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# RF Inductor

## BSCQ 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. Excellent high frequency application
2. High Q factor and SRF value
3. Miniaturization
4. Tight tolerance

### Applications

1. Communication Systems
2. RF matching circuit requiring Q value
3. Bluetooth, WLAN, UWB, digital TV tuners and high-frequency circuit and module

### Product Information

| Series | Size Code (JIS/EIA) | Inductance (nH) |
|---|---|---|
| BSCQ | 0603/0201 | 0.1 ~ 22 |



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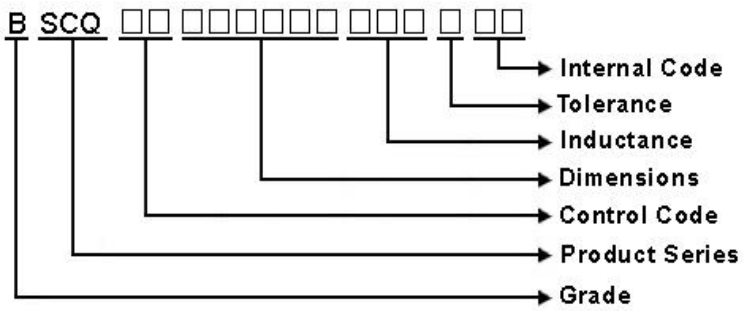
# BSCQ00060303 Series Specification

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

## 2 Part Numbering:

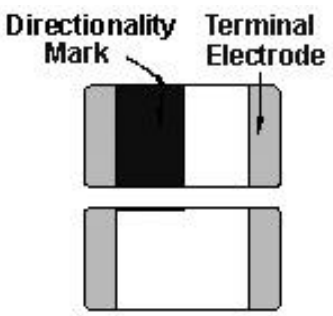



## 3 Rating:

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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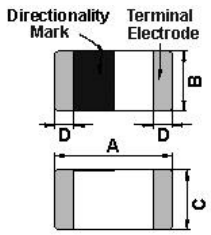
# BSCQ00060303 Series Specification

## 6 Configuration and Dimensions:




Dimensions in mm

| TYPE | 060303 |
|---|---|
| A | 0.60±0.03 |
| B | 0.30±0.03 |
| C | 0.30±0.03 |
| D | 0.15±0.05 |

Net Weight (grms)

| Size Code | Net Weight (grms) |
|---|---|
| 060303 | 0.000175 |

## 7 Electrical Characteristics:

| Part No. | Inductance (nH) | L,Q Test Freq. | Q Min. | SRF (MHz)Min. | RDC (Ω)Max. | IDC (mA)Max. | Tolerance |
|---|---|---|---|---|---|---|---|
| BSCQ000603030N6□00 | 0.6 | 500 MHz,500 mV | 14 | 10000 | 0.06 | 900 | B,C,S |
| BSCQ000603030N7□00 | 0.7 | 500 MHz,500 mV | 14 | 10000 | 0.06 | 900 | B,C,S |
| BSCQ000603030N8□00 | 0.8 | 500 MHz,500 mV | 14 | 10000 | 0.06 | 900 | B,C,S |
| BSCQ000603030N9□00 | 0.9 | 500 MHz,500 mV | 14 | 10000 | 0.06 | 900 | B,C,S |
| BSCQ000603031N0□00 | 1 | 500 MHz,500 mV | 14 | 10000 | 0.07 | 850 | B,C,S |
| BSCQ000603031N1□00 | 1.1 | 500 MHz,500 mV | 14 | 10000 | 0.07 | 850 | B,C,S |
| BSCQ000603031N2□00 | 1.2 | 500 MHz,500 mV | 14 | 10000 | 0.08 | 800 | B,C,S |
| BSCQ000603031N3□00 | 1.3 | 500 MHz,500 mV | 14 | 10000 | 0.09 | 760 | B,C,S |
| BSCQ000603031N4□00 | 1.4 | 500 MHz,500 mV | 14 | 10000 | 0.12 | 640 | B,C,S |
| BSCQ000603031N5□00 | 1.5 | 500 MHz,500 mV | 14 | 10000 | 0.15 | 600 | B,C,S |
| BSCQ000603031N6□00 | 1.6 | 500 MHz,500 mV | 14 | 10000 | 0.19 | 510 | B,C,S |
| BSCQ000603031N7□00 | 1.7 | 500 MHz,500 mV | 14 | 10000 | 0.11 | 680 | B,C,S |
| BSCQ000603031N8□00 | 1.8 | 500 MHz,500 mV | 14 | 10000 | 0.12 | 640 | B,C,S |
| BSCQ000603031N9□00 | 1.9 | 500 MHz,500 mV | 14 | 10000 | 0.13 | 620 | B,C,S |
| BSCQ000603032N0□00 | 2 | 500 MHz,500 mV | 14 | 10000 | 0.15 | 600 | B,C,S |
| BSCQ000603032N1□00 | 2.1 | 500 MHz,500 mV | 14 | 10000 | 0.16 | 550 | B,C,S |
| BSCQ000603032N2□00 | 2.2 | 500 MHz,500 mV | 14 | 10000 | 0.2 | 500 | B,C,S |
| BSCQ000603032N3□00 | 2.3 | 500 MHz,500 mV | 14 | 10000 | 0.24 | 460 | B,C,S |
| BSCQ000603032N4□00 | 2.4 | 500 MHz,500 mV | 14 | 10000 | 0.26 | 430 | B,C,S |
| BSCQ000603032N5□00 | 2.5 | 500 MHz,500 mV | 14 | 10000 | 0.28 | 415 | B,C,S |
| BSCQ000603032N6□00 | 2.6 | 500 MHz,500 mV | 14 | 10000 | 0.3 | 405 | B,C,S |
| BSCQ000603032N7□00 | 2.7 | 500 MHz,500 mV | 14 | 10000 | 0.32 | 400 | B,C,S |
| BSCQ000603032N8□00 | 2.8 | 500 MHz,500 mV | 14 | 9500 | 0.2 | 500 | B,C,S |
| BSCQ000603032N9□00 | 2.9 | 500 MHz,500 mV | 14 | 9300 | 0.22 | 480 | B,C,S |
| BSCQ000603033N0□00 | 3 | 500 MHz,500 mV | 14 | 9100 | 0.24 | 460 | B,C,J,S |

**NOTE: □-tolerance B=±0.1nH / C=±0.2nH / S=±0.3nH / H=±3% / J=±5%**

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

2.IDC:Applied the current to coils, the inductance shall be less than 10% initial value.

3.Residual impedance of short chip : 0.48nH

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# BSCQ00060303 Series Specification

| Part No. | Inductance (nH) | L,Q Test Freq. | Q Min. | SRF (MHz)Min. | RDC (Ω)Max. | IDC (mA)Max. | Tolerance |
|---|---|---|---|---|---|---|---|
| BSCQ000603033N1□00 | 3.1 | 500 MHz,500 mV | 14 | 8900 | 0.25 | 450 | B,C,S |
| BSCQ000603033N2□00 | 3.2 | 500 MHz,500 mV | 14 | 8700 | 0.28 | 415 | B,C,S |
| BSCQ000603033N3□00 | 3.3 | 500 MHz,500 mV | 14 | 8600 | 0.28 | 415 | B,C,S |
| BSCQ000603033N4□00 | 3.4 | 500 MHz,500 mV | 14 | 8400 | 0.29 | 410 | B,C,S |
| BSCQ000603033N5□00 | 3.5 | 500 MHz,500 mV | 14 | 8200 | 0.3 | 405 | B,C,S |
| BSCQ000603033N6□00 | 3.6 | 500 MHz,500 mV | 14 | 8100 | 0.32 | 400 | B,C,S |
| BSCQ000603033N7□00 | 3.7 | 500 MHz,500 mV | 14 | 8000 | 0.36 | 370 | B,C,S |
| BSCQ000603033N8□00 | 3.8 | 500 MHz,500 mV | 14 | 7800 | 0.4 | 355 | B,C,S |
| BSCQ000603033N9□00 | 3.9 | 500 MHz,500 mV | 14 | 7700 | 0.41 | 350 | B,C,S |
| BSCQ000603034N3□00 | 4.3 | 500 MHz,500 mV | 14 | 6500 | 0.48 | 320 | C,S |
| BSCQ000603034N7□00 | 4.7 | 500 MHz,500 mV | 14 | 6400 | 0.42 | 350 | H,C,S |
| BSCQ000603035N1□00 | 5.1 | 500 MHz,500 mV | 14 | 6100 | 0.45 | 330 | C,S |
| BSCQ000603035N6□00 | 5.6 | 500 MHz,500 mV | 14 | 5500 | 0.47 | 325 | C,S |
| BSCQ000603036N2□00 | 6.2 | 500 MHz,500 mV | 14 | 5100 | 0.52 | 305 | H,C,S |
| BSCQ000603036N8□00 | 6.8 | 500 MHz,500 mV | 14 | 4800 | 0.55 | 305 | H,J |
| BSCQ000603037N5□00 | 7.5 | 500 MHz,500 mV | 14 | 4600 | 0.55 | 305 | H,J |
| BSCQ000603038N2□00 | 8.2 | 500 MHz,500 mV | 14 | 4300 | 0.57 | 290 | H,J |
| BSCQ000603039N1□00 | 9.1 | 500 MHz,500 mV | 14 | 4000 | 0.65 | 270 | H,J |
| BSCQ0006030310N□00 | 10 | 500 MHz,500 mV | 14 | 3800 | 0.85 | 230 | H,J |
| BSCQ0006030312N□00 | 12 | 500 MHz,500 mV | 12 | 3300 | 0.85 | 230 | H,J |
| BSCQ0006030315N□00 | 15 | 500 MHz,500 mV | 12 | 2600 | 0.89 | 220 | H,J |
| BSCQ0006030318N□00 | 18 | 500 MHz,500 mV | 12 | 2300 | 1.05 | 205 | H,J |
| BSCQ0006030322N□00 | 22 | 500 MHz,500 mV | 12 | 1900 | 1.29 | 190 | H,J |

