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

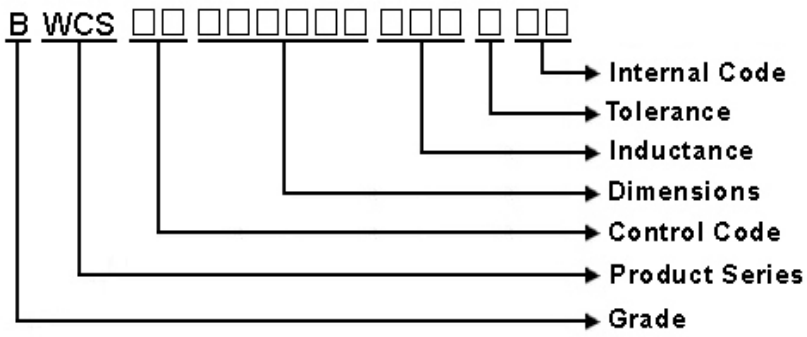
Product Information

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

BWCS00231715 Series Specification

1 Scope: This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:

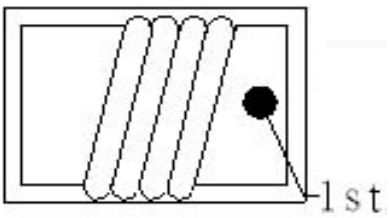


3 Rating:

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

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

4 Marking:



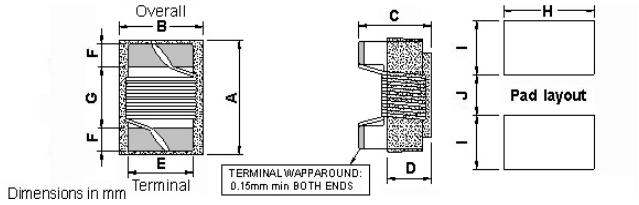
Marking:1st→RED

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

BWCS00231715 Series Specification

6 Configuration and Dimensions and Unit Weight:



TYPE	A	B	C	D	E	F	G	H	I	J
231715	2.2±0.15	1.6±0.15	1.45±0.1	0.71	1.27	0.51	1.02	1.78	1.02	0.76

Net Weight (grms)

SIZE CODE	Net Weight (grms)
231715	0.01 (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	Color Code 1st
BWCS002317152N7□00	2.7	250/1500	50	7900	0.06	800	K,J,G,B	YEL
BWCS002317152N8□00	2.8	250/1500	80	7900	0.06	800	K,J,G	GRY
BWCS002317153N0□00	3	250/1500	65	7900	0.06	800	K,J,G	WHT
BWCS002317153N3□00	3.3	250/1500	50	7900	0.08	600	K,J,G,B	BLK
BWCS002317155N6□00	5.6	250/1000	65	5500	0.08	600	K,J,G	ORN
BWCS002317156N8□00	6.8	250/1000	50	5500	0.11	600	K,J,G	BRN
BWCS002317157N5□00	7.5	250/1000	50	4500	0.14	600	K,J,G	GRN
BWCS002317158N2□00	8.2	250/1000	50	4700	0.12	600	K,J,G	RED
BWCS0023171510N□00	10	250/500	60	4200	0.1	600	K,J,G	BLU
BWCS0023171512N□00	12	250/500	50	4000	0.15	600	K,J,G	ORN
BWCS0023171515N□00	15	250/500	50	3400	0.17	600	K,J,G	YEL
BWCS0023171518N□00	18	250/500	50	3300	0.2	600	K,J,G	GRN
BWCS0023171522N□00	22	250/500	55	2600	0.22	500	K,J,G	BLU
BWCS0023171524N□00	24	250/500	50	2000	0.22	500	K,J,G	GRY
BWCS0023171527N□00	27	250/500	55	2500	0.25	500	K,J,G	VIO
BWCS0023171533N□00	33	250/500	60	2050	0.27	500	K,J,G	GRY
BWCS0023171536N□00	36	250/500	55	1700	0.27	500	K,J,G	ORN
BWCS0023171539N□00	39	250/500	60	2000	0.29	500	K,J,G	WHT
BWCS0023171543N□00	43	200/500	60	1650	0.34	500	K,J,G	YEL
BWCS0023171547N□00	47	200/500	60	1650	0.31	500	K,J,G	BLK
BWCS0023171556N□00	56	200/500	60	1550	0.34	500	K,J,G	BRN
BWCS0023171568N□00	68	200/500	60	1450	0.38	500	K,J,G	RED
BWCS0023171582N□00	82	150/500	65	1300	0.42	400	K,J,G	ORN
BWCS0023171591N□00	91	150/500	65	1200	0.48	400	K,J,G	BLK
BWCS00231715R10□00	100	150/500	65	1200	0.46	400	K,J,G	YEL

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.

4.weight: 10(mg)(typ.)

