RF Inductor

BWCS Series

Overview

Wire-wound RF inductors are electronic components designed to store energy in a magnetic field when electrical current passes through them. They are constructed by winding a conductive wire (usually copper or gold-plated) around a core material such as air, ceramic, or ferrite.
This configuration allows them to provide high inductance values with minimal power loss, especially at high frequencies.

Benefits

1. High Q-Factor (Quality Factor)
2. Ceramic body and wire wound construction provide high SRFs
3. Low DC resistance design
4. High Current Handling
5. Can maintain excellent thermal stability at different temperatures

Applications

1. Industrial and Medical Equipmen: RFID systems and medical imaging equipment.
2. Data Centers
3. Networking
4. Base Station
5. Consumer Electronics
6. Security system

Product Information

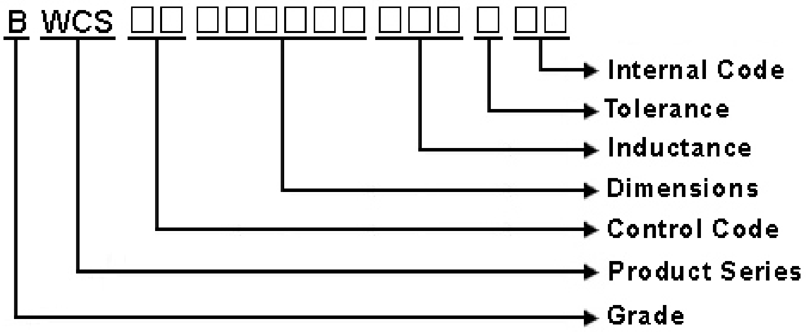
Series	Size Code (JIS/EIA)	Inductance (nH)
BWCS	0603/0201 1005/0402 1608/0603 2012/0805 2520/1008 4938/1812	1 ~ 470

BWCS00120707 Series Specification

1 Scope:

This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:



3 Rating:

Operating Temperature: - 40℃ ~ 125℃
(Including self - temperature rise)

Storage Temperature: - 40℃ ~ 125℃
(The storage temperature range is for after the assembly)

4 Marking:

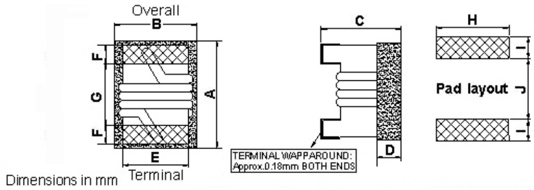
No Marking

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

BWCS00120707 Series Specification

6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
120707	1.09±0.1	0.54±0.1	0.56±0.1	0.25ref	0.51	0.23	0.56	0.66	0.36	0.46

Net Weight (grms)

SIZE CODE	Net Weight (grms)
120707	0.0008 (typ.)

7 Electrical Characteristics:

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance
BWCS001207071N0□00	1	250/250	16	12700	0.045	1360	K,J,B
BWCS001207071N2□00	1.2	250/250	10	10400	0.14	640	K,J,B
BWCS001207071N3□00	1.3	250/250	10	10400	0.14	640	K,B
BWCS001207071N8□00	1.8	250/250	16	11300	0.07	1040	C,K,J,B,G
BWCS001207071N9□00	1.9	250/250	16	11300	0.07	1040	K,J,B
BWCS001207072N0□00	2	250/250	16	11100	0.07	1040	K,J,B
BWCS001207072N1□00	2.1	250/250	19	10800	0.07	960	K,J,B
BWCS001207072N2□00	2.2	250/250	19	10800	0.07	960	K,J,B
BWCS001207072N4□00	2.4	250/250	15	10500	0.068	790	K,J,B
BWCS001207072N5□00	2.5	250/250	13	10400	0.15	640	K,J,B
BWCS001207072N7□00	2.7	250/250	16	10400	0.12	640	K,J,B,C
BWCS001207073N3□00	3.3	250/250	19	7000	0.066	840	K,J,H,B,G,C
BWCS001207073N6□00	3.6	250/250	19	6800	0.066	840	K,J,H,G
BWCS001207073N9□00	3.9	250/250	19	6000	0.066	840	K,J,H,G,C
BWCS001207074N3□00	4.3	250/250	18	6000	0.091	700	K,J,H
BWCS001207074N7□00	4.7	250/250	15	4770	0.13	640	K,J,H
BWCS001207075N1□00	5.1	250/250	20	4800	0.083	800	K,J,H
BWCS001207075N6□00	5.6	250/250	20	4800	0.083	760	K,J,H,G
BWCS001207075N8□00	5.8	250/250	20	4800	0.083	760	K,J,H
BWCS001207076N2□00	6.2	250/250	20	4800	0.083	760	K,J,H
BWCS001207076N8□00	6.8	250/250	20	4800	0.083	680	K,J,H,G
BWCS001207077N3□00	7.3	250/250	20	4800	0.12	680	K,J,H
BWCS001207077N5□00	7.5	250/250	22	4800	0.1	680	K,J,H
BWCS001207078N2□00	8.2	250/250	22	4400	0.1	680	K,J,H,G
BWCS001207078N7□00	8.7	250/250	18	4100	0.2	480	K,J,H,G

NOTE: □-tolerance C=±0.2nH B=±0.1nH / G=±2% / H=±3% / J=±5% / K=±10%

1.Operating temperature range -40℃ ~ 125℃(Including self - temperature rise)

2.Irms for a 15℃ temperature rise from 25℃ ambient.

3.L/Q Test OSC @200mV.

BWCS00120707 Series Specification

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance
BWCS001207079N0□00	9	250/250	22	4160	0.1	680	K,J,H
BWCS001207079N1□00	9.1	250/250	22	4160	0.1	680	K,J,H
BWCS001207079N5□00	9.5	250/250	18	4000	0.2	480	K,J,H,G
BWCS0012070710N□00	10	250/250	21	3900	0.2	480	K,J,H,G
BWCS0012070711N□00	11	250/250	24	3680	0.12	640	K,J,H,G
BWCS0012070712N□00	12	250/250	24	3600	0.12	640	K,J,H,G
BWCS0012070713N□00	13	250/250	24	3450	0.21	440	K,J,H,G
BWCS0012070715N□00	15	250/250	24	3280	0.17	560	K,J,H,G
BWCS0012070716N□00	16	250/250	24	3100	0.22	560	K,J,H,G
BWCS0012070718N□00	18	250/250	25	3100	0.23	420	K,J,H,G
BWCS0012070719N□00	19	250/250	24	3040	0.2	480	K,J,H,G
BWCS0012070720N□00	20	250/250	25	3000	0.25	420	K,J,H,G
BWCS0012070722N□00	22	250/250	25	2800	0.3	400	K,J,H,G
BWCS0012070723N□00	23	250/250	22	2720	0.3	400	K,J,H,G
BWCS0012070724N□00	24	250/250	25	2700	0.3	400	K,J,H,G
BWCS0012070727N□00	27	250/250	24	2480	0.3	400	K,J,H,G
BWCS0012070730N□00	30	250/250	25	2350	0.35	400	K,J,H,G
BWCS0012070733N□00	33	250/250	24	2350	0.4	400	K,J,H,G
BWCS0012070736N□00	36	250/250	24	2320	0.44	320	K,J,H,G
BWCS0012070739N□00	39	250/250	25	2100	0.55	200	K,J,H,G
BWCS0012070740N□00	40	250/250	24	2240	0.65	320	K,J,H,G
BWCS0012070743N□00	43	250/250	25	2030	0.81	100	K,J,H,G
BWCS0012070747N□00	47	250/250	20	2100	0.83	150	K,J,H,G
BWCS0012070751N□00	51	250/250	25	1750	0.82	100	K,J,H,G
BWCS0012070756N□00	56	250/250	22	1760	0.97	100	K,J,H,G
BWCS0012070768N□00	68	250/250	22	1620	1.12	100	K,J,H,G
BWCS0012070772N□00	72	250/250	20	1260	2	30	K,J,H,G
BWCS0012070782N□00	82	250/250	20	1260	1.55	50	K,J,H,G
BWCS00120707R10□00	100	250/250	20	1160	2	30	K,J,H,G
BWCS00120707R12□00	120	250/250	15	1100	2.2	30	K,J,H,G
BWCS00120707R18□00	180	100/100	8	700	2.7	50	K,J,H,G
BWCS00120707R22□00	220	100/100	8	700	4	50	K,J,H,G