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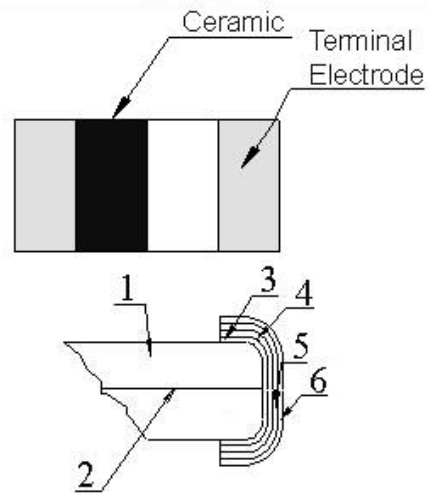
# BSCQ00060303 Series Specification

## 8 BSCQ00060303 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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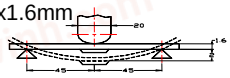
# BSCQ00060303 Series Specification

## 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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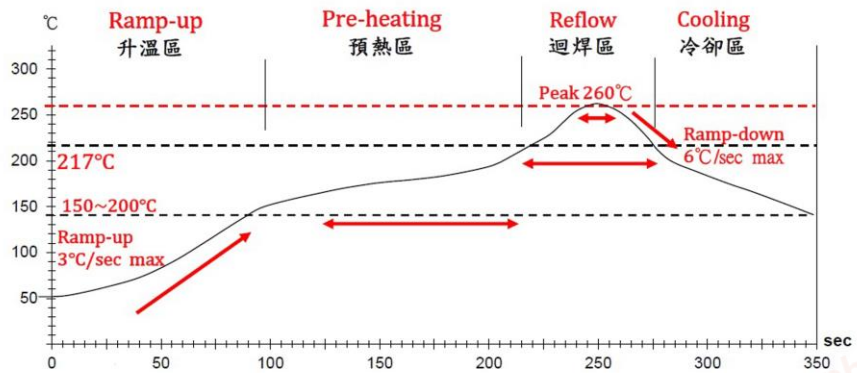
# BSCQ00060303 Series Specification




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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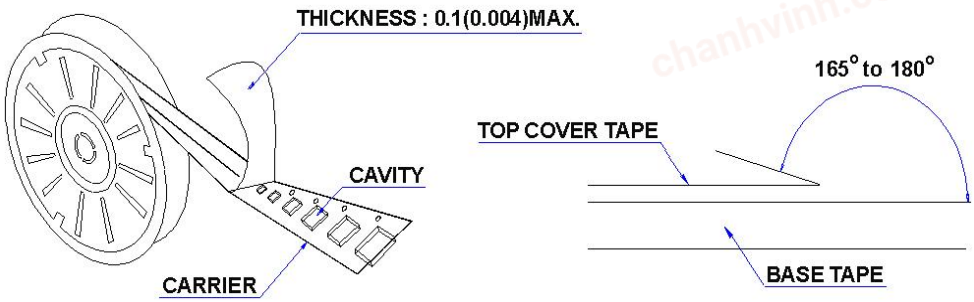
# BSCQ00060303 Series Specification

## 10 Packaging:

### 10.1 Packaging -Cover Tape

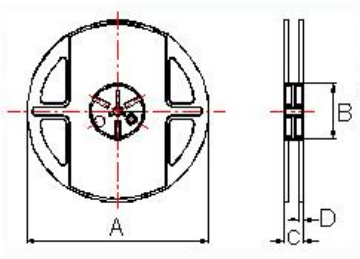
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.




### 10.2 Packaging Quantity

| TYPE | PCS/REEL |
|---|---|
| 060303 | 15000 |

### 10.3 Reel Dimensions




Dimensions in mm

| TYPE | A | B | C | D |
|---|---|---|---|---|
| 060303 | 180 | 60 | 13 | 1.5 |

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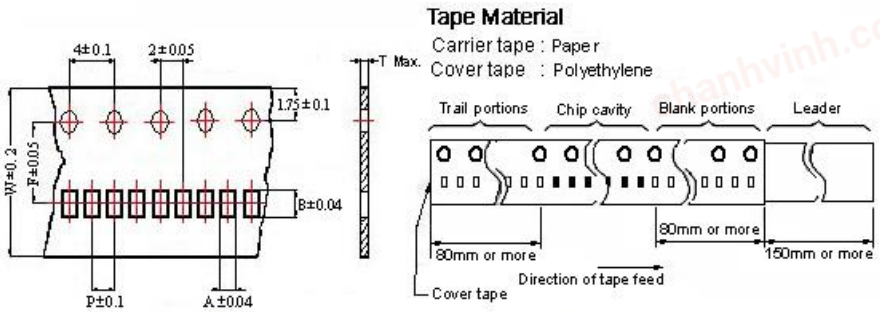
# BSCQ00060303 Series Specification

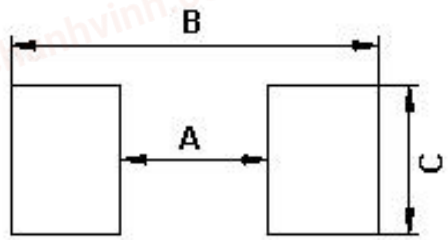
## 10 Packaging:

### 10.4 Tape Dimensions in mm




| TYPE | A | B | T | W | P | F |
|---|---|---|---|---|---|---|
| 060303 | 0.37 | 0.67 | 0.42 | 8 | 2 | 3.5 |

## 11 Recommended Land Pattern:




Dimensions in mm

| TYPE | A | B | C |
|---|---|---|---|
| 060303 | 0.3 | 0.75~1.05 | 0.3 |

## 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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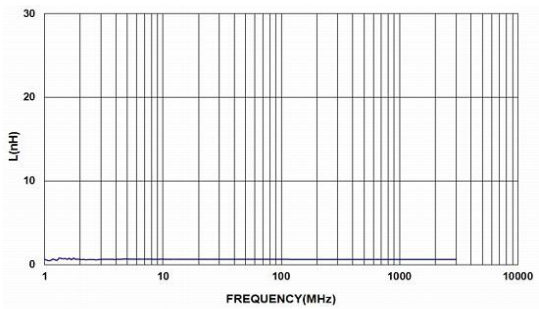
# BSCQ00060303 Series Specification

## 13 Graph:

BSCQ000603030N6B00

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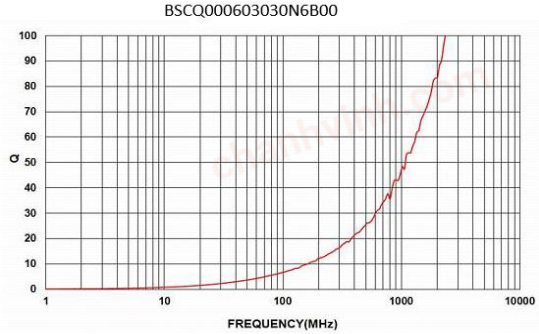


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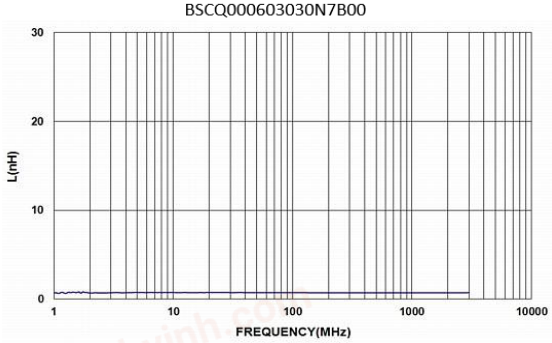


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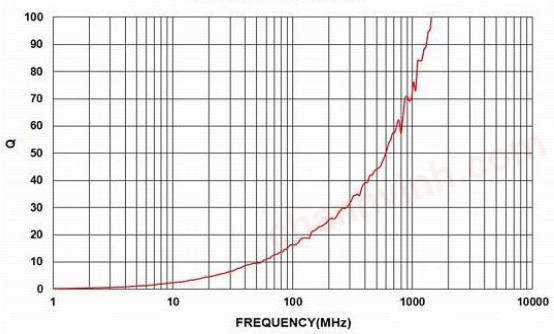


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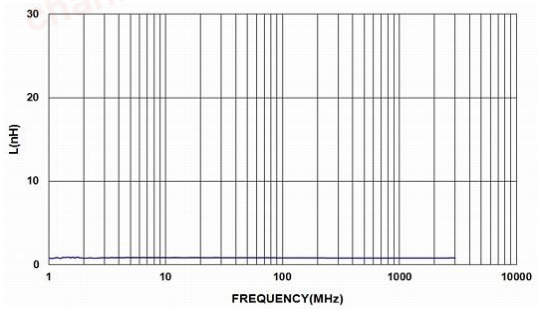