BWCS00231715 Series Specification

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance	Color Code 1st
BWCS00231715R11□00	110	150/250	50	1000	0.48	400	K,J,G	BRN
BWCS00231715R12□00	120	150/250	50	1100	0.51	400	K,J,G	GRN
BWCS00231715R15J00	150	100/250	50	920	0.56	400	K,J,G	BLU
BWCS00231715R18□00	180	100/250	50	870	0.64	400	K,J,G	VIO
BWCS00231715R20□00	200	100/250	50	860	0.68	400	K,J,G	RED
BWCS00231715R22□00	220	100/250	50	850	0.7	400	K,J,G	GRY
BWCS00231715R24□00	240	100/250	44	690	1	350	K,J,G	RED
BWCS00231715R25□00	250	100/250	45	660	1.2	350	K,J,G	YEL
BWCS00231715R27□00	270	100/250	48	650	1	350	K,J,G	WHT
BWCS00231715R30□00	300	100/250	25	450	1.4	310	K,J,G	ORN
BWCS00231715R33□00	330	100/250	48	600	1.4	310	K,J,G	BLK
BWCS00231715R39□00	390	100/250	48	560	1.5	290	K,J,G	BRN
BWCS00231715R47□00	470	50/100	33	450	1.76	250	K,J,G	VIO
BWCS00231715R51□00	510	25/50	23	340	1.9	230	K,J,G	GRY
BWCS00231715R56□00	560	25/50	23	340	1.9	230	K,J,G	ORN
BWCS00231715R62□00	620	25/50	23	220	2.2	210	K,J,G	YEL
BWCS00231715R68□00	680	25/50	23	188	2.2	190	K,J,G	GRN
BWCS00231715R82□00	820	25/50	23	215	2.35	180	K,J,G	BLU
BWCS002317151R0□00	1000	25/50	20	100	2.5	170	K,J,G	GRY
BWCS002317151R2□00	1200	7.9/25	18	100	2.5	170	K,J	WHT
BWCS002317151R8□00	1800	7.9/7.9	16	80	2.5	170	K,J,G	ORN
BWCS002317152R2□00	2200	7.9/7.9	16	65	3.9	140	K,J,G	GRY
BWCS002317152R7□00	2700	25/50	16	65	4.5	175	K,J,G	RED
BWCS002317153R3□00	3300	7.9/7.9	15	40	4.4	90	K,J,G	RED
BWCS002317154R7□00	4700	7.9/7.9	15	40	6.4	90	K,J,G	YEL

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.

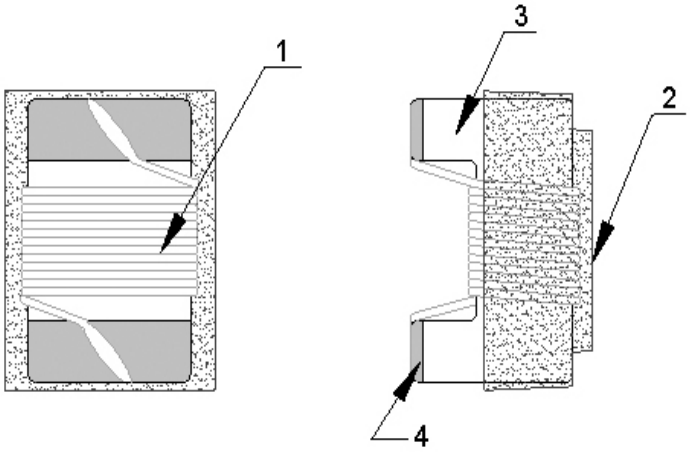
3.L/Q Test OSC @200mV.

4.weight: 10(mg)(typ.)

BWCS00231715 Series Specification

8 BWCS00231715 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

BWCS00231715 Series Specification

9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

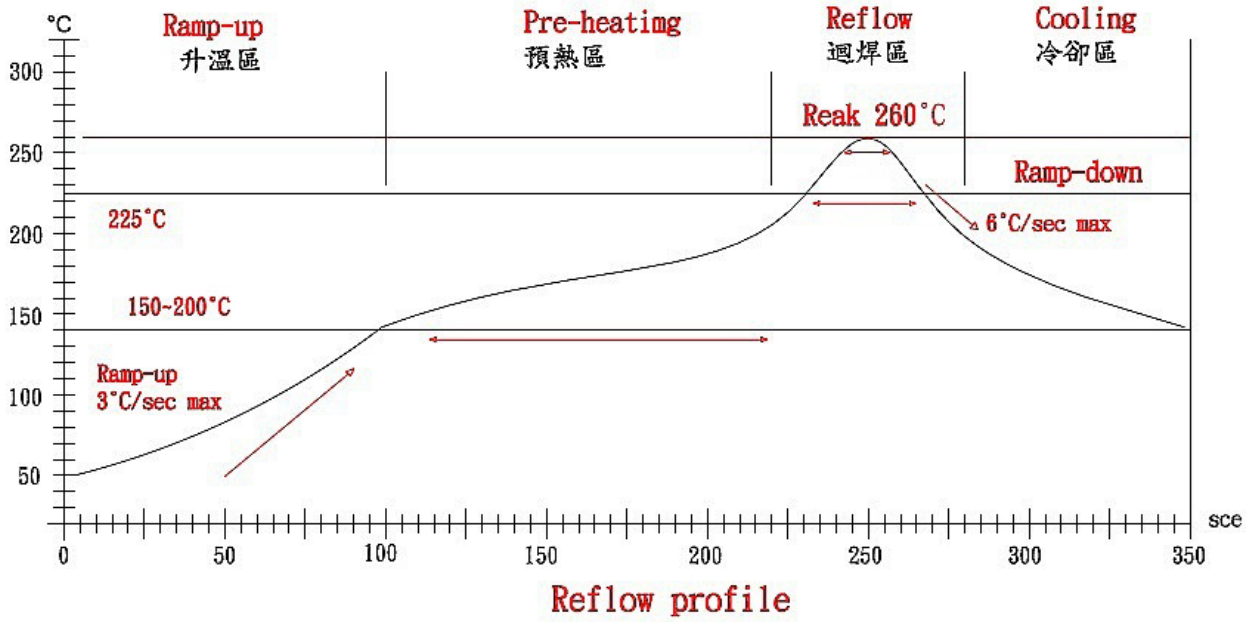
1-1.Environmental Performance

<table>
<tr><th>No</th><th>Item</th><th>Specification</th><th>Test Method</th></tr>
<tr><td>1-1-1</td><td>Temperature Cycle</td><td rowspan="3">Appearance: No Damage
Inductance:within±10% of initial value
Q change:within±30% of initial value</td><td>One cycle:
<table>
<tr><th>Step</th><th>Temperature (℃)</th><th>Time (min)</th></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>
</table>
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>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>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>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