NOTE: □-tolerance B=±0.1nH / G=±2% / H=±3% / J=±5% / K=±10%

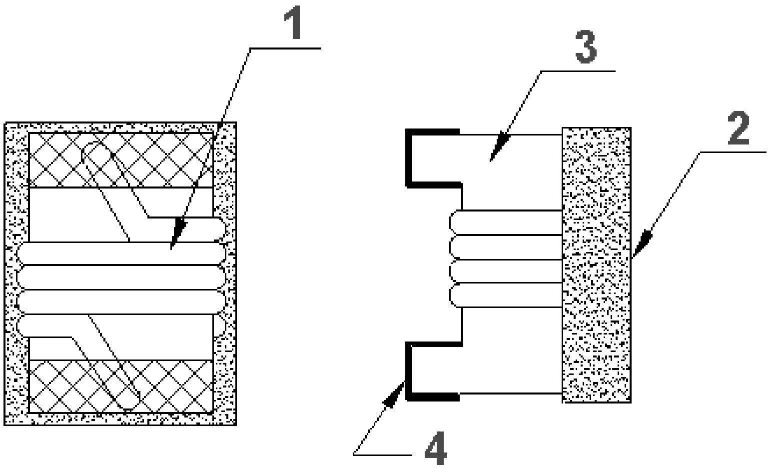
1.Operating temperature range -40℃~125℃(Including self - temperature rise)

2.Irms for a 15℃ temperature rise from 25℃ ambient.

3.L/Q Test OSC @200mV.

8 BWCS00120707 Series

8.1 Construction:



8.2 Material List:

NO	PART	MATERIAL
1	WIRE	Grade 180
2	EPOXY	UV GLUE
3	CORE	CERAMIC
4	TERMINAL	Ag/Cu/Ni/Sn

9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

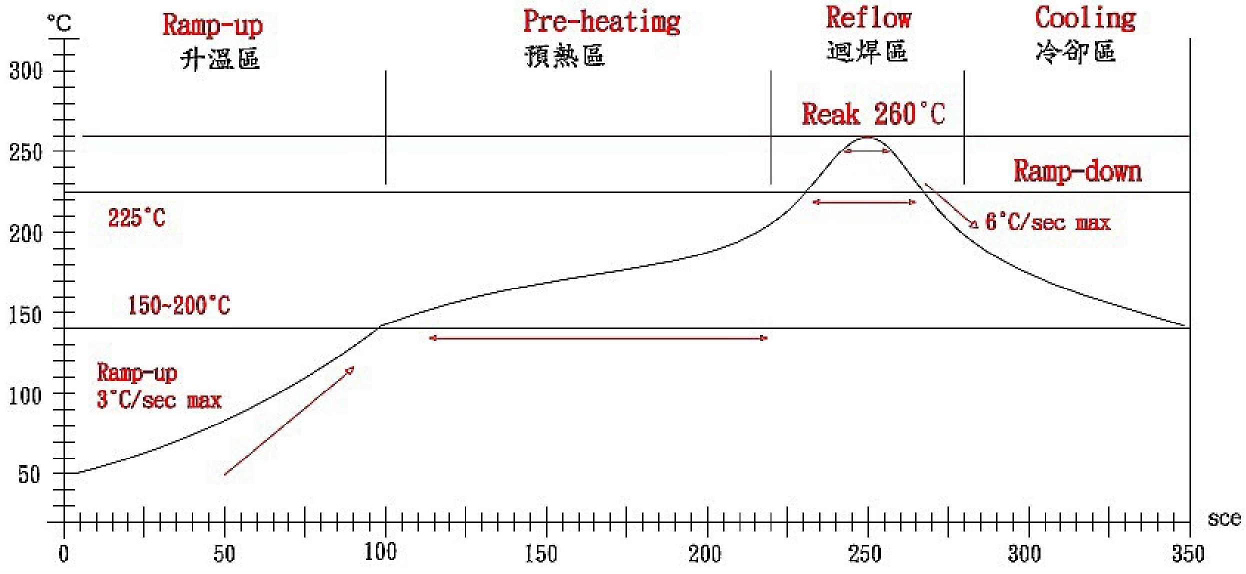
1-1.Environmental Performance

<table>
<tr><th>No</th><th>Item</th><th>Specification</th><th colspan="3">Test Method</th></tr>
<tr><td rowspan="7">1-1-1</td><td rowspan="7">Temperature Cycle</td><td rowspan="9">Appearance: No Damage
Inductance:within±10% of initial value
Q change:within±30% of initial value</td><td colspan="3">One cycle:</td></tr>
<tr><td>Step</td><td>Temperature (℃)</td><td>Time (min)</td></tr>
<tr><td>1</td><td>-40±3</td><td>30</td></tr>
<tr><td>2</td><td>25±2</td><td>15</td></tr>
<tr><td>3</td><td>125±3</td><td>30</td></tr>
<tr><td>4</td><td>25±2</td><td>15</td></tr>
<tr><td colspan="3">Total: 5 cycles
Measured After Exposure in The Room Condition For 1hrs</td></tr>
<tr><td>1-1-2</td><td>High Temperature Resistance</td><td colspan="3">Temperature: 125±3℃
Time: 1000Hrs
Measured After Exposure In The Room Condition For 1Hrs</td></tr>
<tr><td>1-1-3</td><td>Low Temperature Resistance</td><td colspan="3">Temperature: -40±3℃
Time: 1000Hrs
Measured After Exposure In The Room Condition For 1Hrs</td></tr>
<tr><td>1-1-4</td><td>Humidity Load Life</td><td>There should be no evidence of short or open circle</td><td colspan="3">Temperature: 40±2℃
Relative Humidity: 90~95%
Load: Allowed DC Current
Time: 96Hrs</td></tr>
</table>

1-2.Mechanical Performance

No	Item	Specification	Test Method
1-2-1	Vibration Test (Low Frequency)	1.Appearance: No Damage 2.Inductance:within±10% of initial value 3.Q change:within±30% of initial value	1. Test device shall be soldered on the substrate. 2. Oscillation frequency: 10 to 55 to 10Hz for 1min. 3. Amplitude: 1.5mm 4. Time: 2hrs for each axis(X, Y & Z),total 6hrs
1-2-2	Resistance TO Soldering Heat	Appearance: No Damage	1. The device should be reflow soldered on PCB (peak 260℃±5℃ for 10 seconds) 2. Solder Composition: Sn/Ag3.0/Cu0.5 3. Test time: 6 minutes
1-2-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	1. Pre-Heating: 150℃,1min. 2. Solder Composition: Sn/Ag3.0/Cu0.5 3. Solder Temperature: 245±5℃. 4. Immersion Time: 4±1 sec.
1-2-4	Component Adhesion (Push Test)	1 Lbs. For 0402 2 Lbs. For 0603 4 Lbs. For The Rest	The device should be reflow soldered (245±5℃ For 10 seconds) to a tinned copper substrate. A force gauge should be applied to the side of the component. The device must withstand a minimum force of 2 or 4 pounds without a failure of the termination attached to component

BWCS00120707 Series Specification



Reflow profile

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

管制項目 Item.	升溫區 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℃	150℃ ~ 200℃	Above 217°C	260±5℃	Peak Temp.~150℃
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	-