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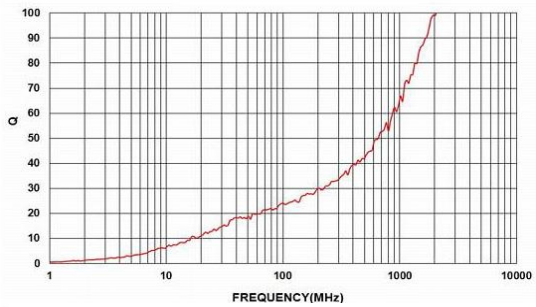


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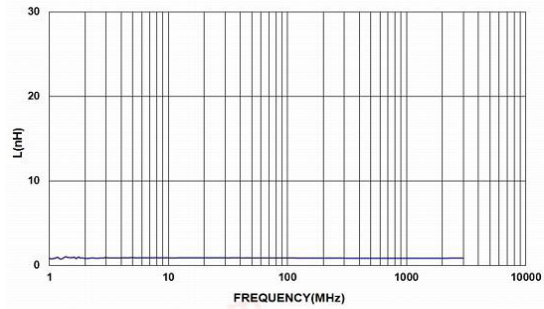


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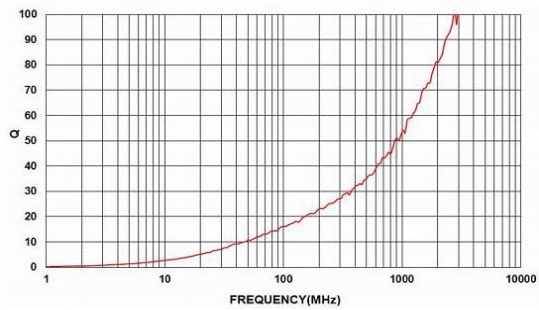

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# BSCQ00060303 Series Specification

## 13 Graph:

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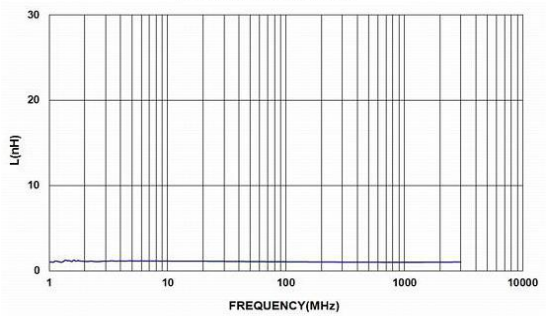


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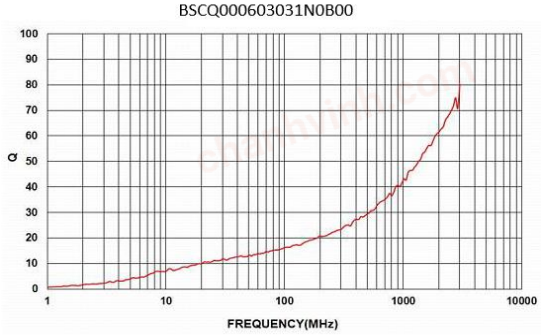


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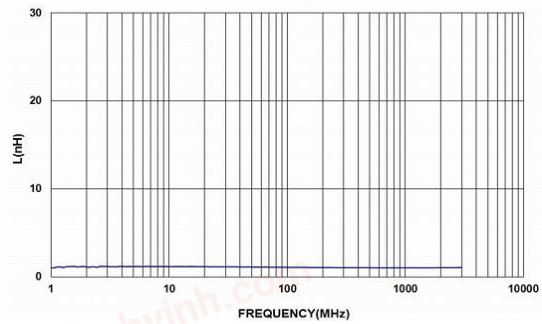


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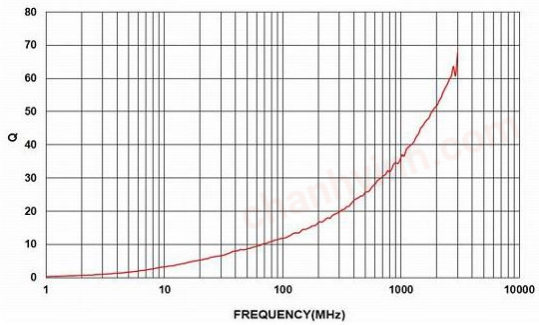


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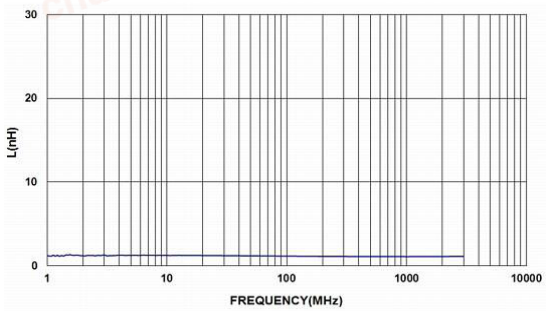


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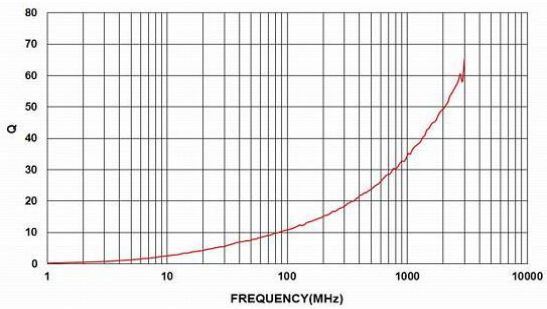


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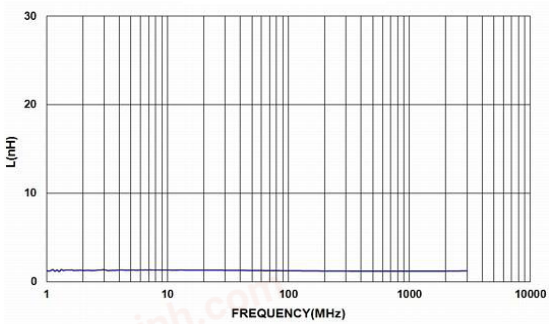


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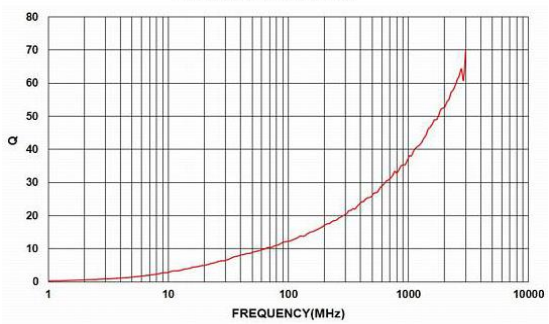

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# BSCQ00060303 Series Specification

## 13 Graph:

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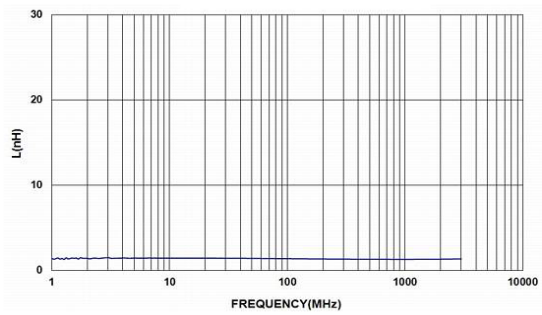


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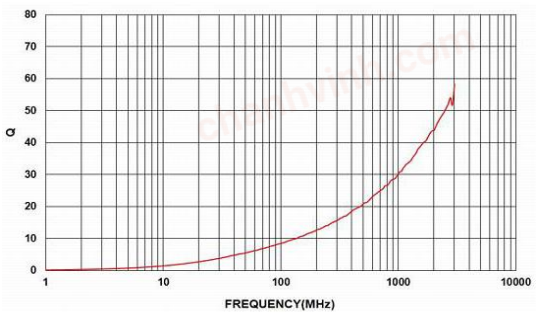


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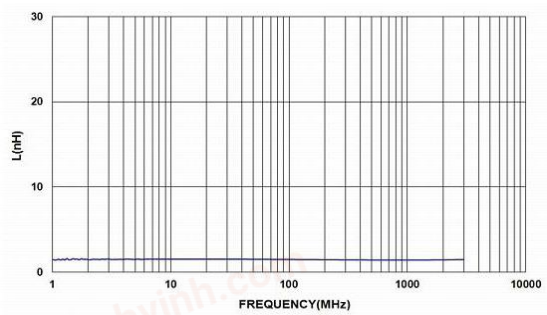


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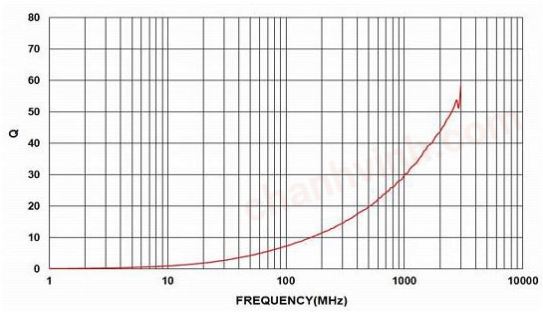