BWCS00231715 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℃	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:

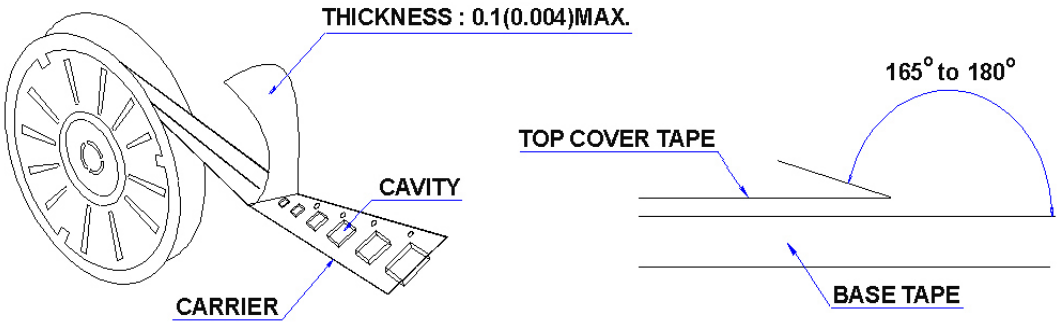
1.Re-flow possible times : within 3 times
2.Nitrogen adopted is recommendes while in re-flow
3.Products can only be soldered with reflow

BWCS00231715 Series Specification

11 Packaging:

10.1 Packaging -Cover Tape

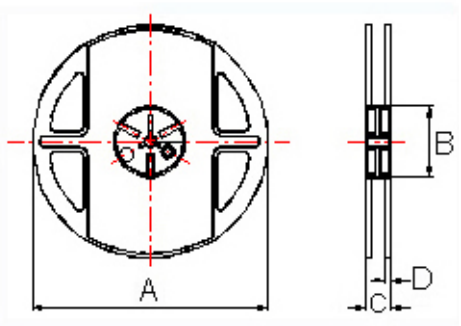
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



11.2 Packaging Quantity

TYPE	PCS/REEL
231715	2000

11.3 Reel Dimensions



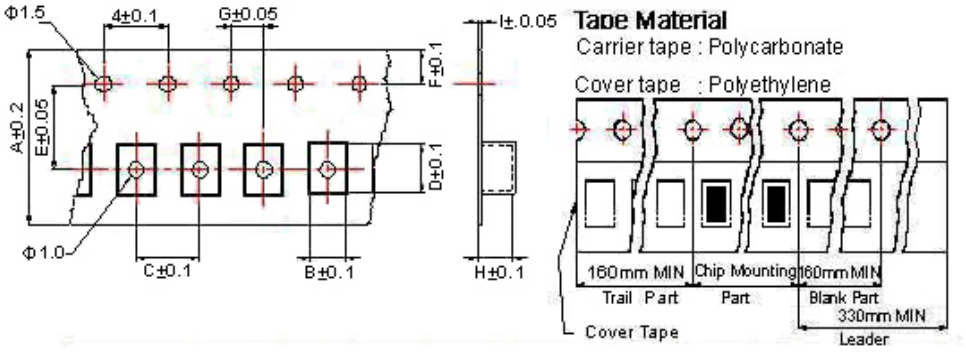
Dimensions in mm

TYPE	A	B	C	D
231715	178±1	60±0.5	12±0.5	1.5±0.5

BWCS00231715 Series Specification

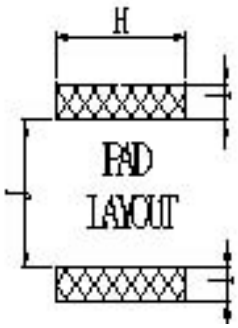
11 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	H	T
231715	8.0	1.85	4	2.45	3.5	1.75	2	1.7	0.23

12 Recommended Land Pattern:



Dimensions in mm

TYPE	H(In/mm)	I(In/mm)	J(In/mm)
231715	0.07/1.78	0.04/1.02	0.03/0.76

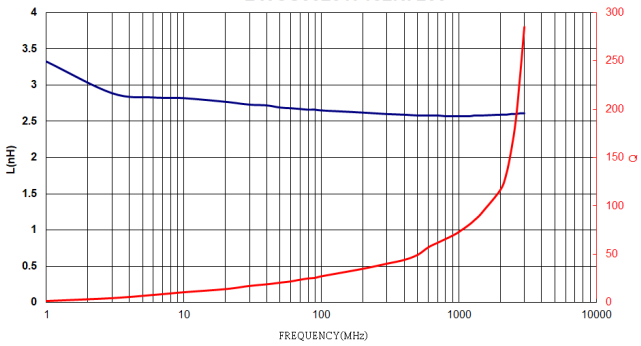
13 Note:

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. 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.