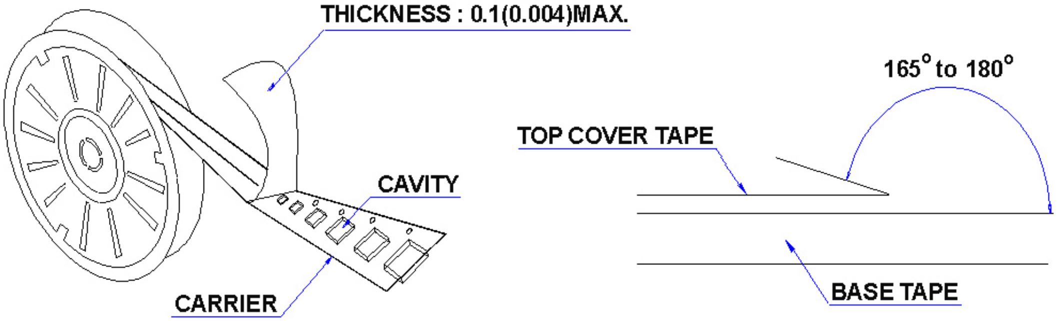
NOTE:

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

10 Packaging:

10.1 Packaging -Cover Tape

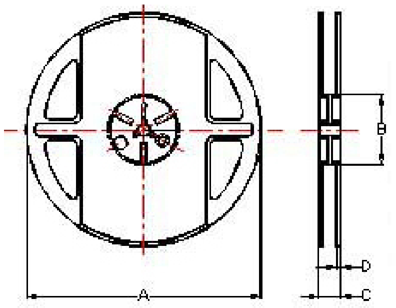
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
120707	4000

10.3 Reel Dimensions



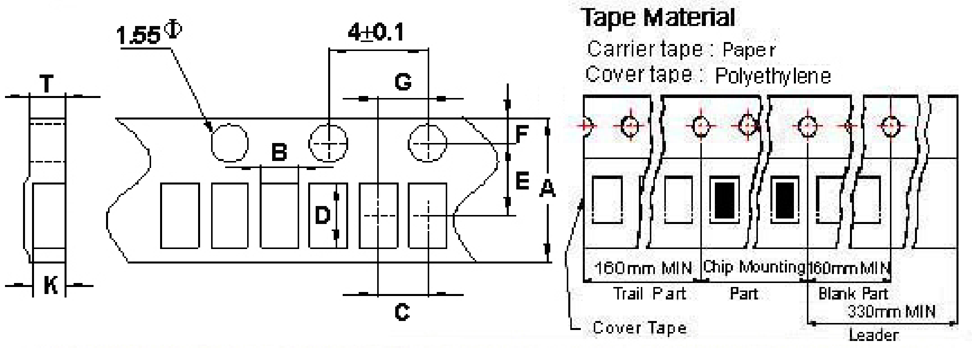
Dimensions in mm

TYPE	A	B	C	D
120707	178±1	60±0.5	12±0.5	1.5±0.5

BWCS00120707 Series Specification

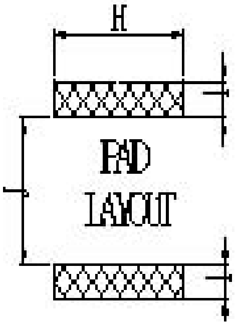
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	T	K
120707	8.0	0.67	2	1.20	3.5	1.75	2	0.75	0.59

11 Recommended Land Pattern:



Dimensions in mm

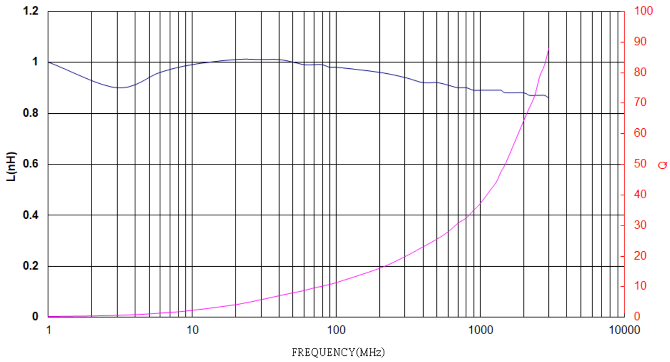
TYPE	F(In/mm)	H(In/mm)	J(In/mm)
120707	0.026/0.66	0.014/0.36	0.018/0.46

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.The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RHor less).
If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
5.Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
6. The moisture sensitivity level (MSL) of products is classified as level 1.