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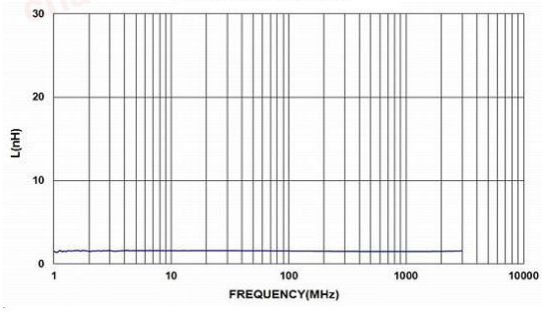


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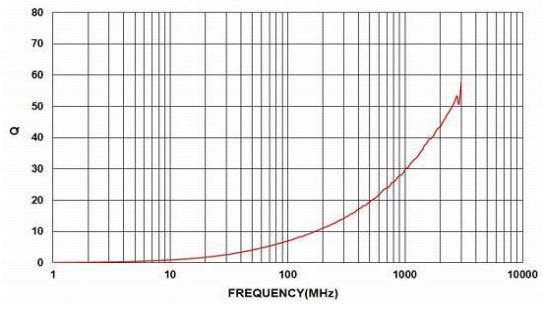


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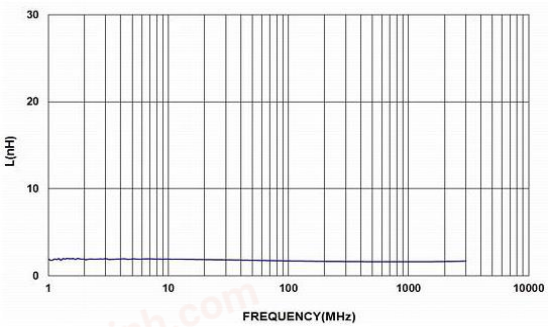


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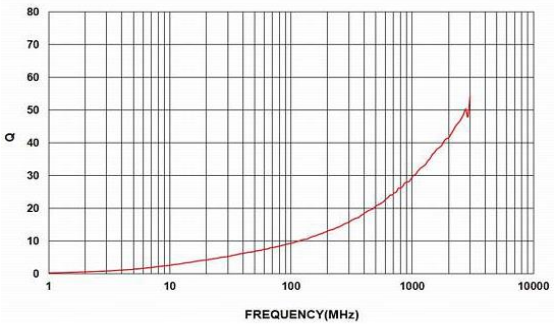

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# BSCQ00060303 Series Specification

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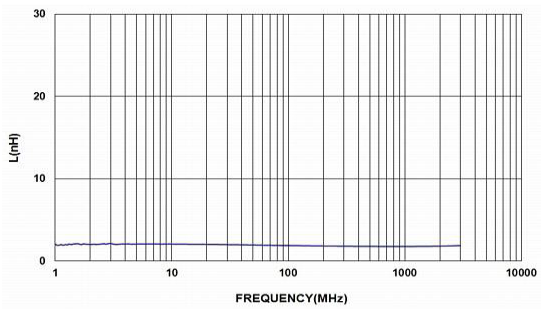


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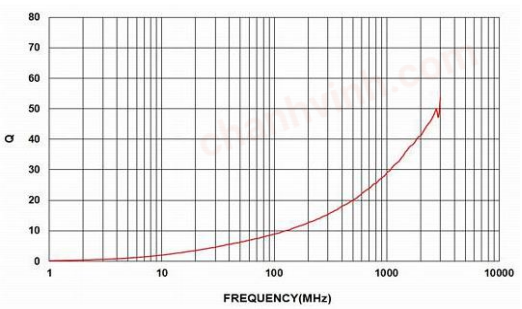


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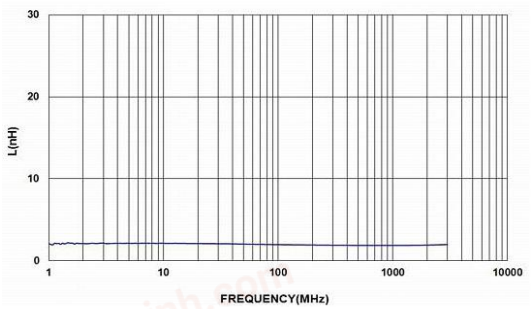


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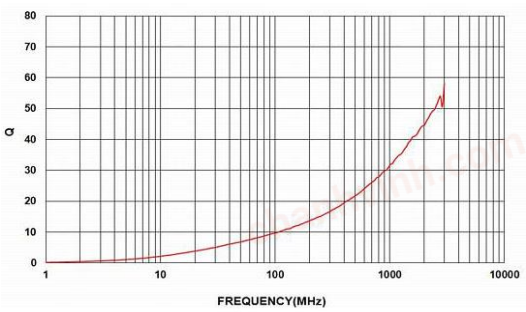


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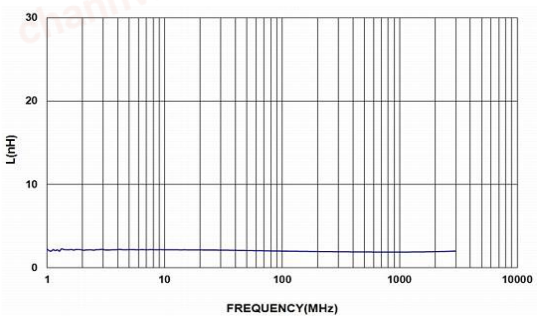


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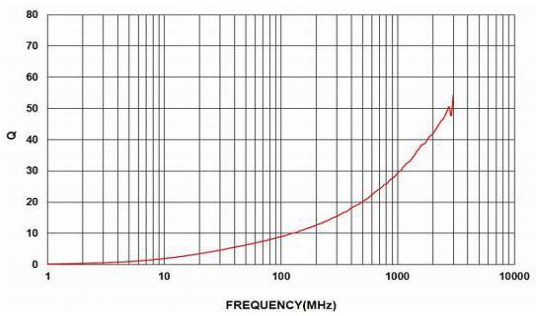


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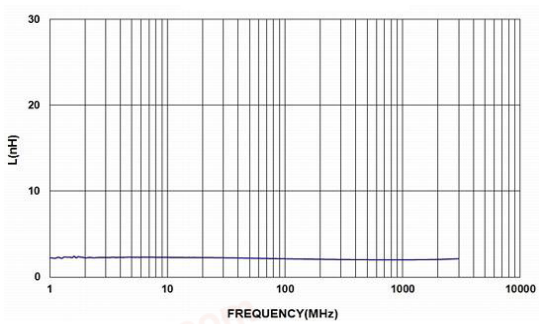


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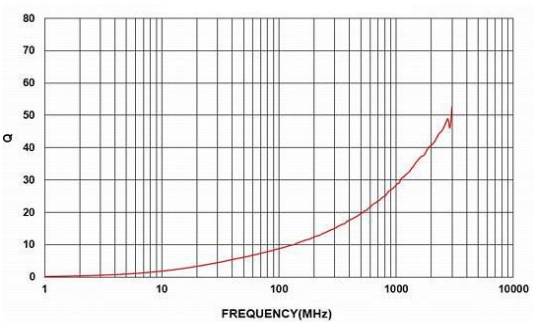

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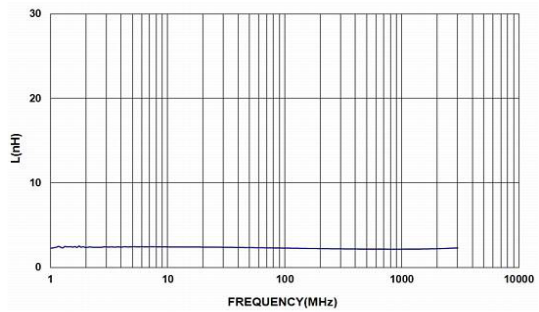


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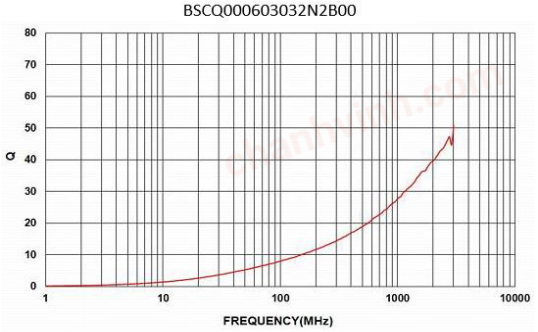


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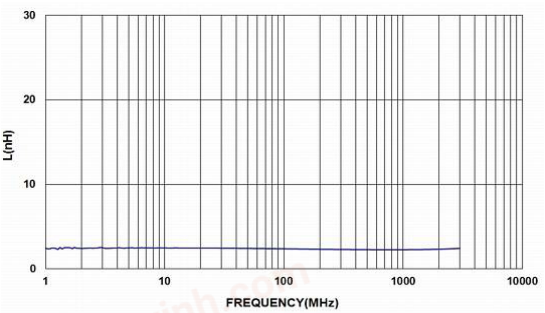


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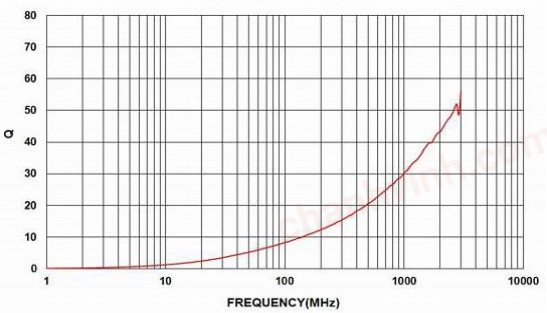