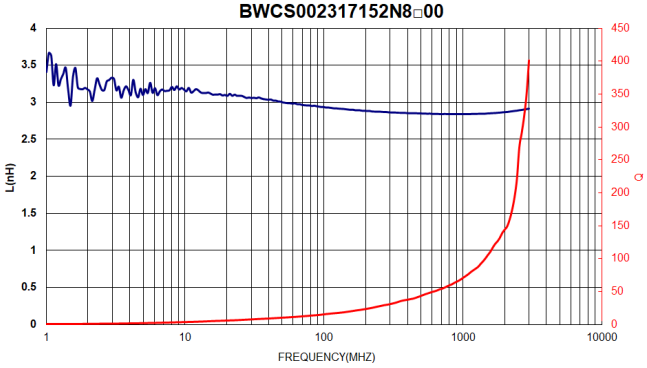
BWCS00231715 Series Specification

13 Graph:

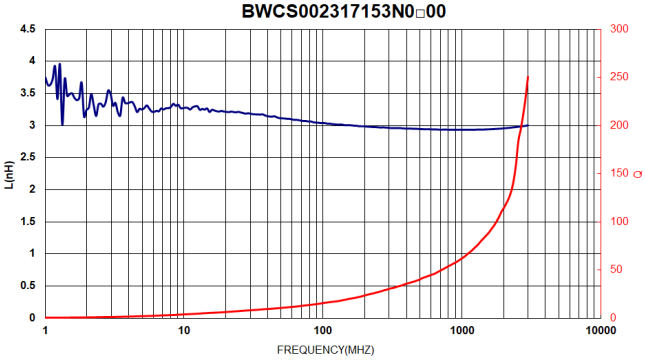
BWCS002317152N7□00



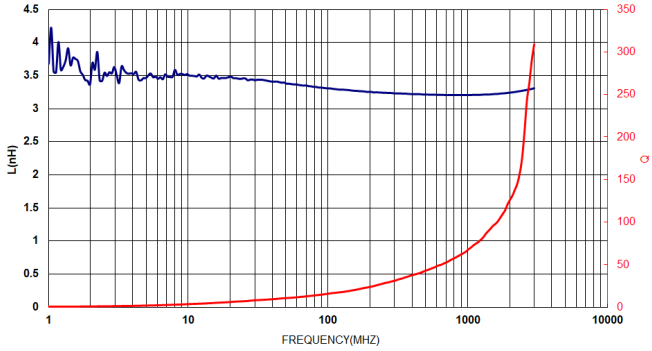
BWCS002317152N8□00



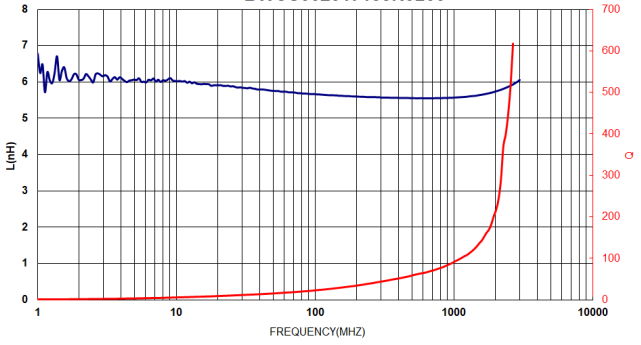
BWCS002317153N0□00



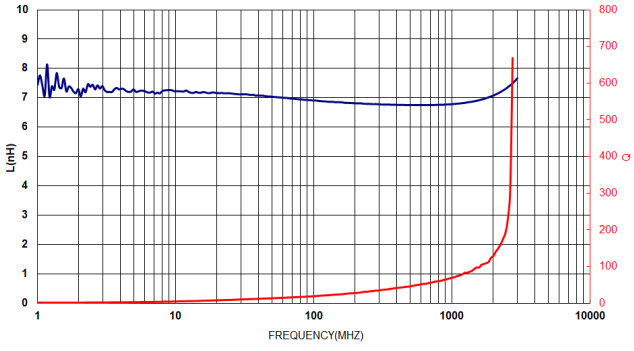
BWCS002317153N3□00



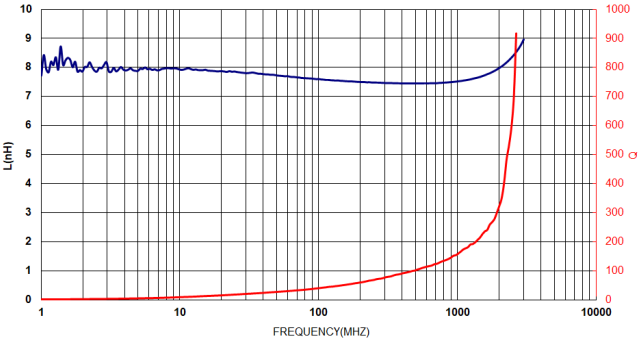
BWCS002317155N6□00



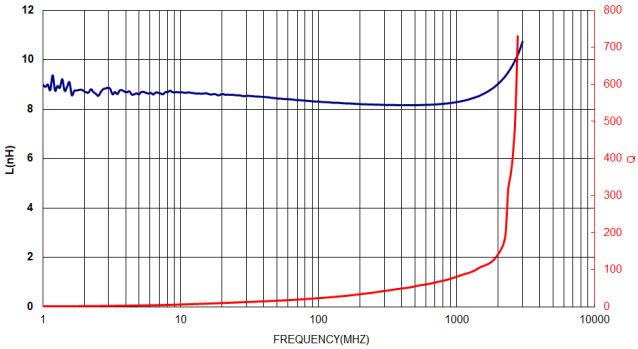
BWCS002317156N8□00



BWCS002317157N5□00