BWCS00120707 Series Specification

13 Graph: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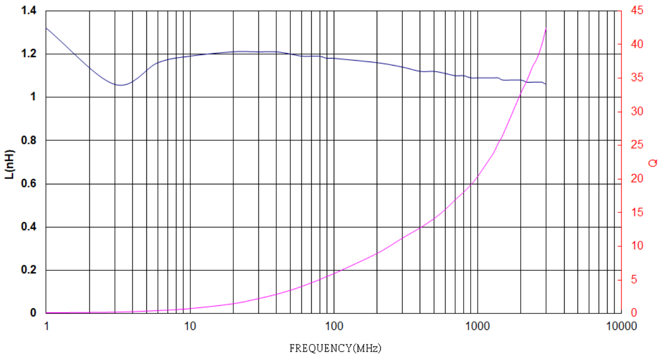
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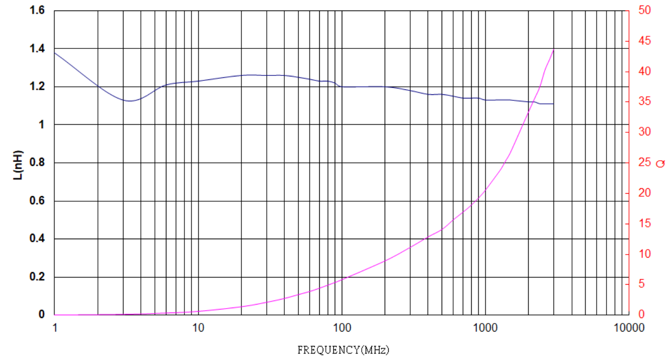
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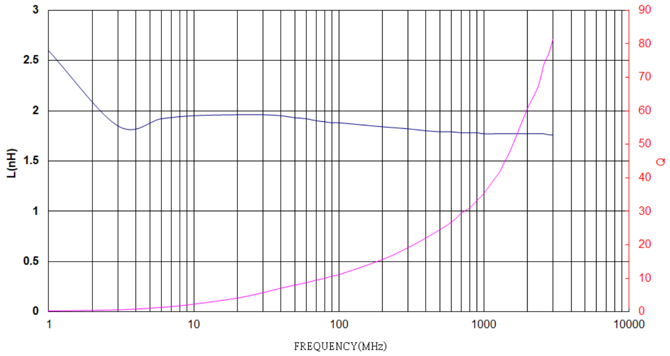
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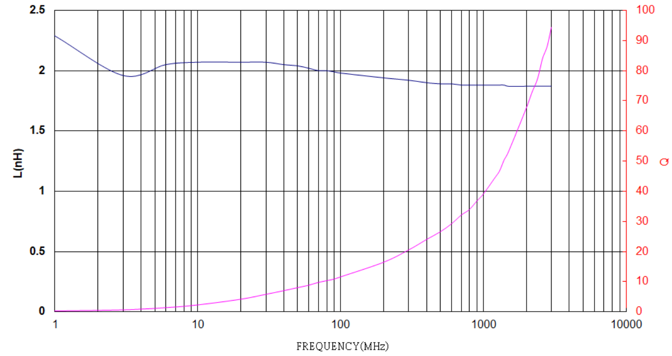
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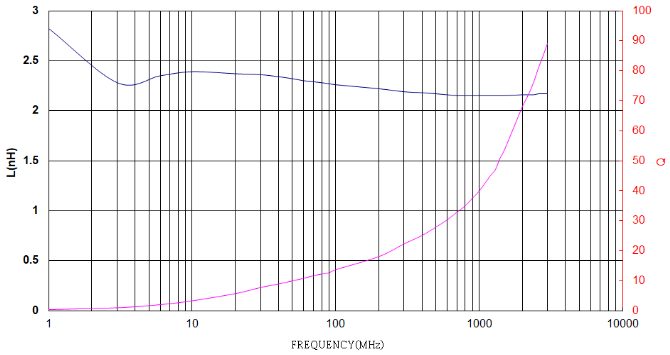
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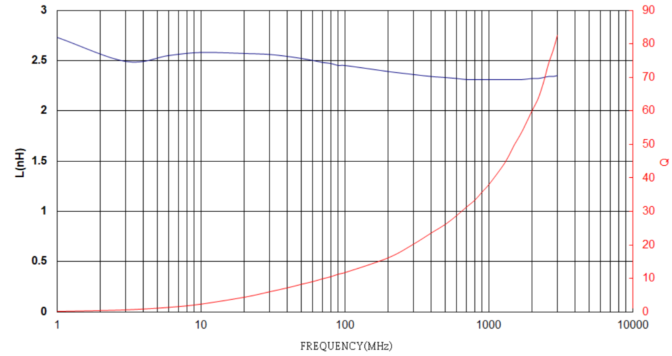
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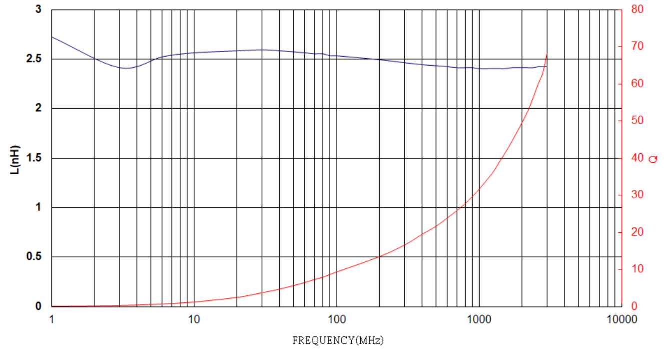
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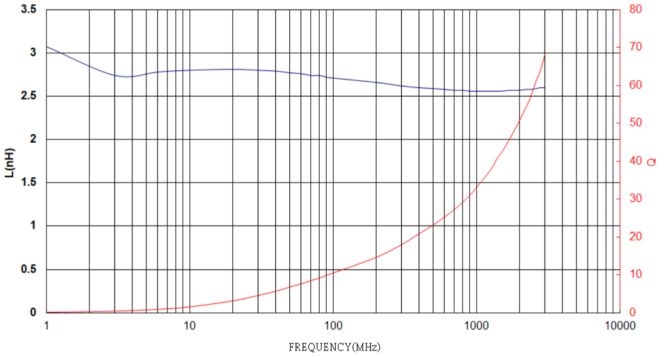
BWCS00120707 Series Specification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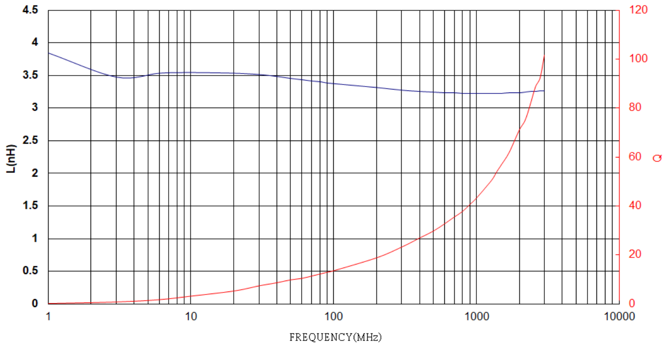
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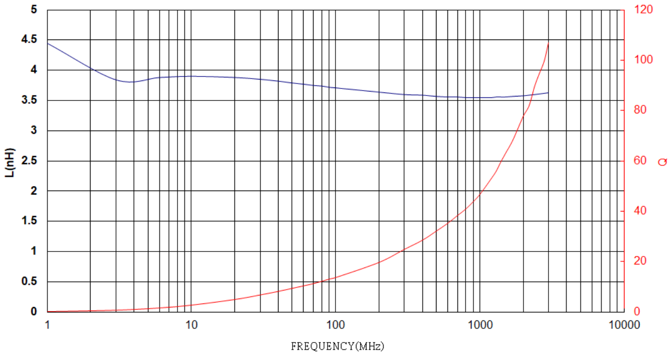
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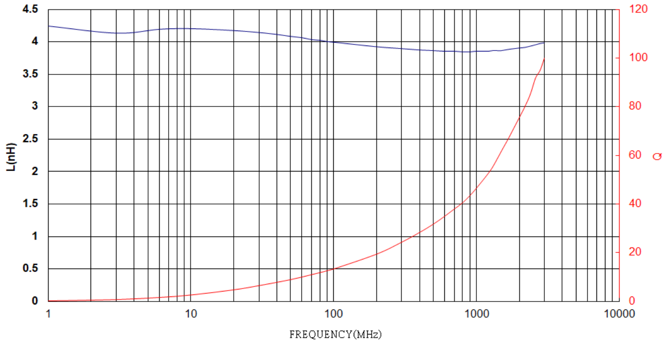
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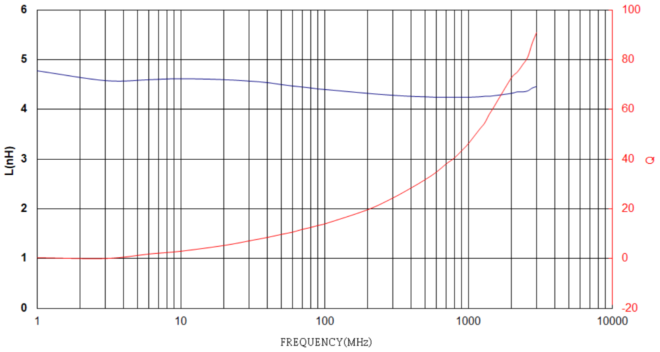
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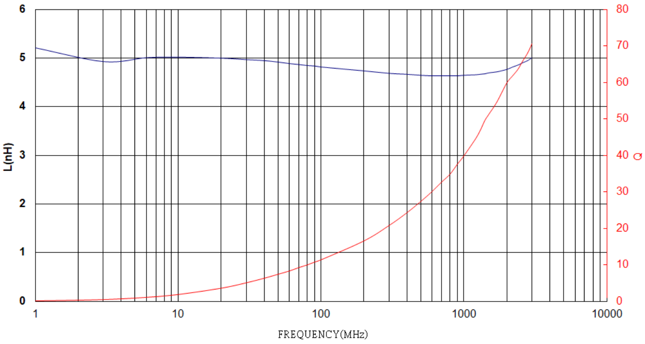
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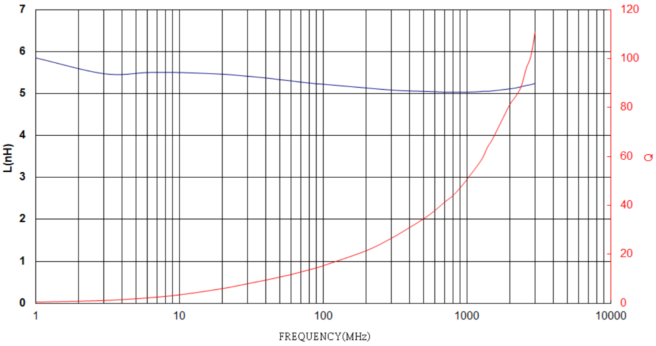
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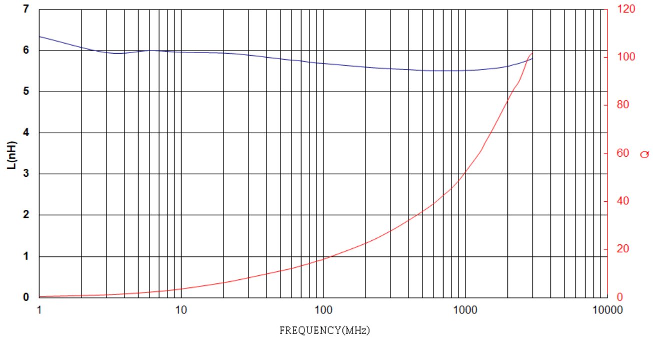
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BWCS00120707 Series Specification