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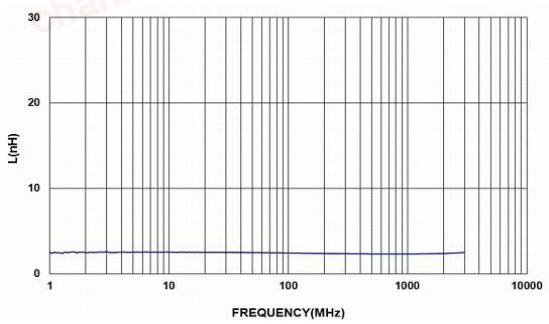


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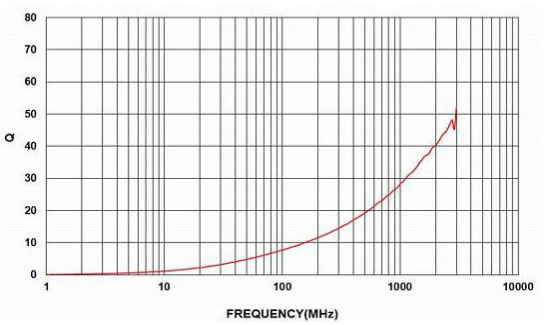


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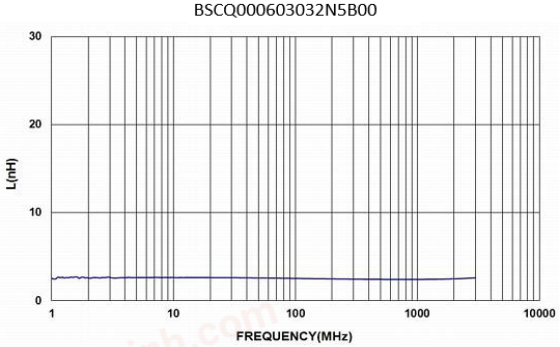


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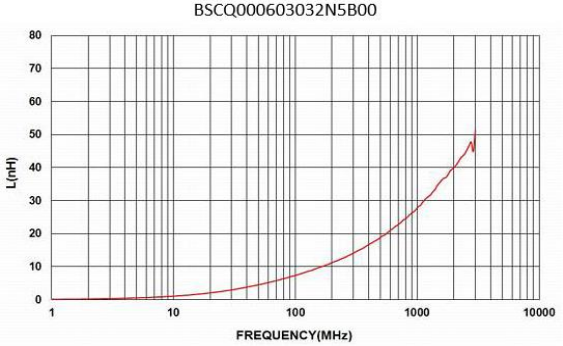

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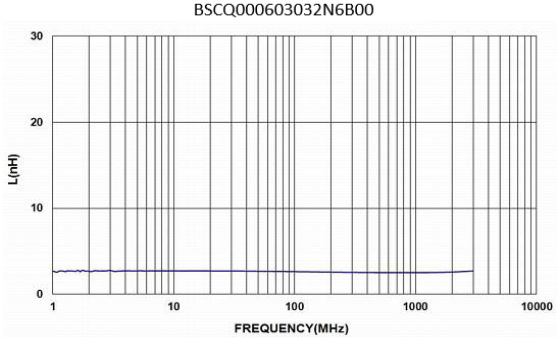


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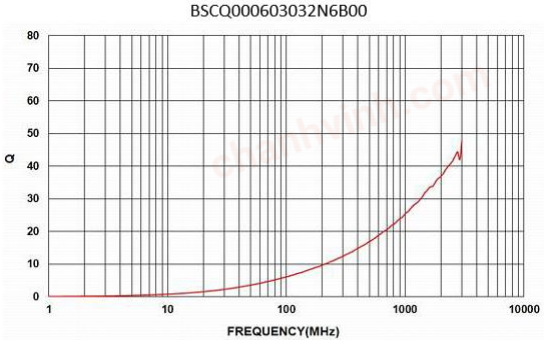


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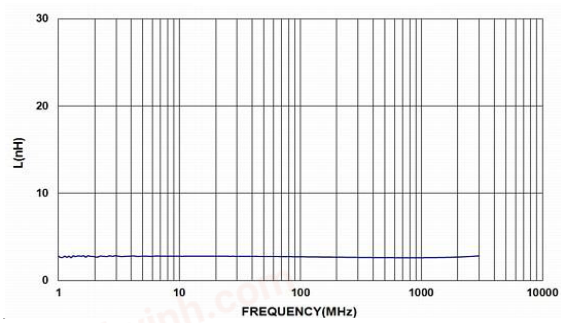


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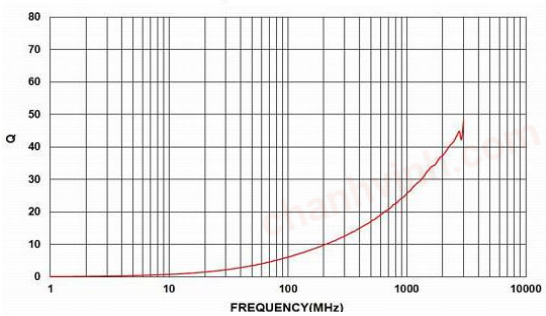


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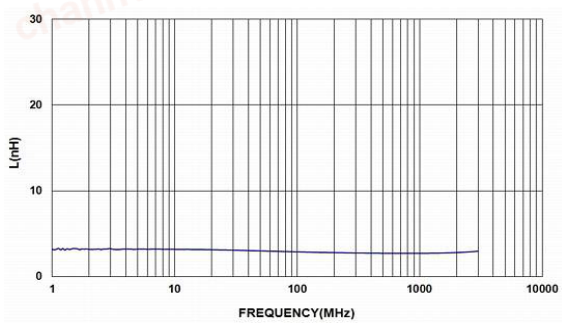


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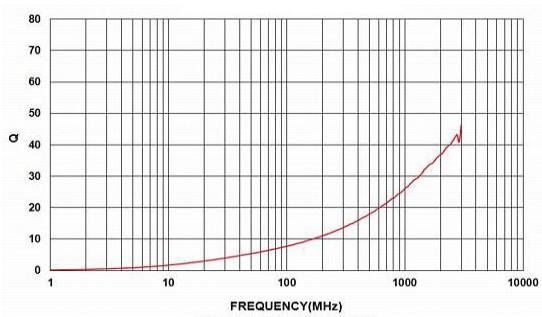


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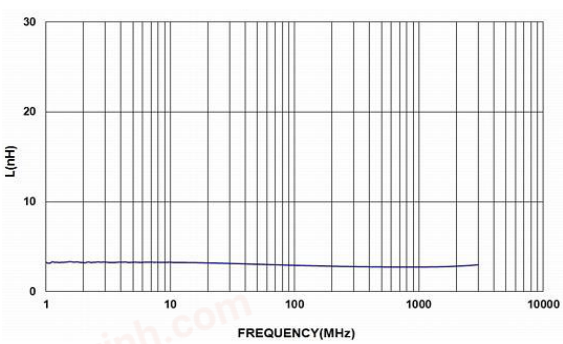


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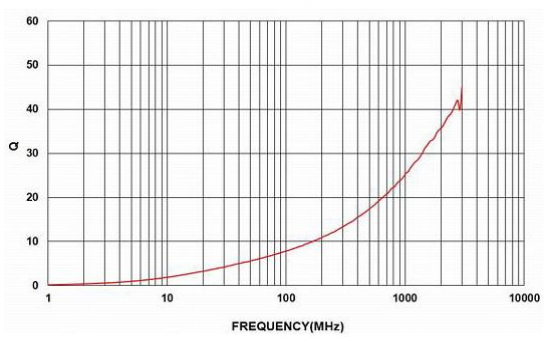

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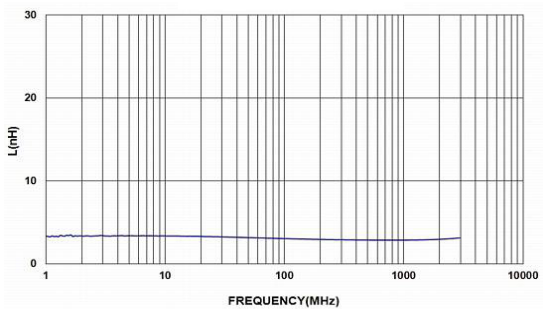


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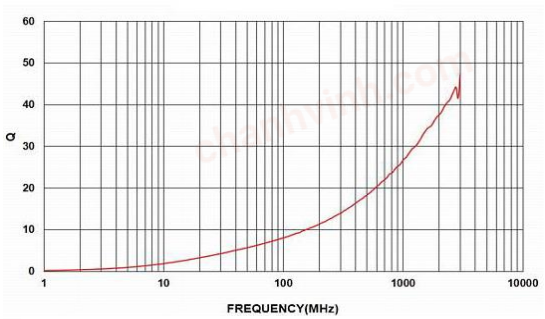


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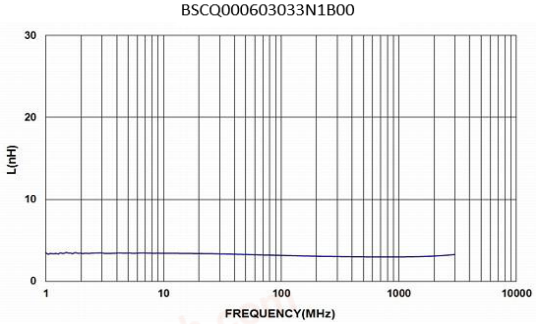