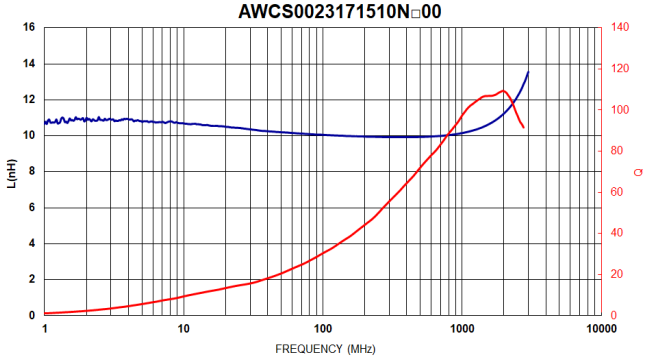


BWCS002317158N2□00

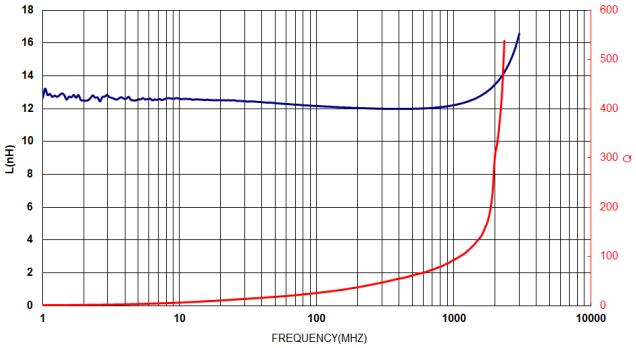


BWCS00231715 Series Specification

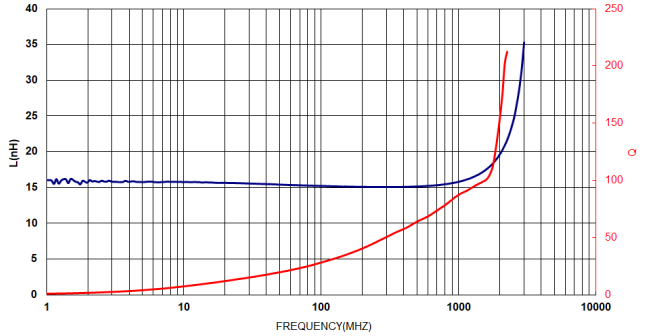
AWCS0023171510N□00



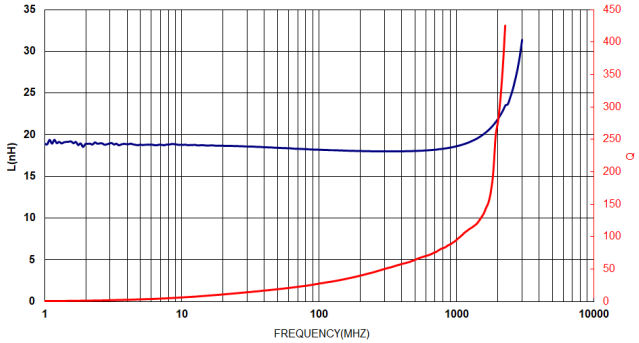
BWCS0023171512N□00



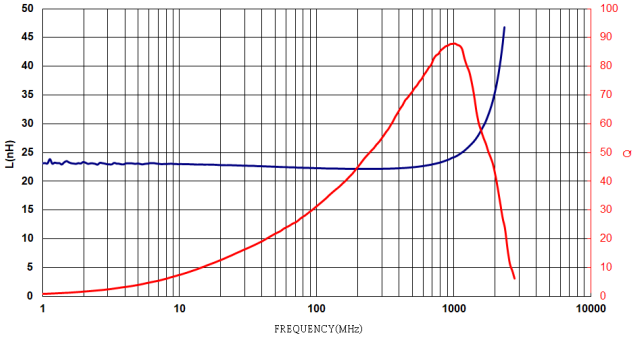
BWCS0023171515N□00



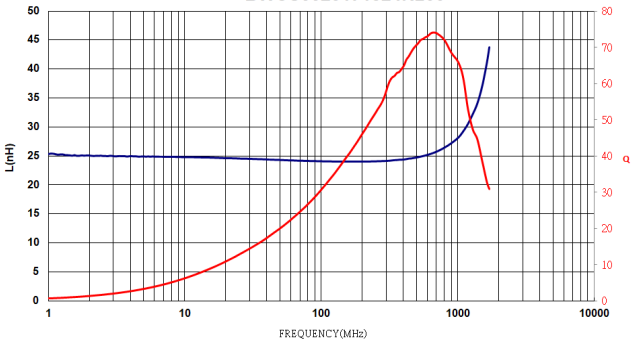
BWCS0023171518N□00



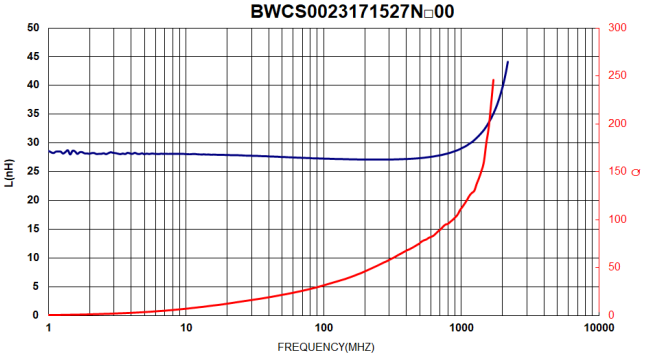
BWCS0023171522N□00



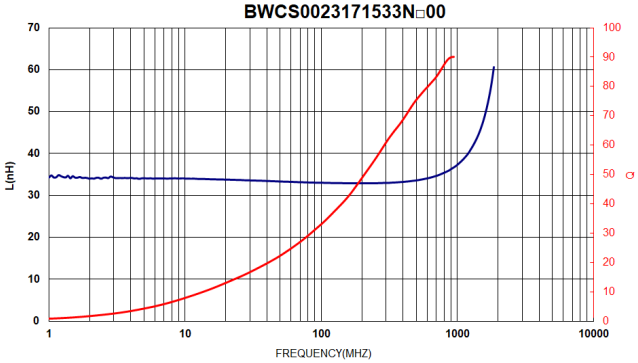
BWCS0023171524N□00