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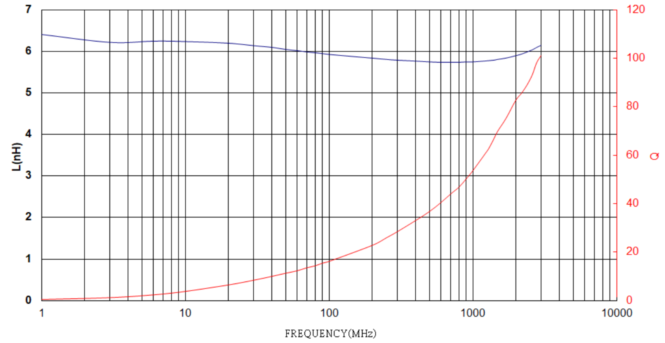

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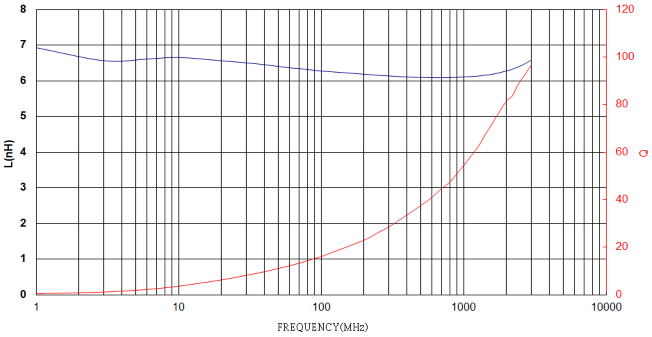

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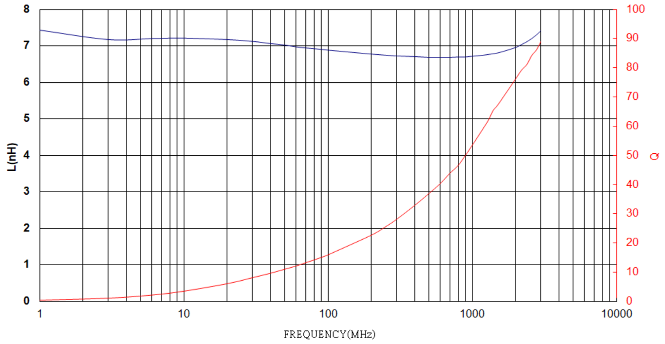

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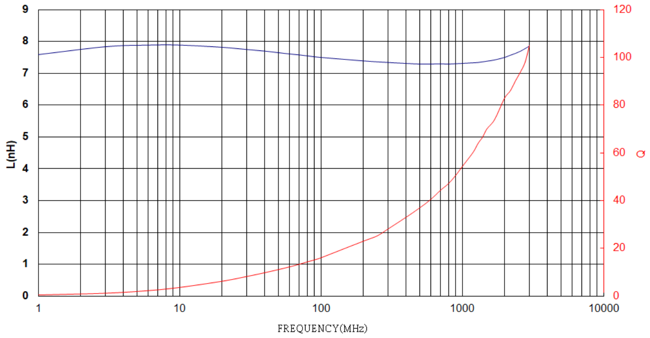

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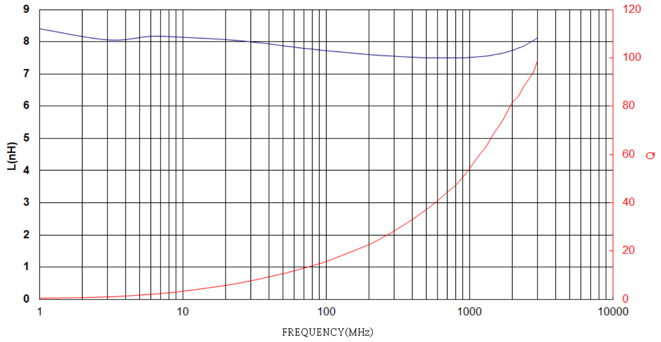

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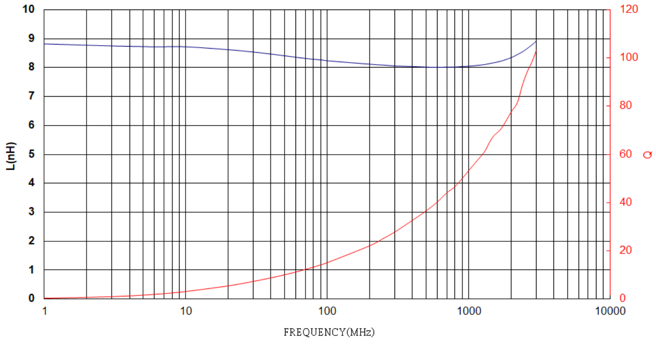

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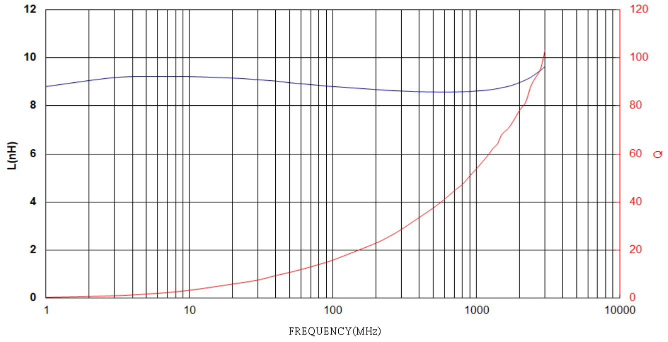

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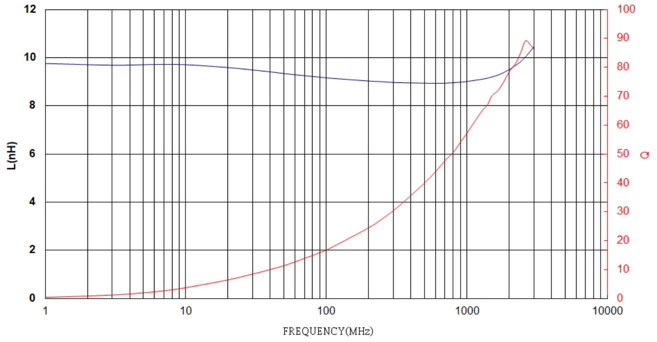

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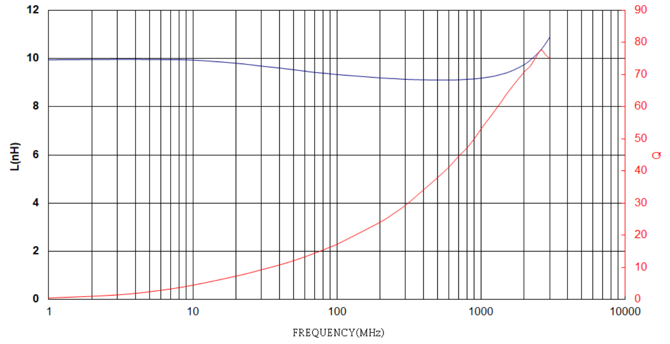