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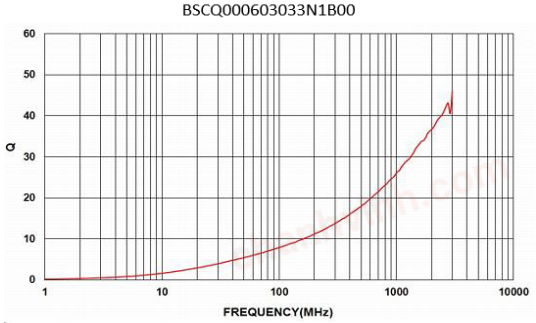


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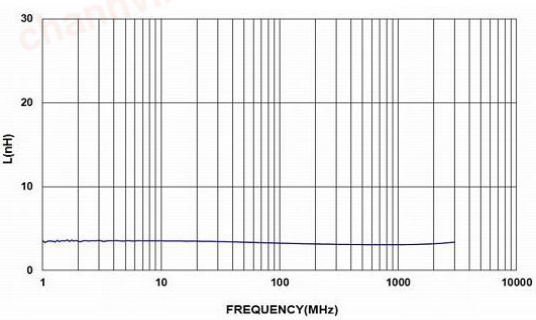


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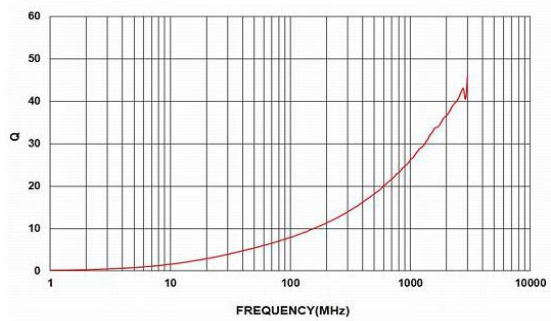


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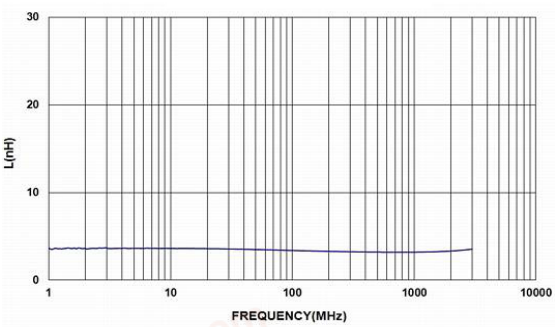


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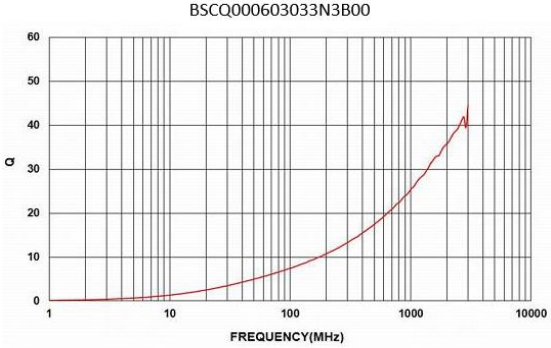

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# BSCQ00060303 Series Specification

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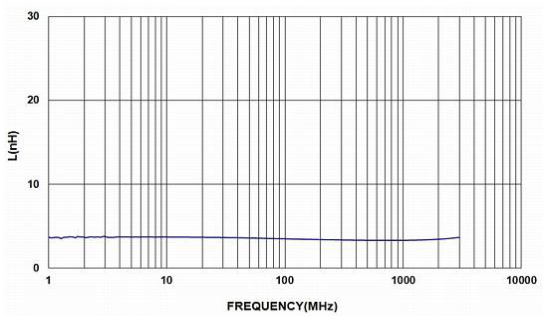


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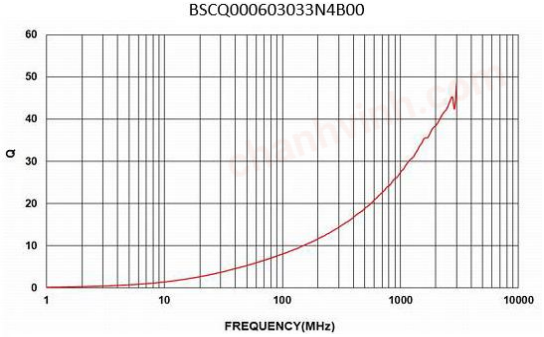


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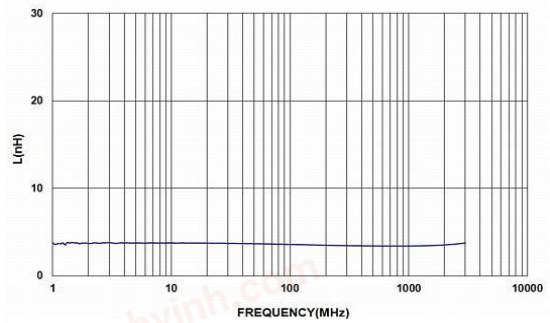


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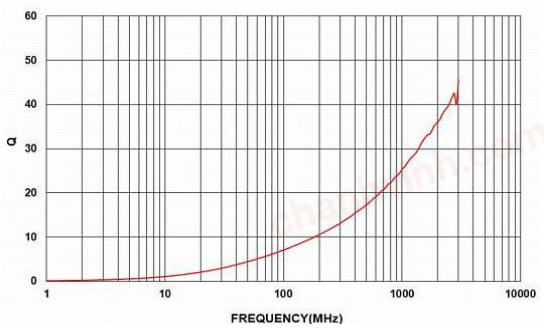


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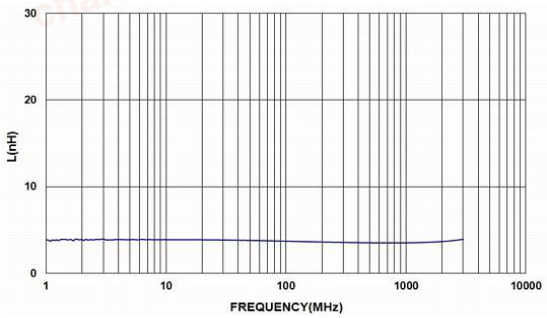


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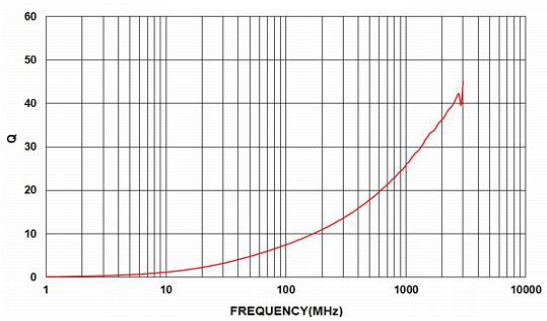


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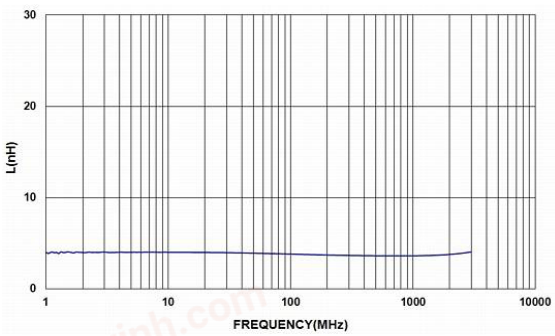


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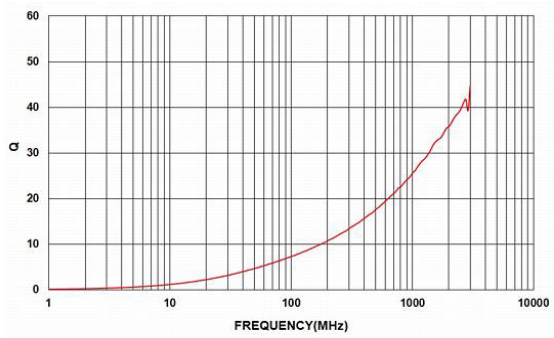

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# BSCQ00060303 Series Specification

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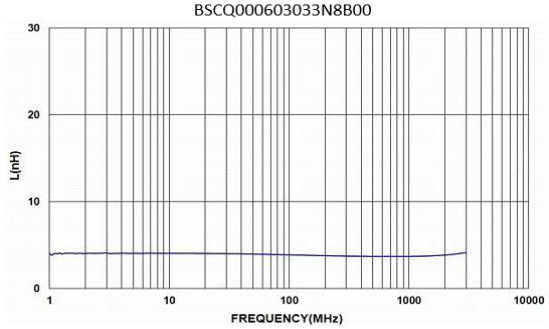


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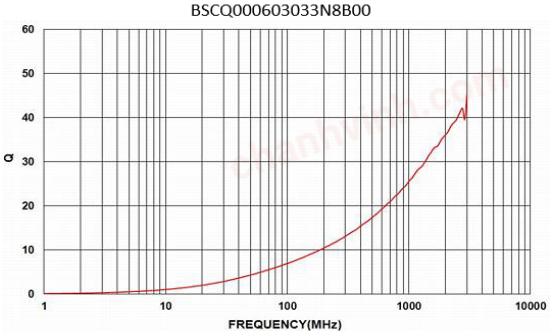