BWCS0023171527N□00

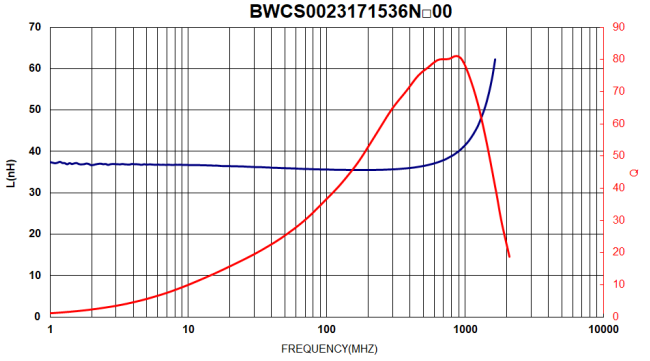


BWCS0023171533N□00

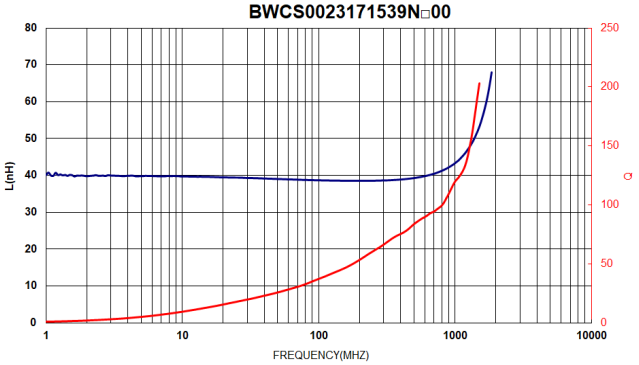


BWCS00231715 Series Specification

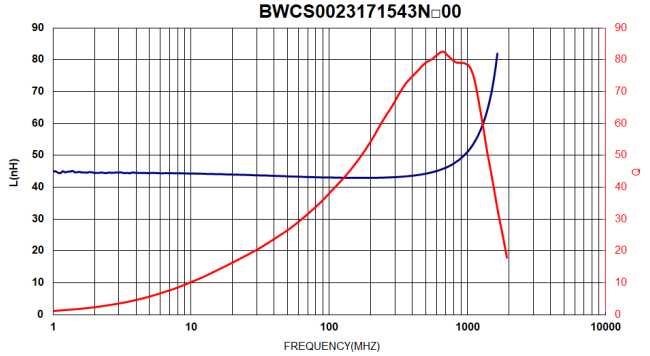
BWCS0023171536N□00



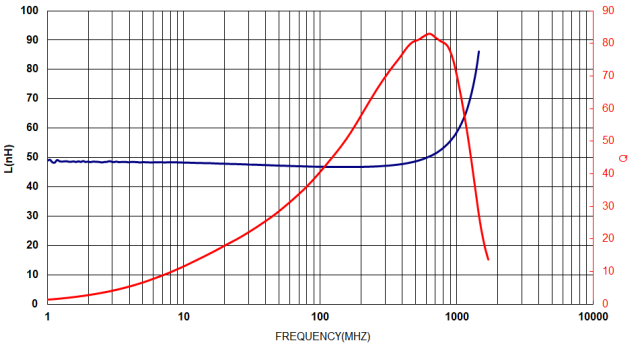
BWCS0023171539N□00



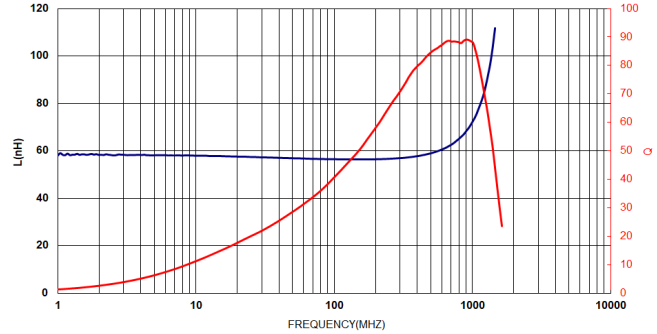
BWCS0023171543N□00



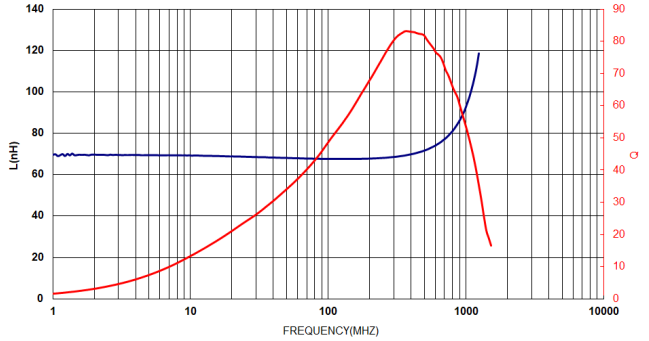
BWCS0023171547N□00



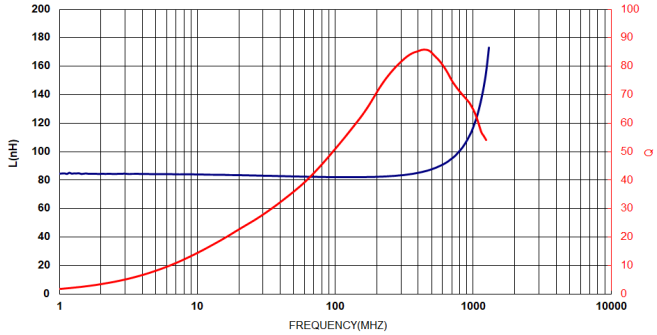
BWCS0023171556N□00



