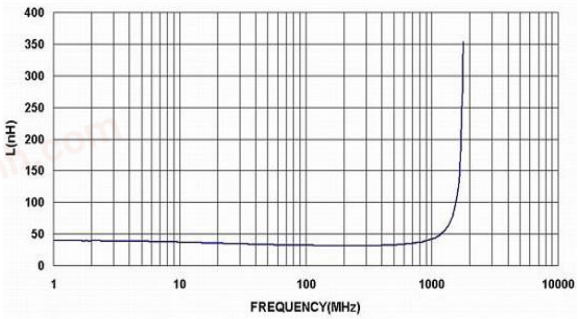


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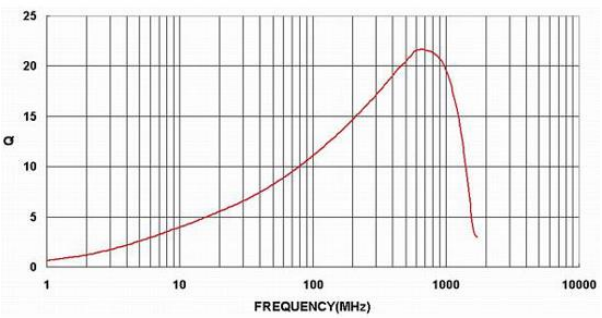


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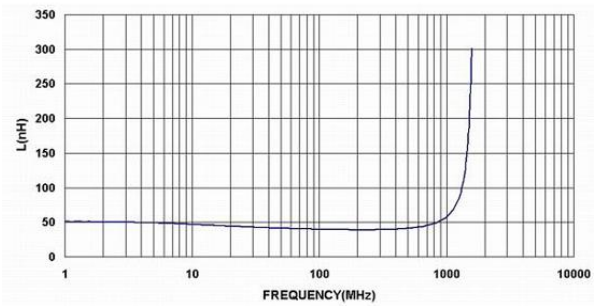


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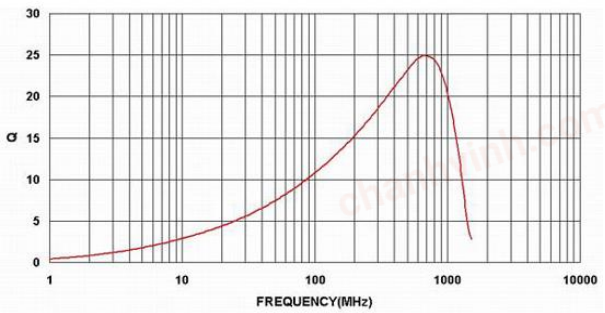

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# BSCH00100505 Series Specification

## 14 Graph:

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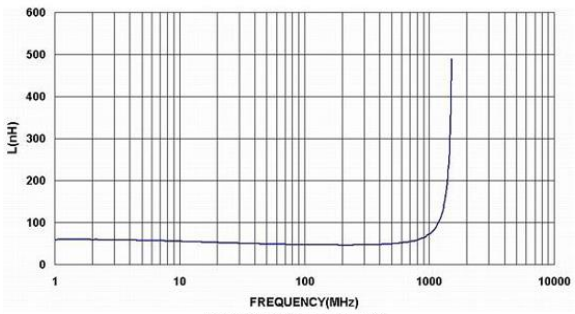


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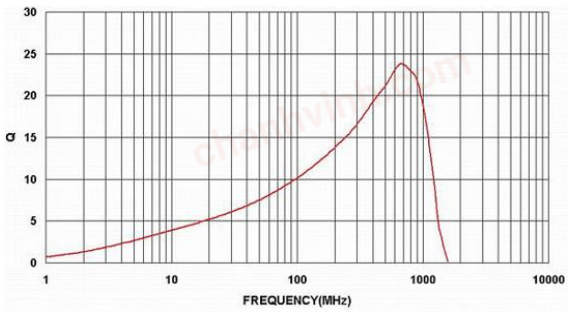


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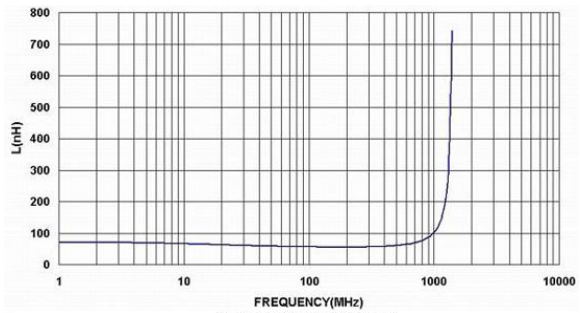


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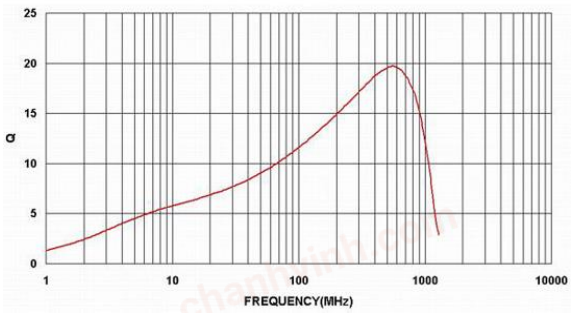


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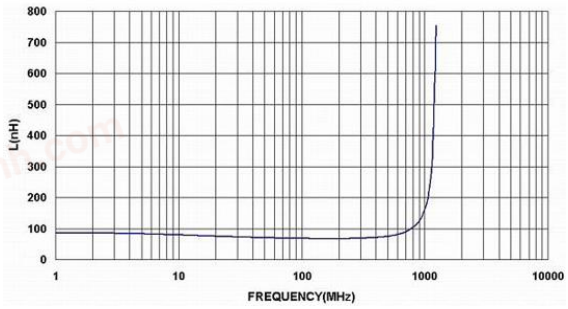


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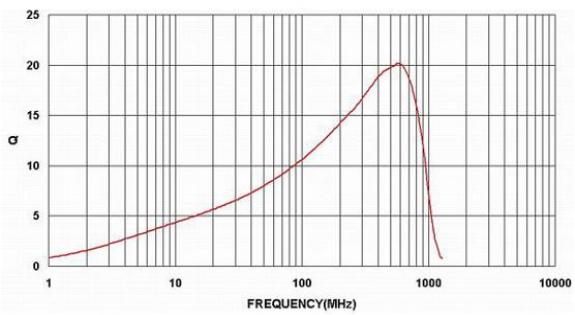


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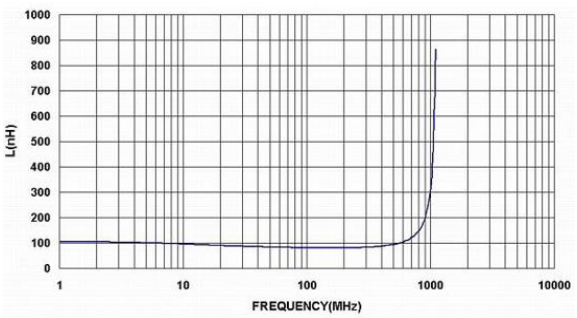


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