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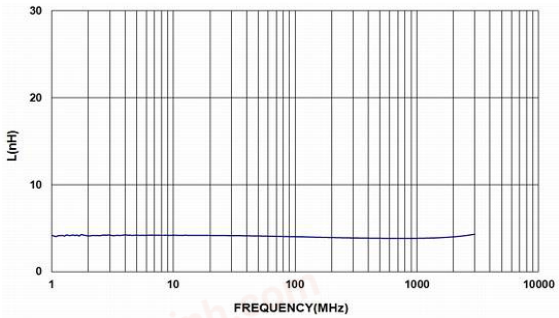


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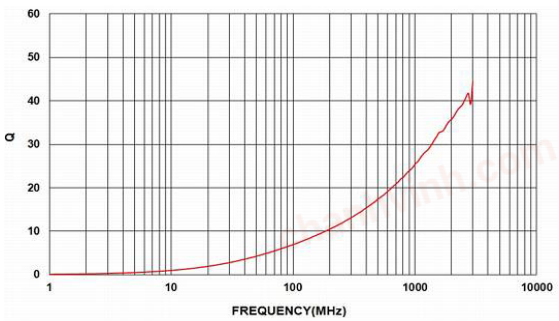


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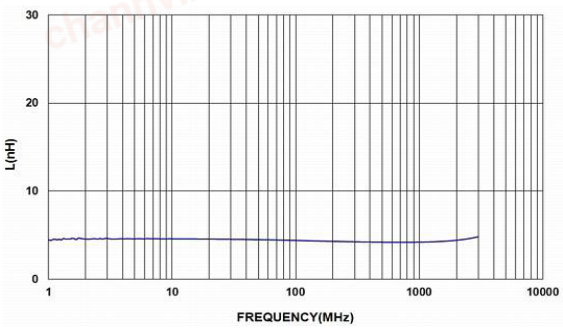


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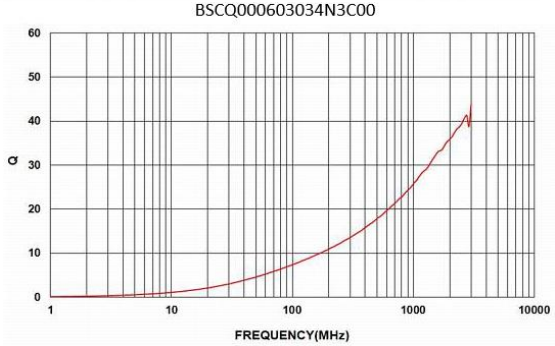


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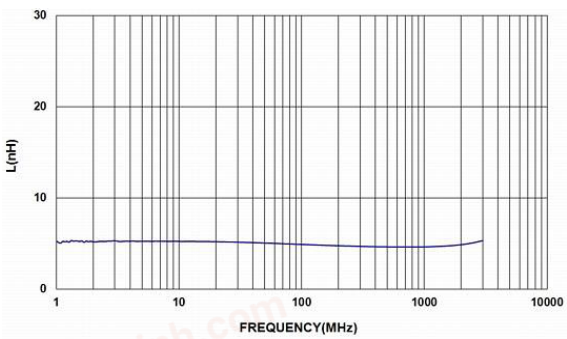


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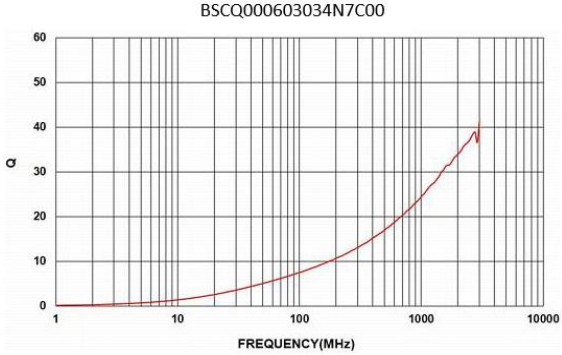

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# BSCQ00060303 Series Specification

## 13 Graph:

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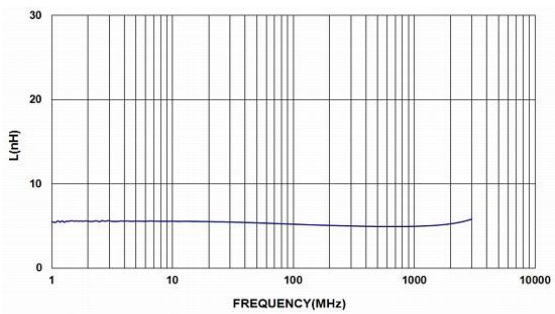


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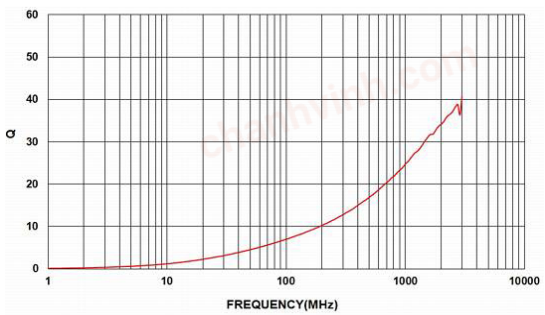


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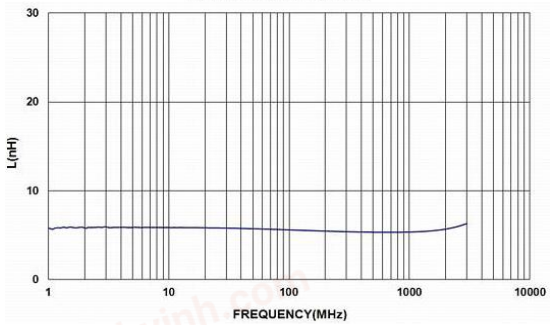


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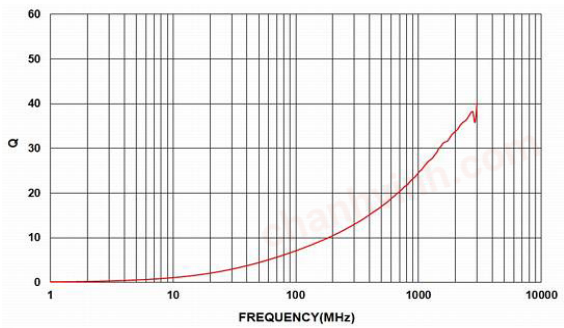


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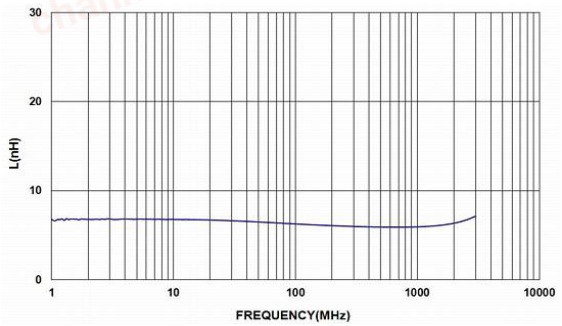


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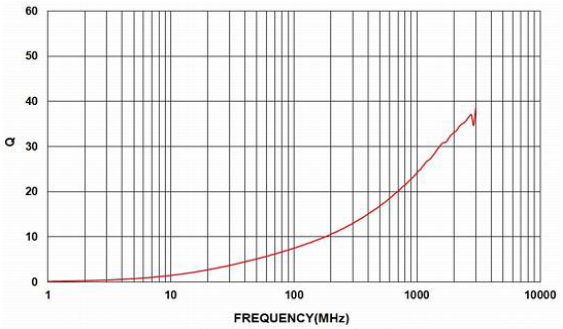


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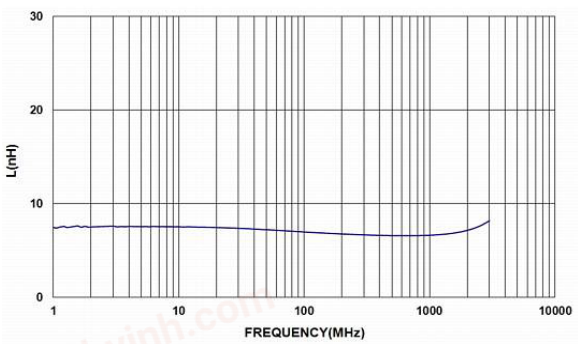


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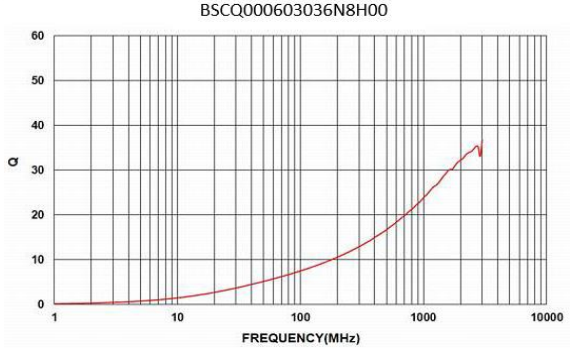

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# BSCQ00060303 Series Specification