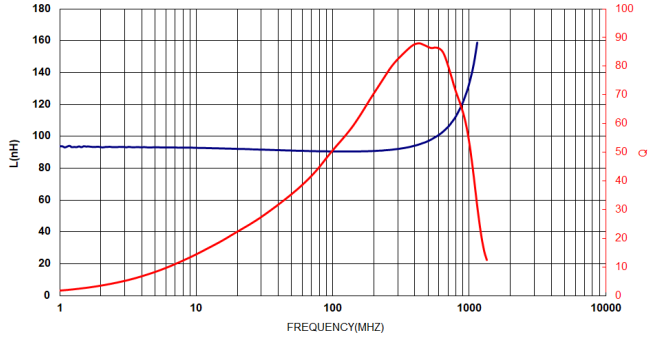
BWCS0023171568N□00



BWCS0023171582N□00

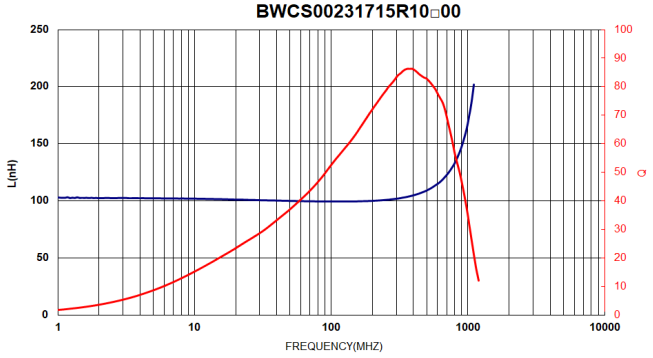


BWCS0023171591N□00

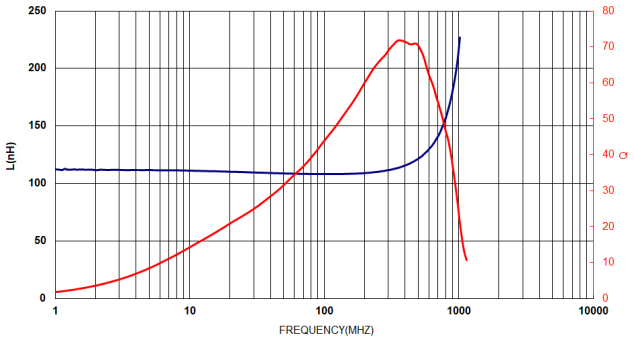


BWCS00231715 Series Specification

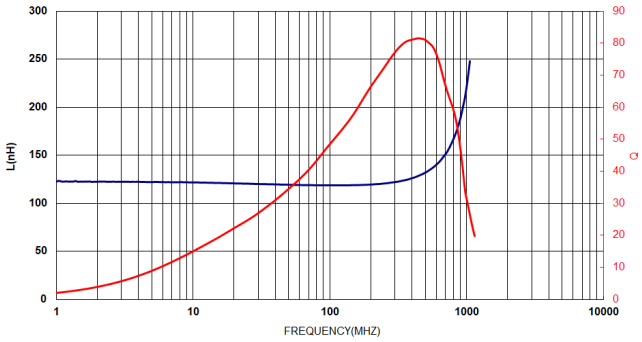
BWCS00231715R10□00



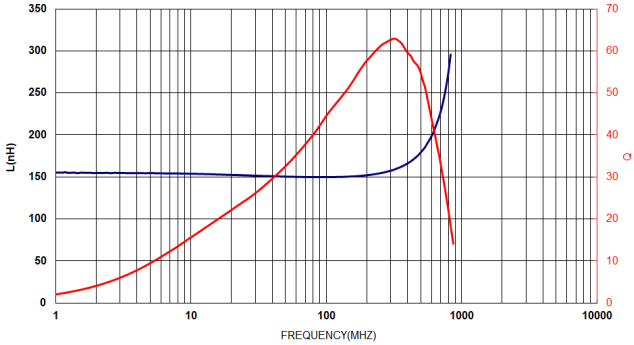
BWCS00231715R11□00



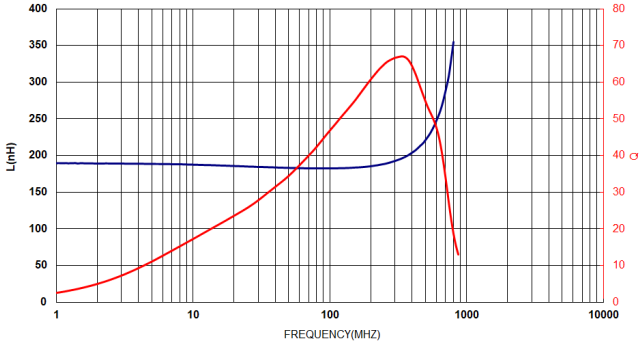
BWCS00231715R12□00



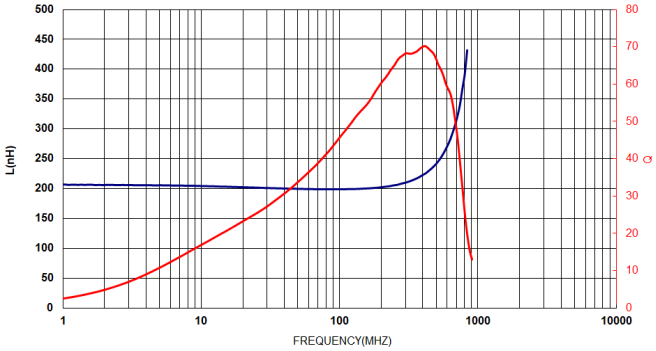
BWCS00231715R15□00



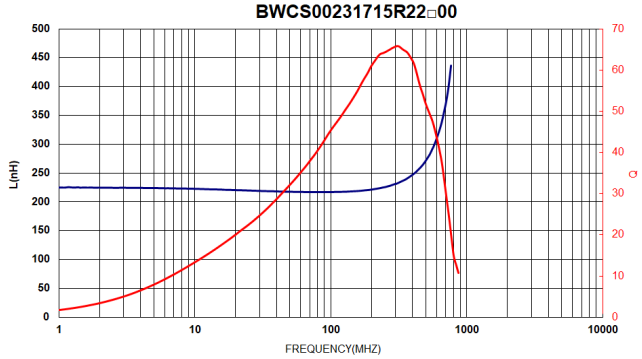