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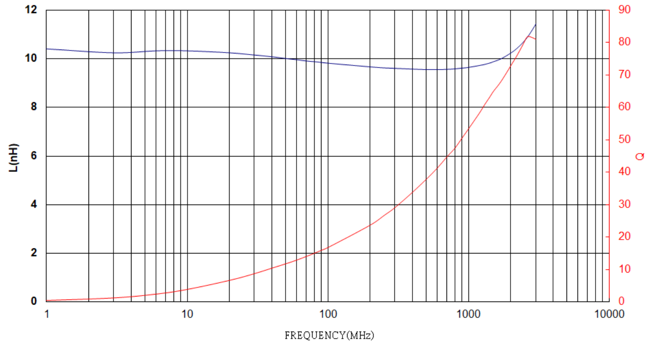

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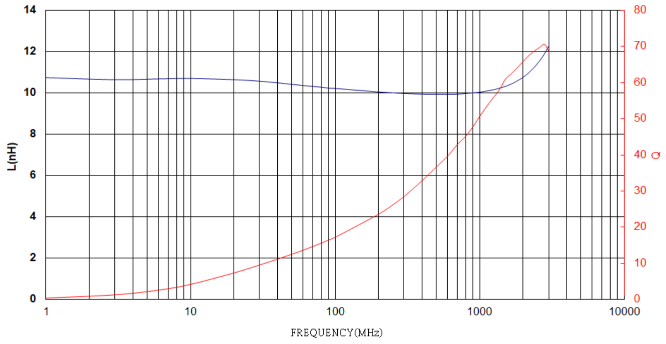

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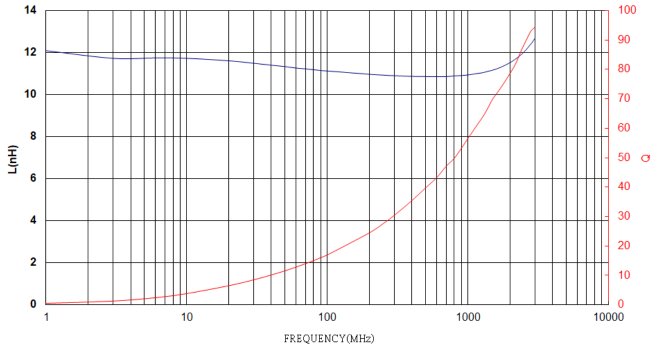

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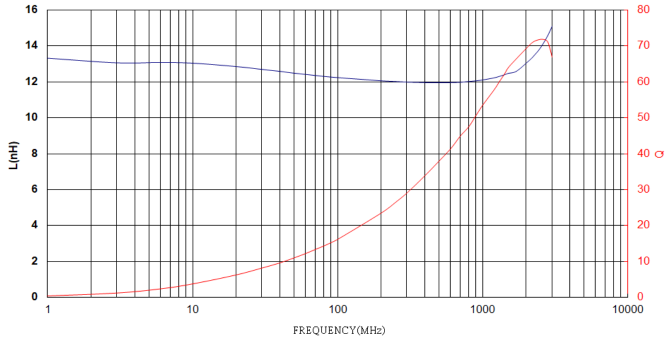

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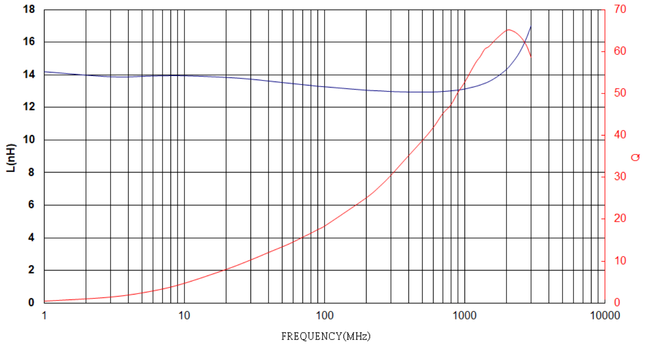

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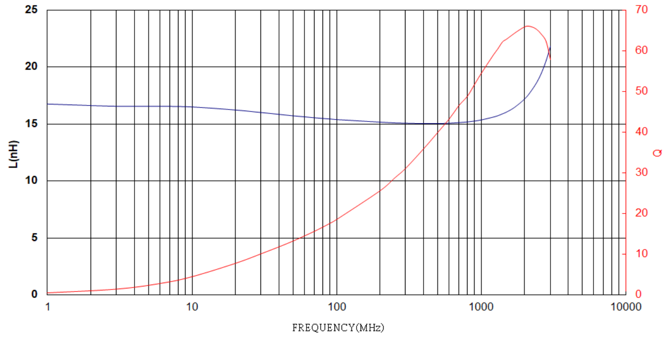

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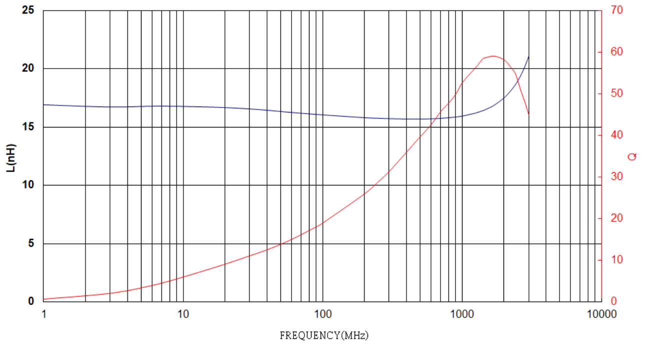