## 13 Graph:

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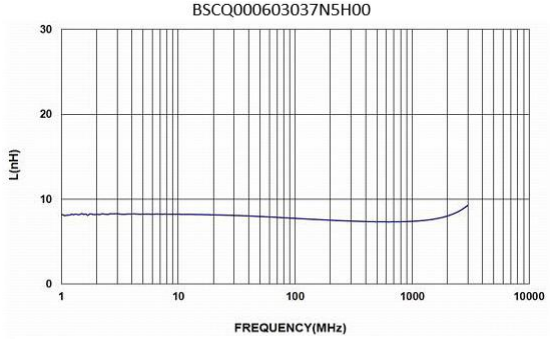


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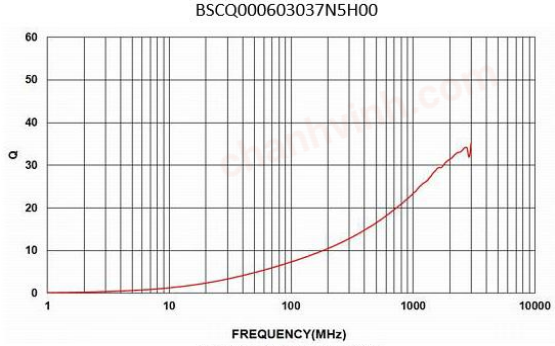


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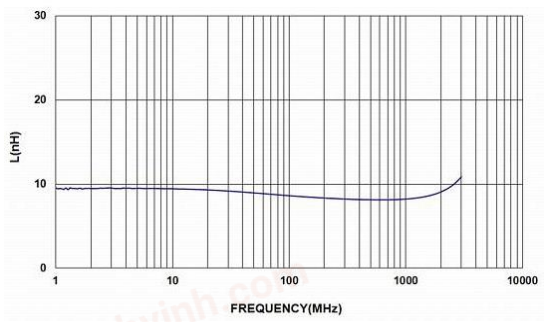


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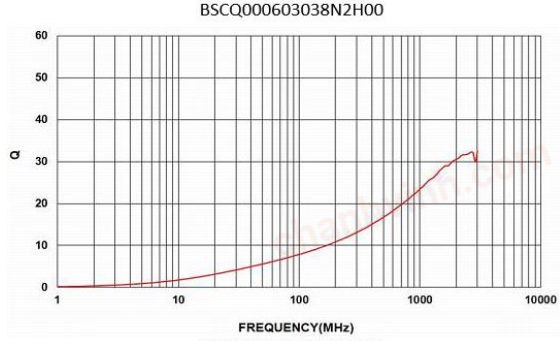


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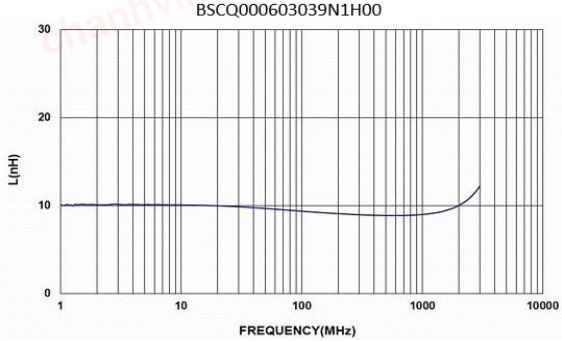


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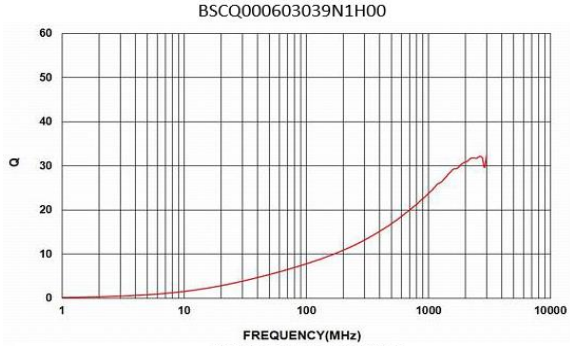


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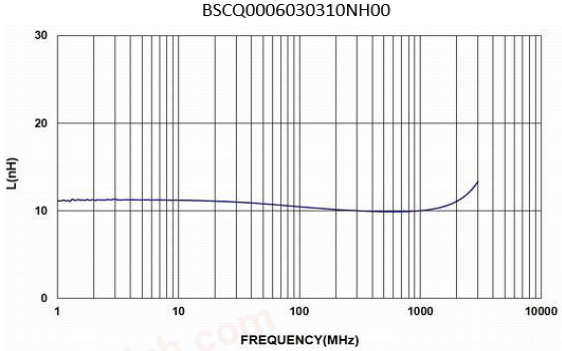


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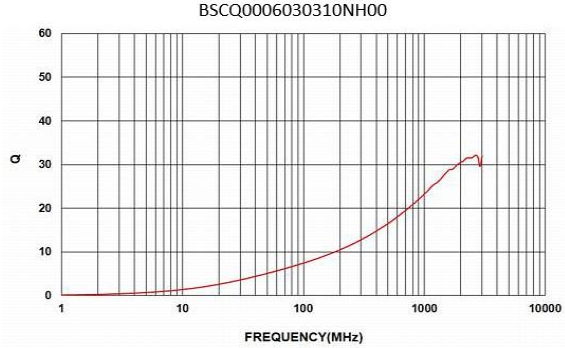

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# BSCQ00060303 Series Specification

## 13 Graph:

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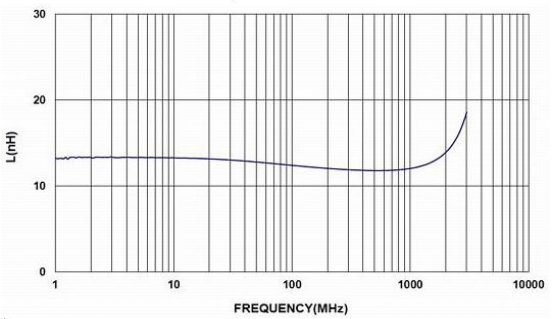


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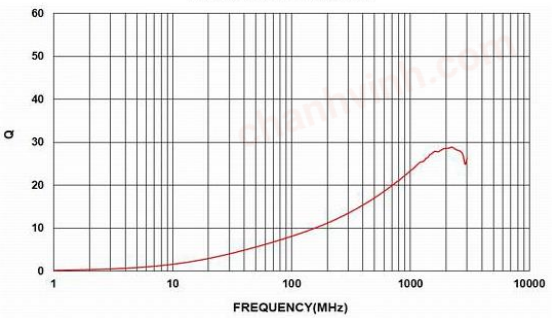


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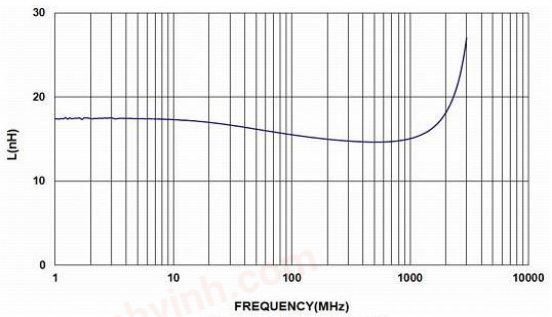


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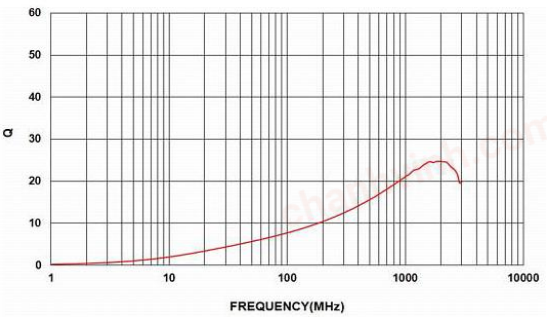


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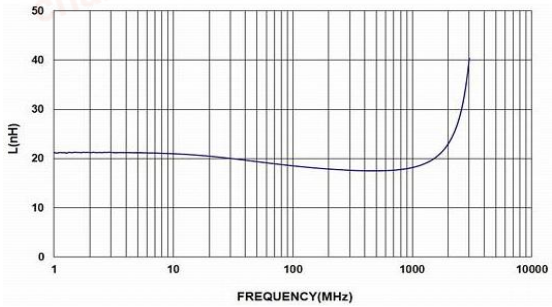


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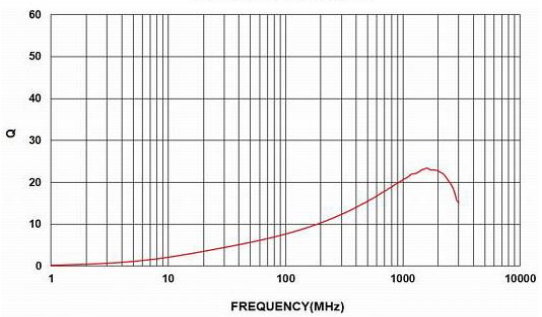


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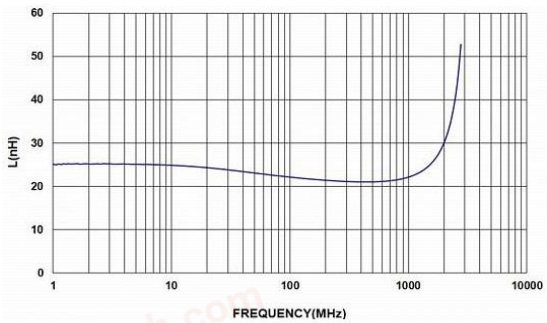


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