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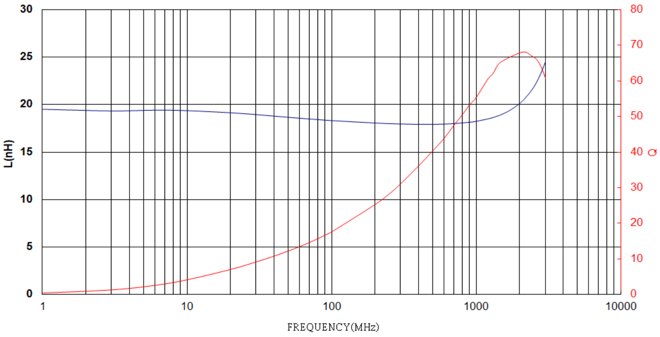
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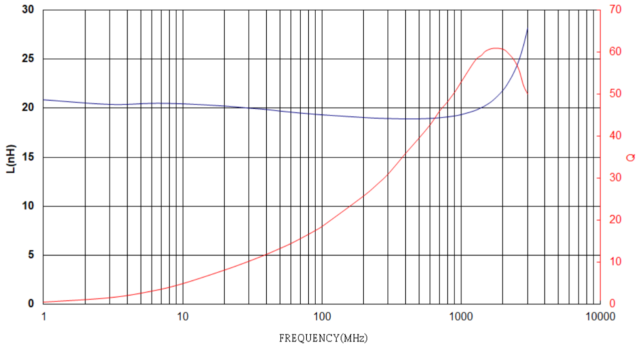
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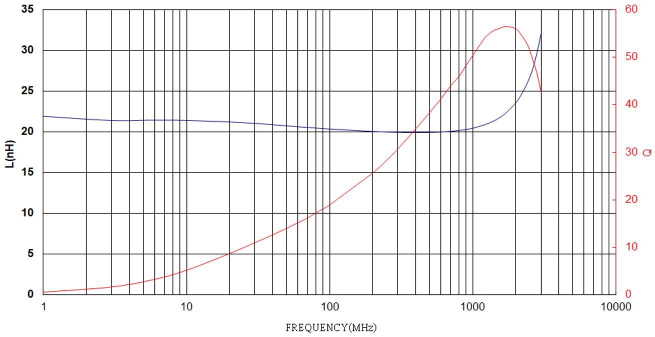
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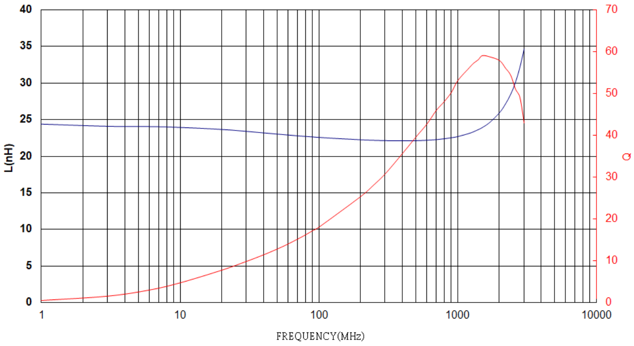
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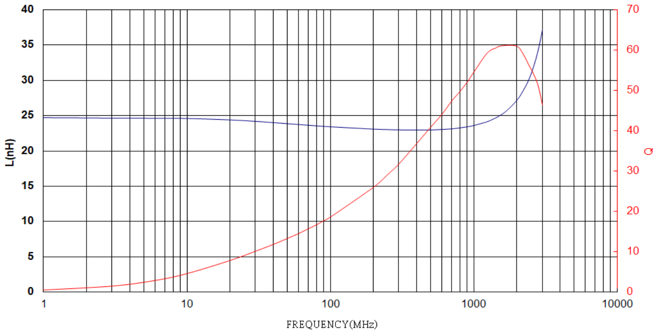
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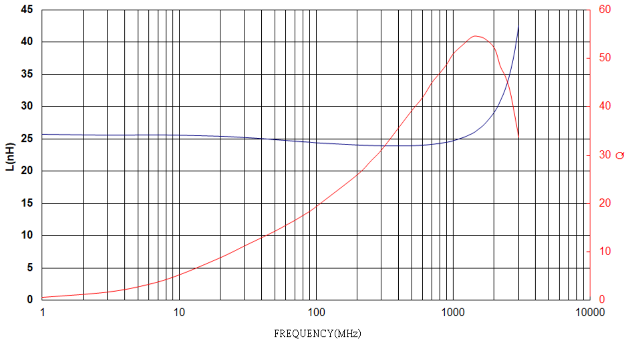
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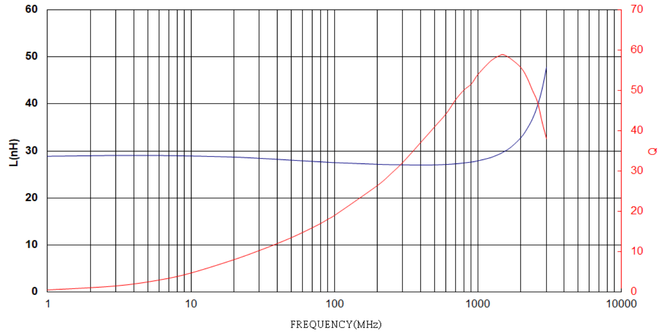
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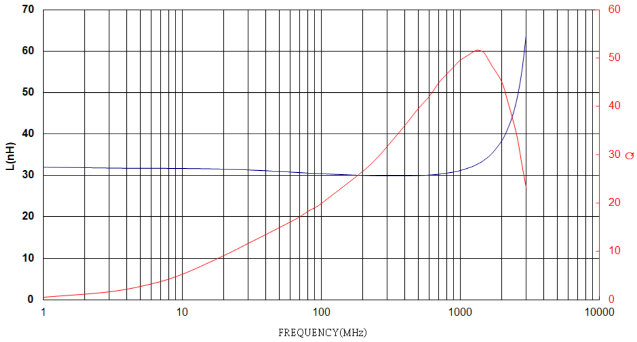
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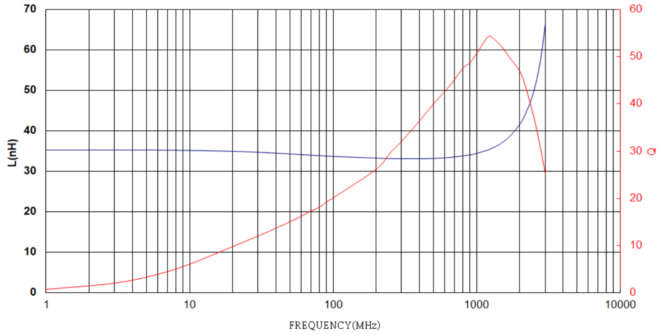

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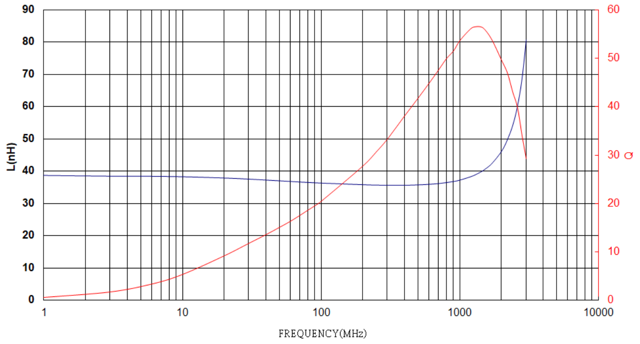

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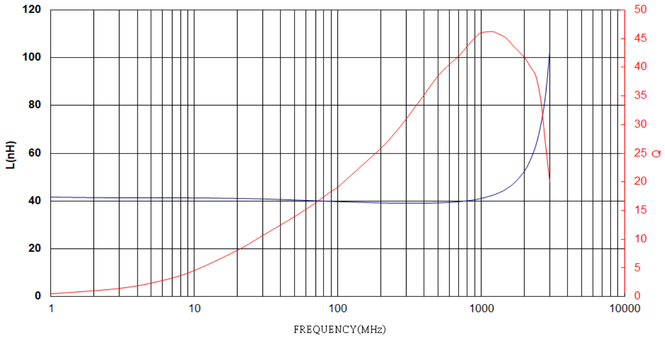

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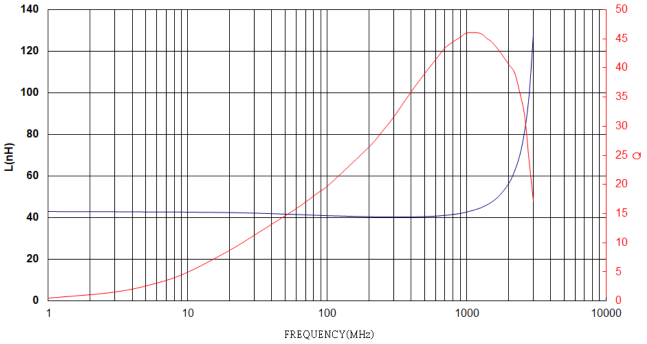

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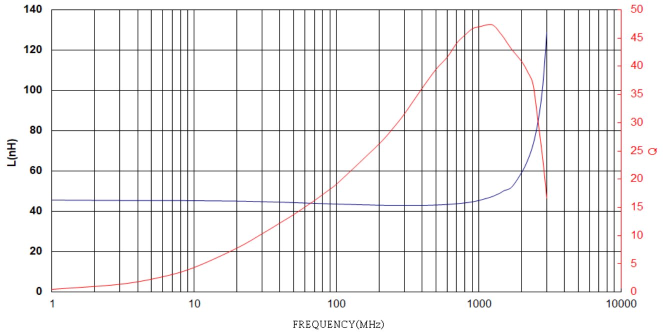

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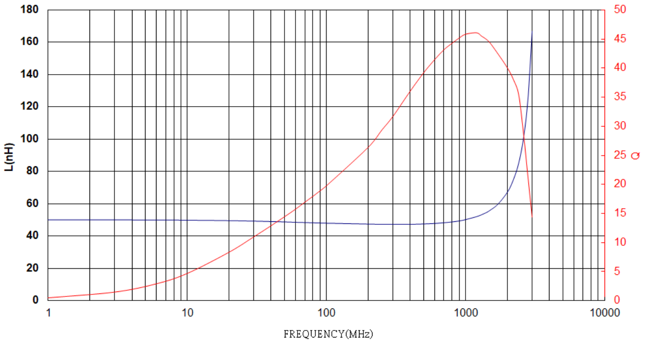

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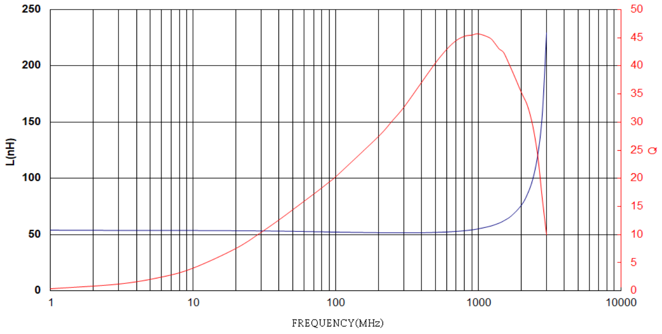

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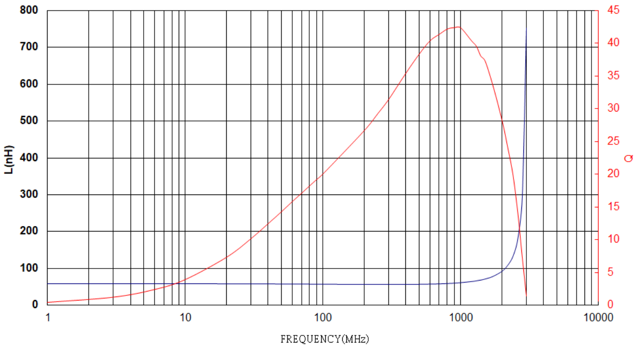

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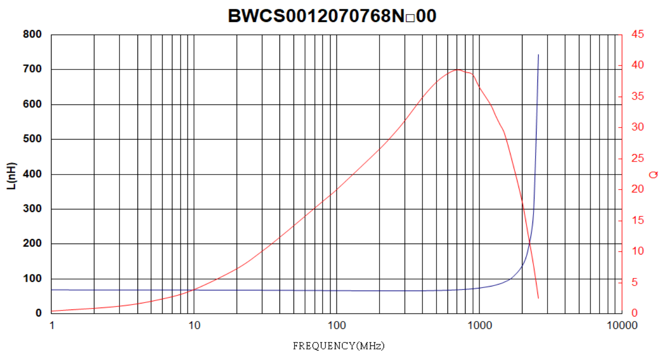
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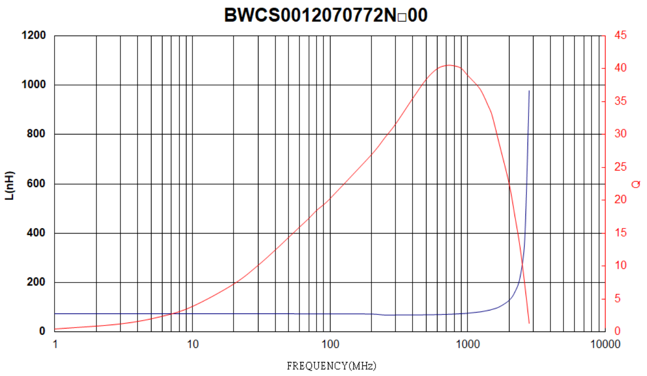
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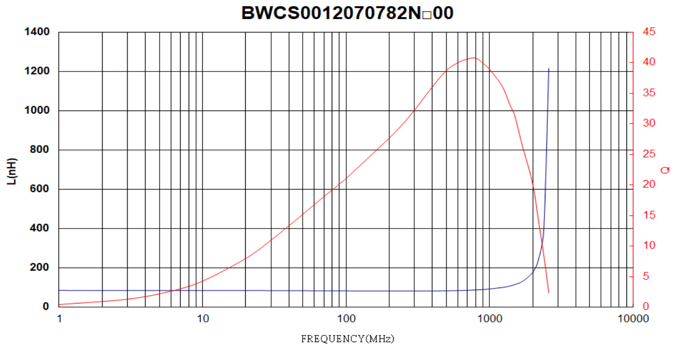
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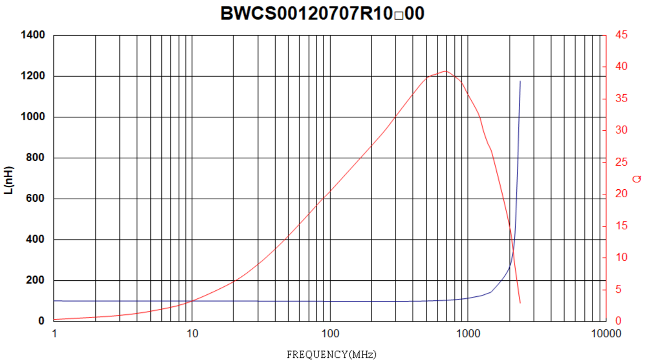
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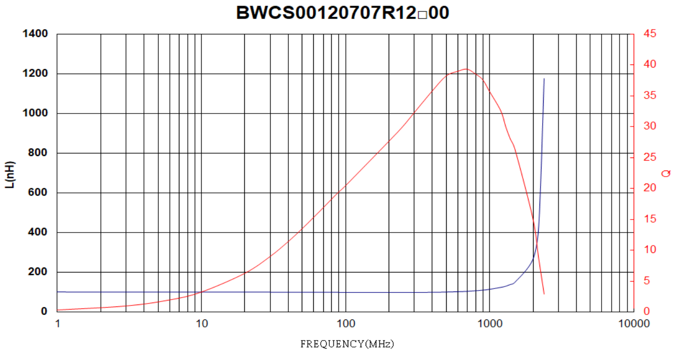
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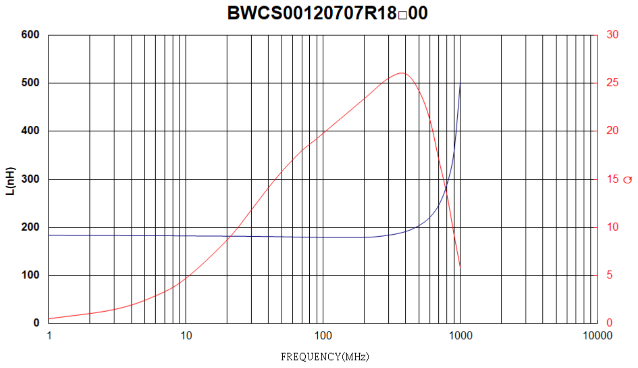
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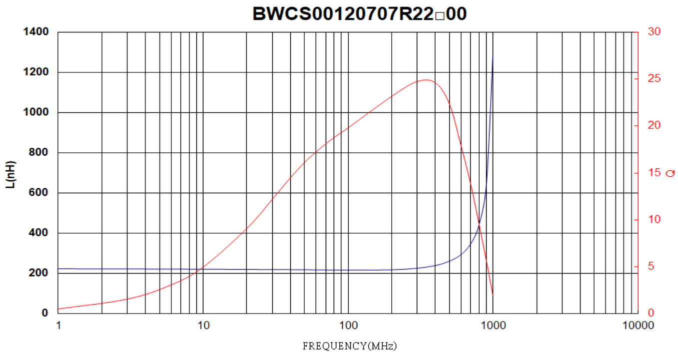
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