BWCS00231715R18□00



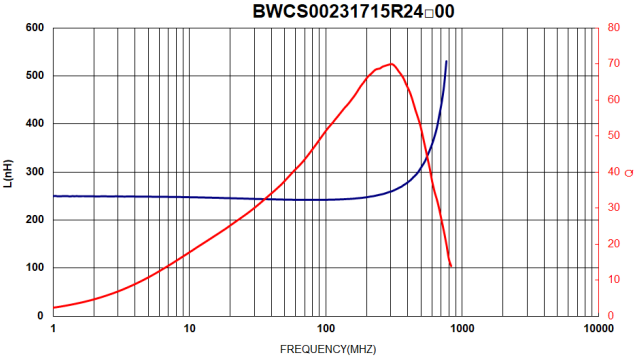
BWCS00231715R20□00



BWCS00231715R22□00

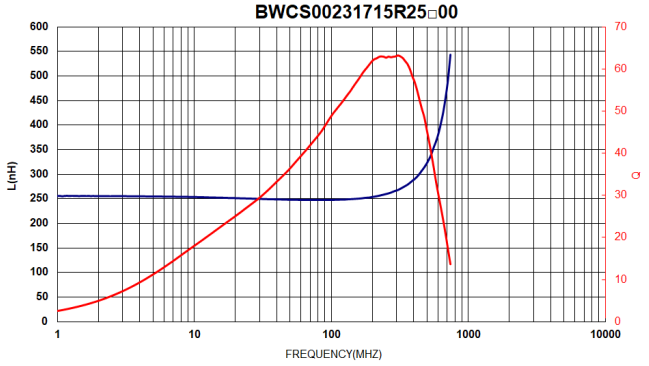


BWCS00231715R24□00

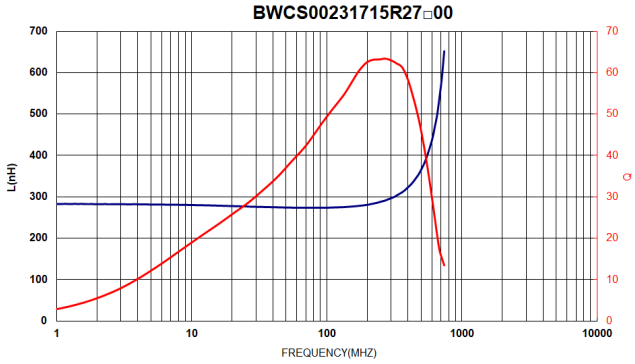


BWCS00231715 Series Specification

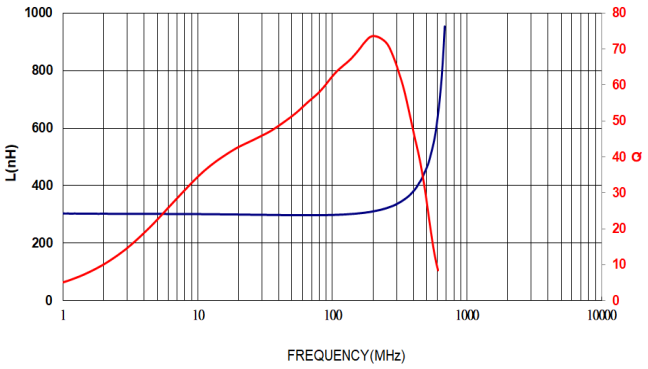
BWCS00231715R25□00



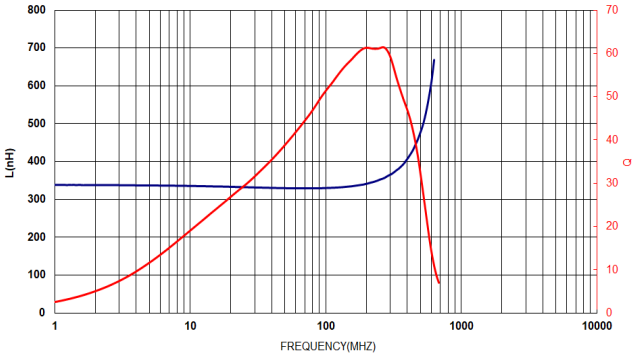
BWCS00231715R27□00



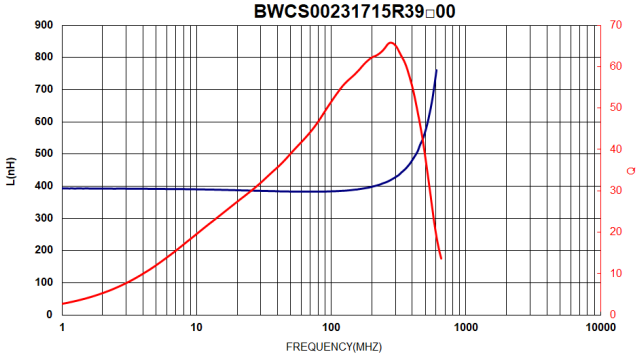
BWCS00231715R30□00



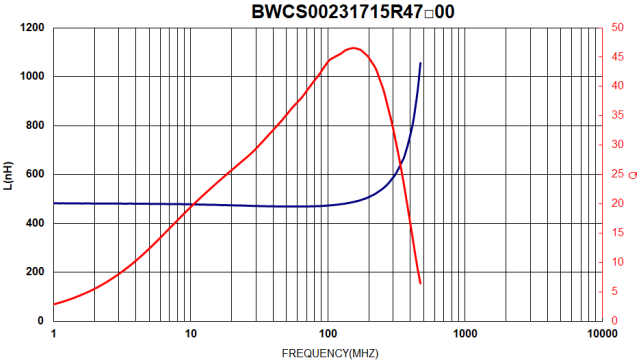
BWCS00231715R33□00



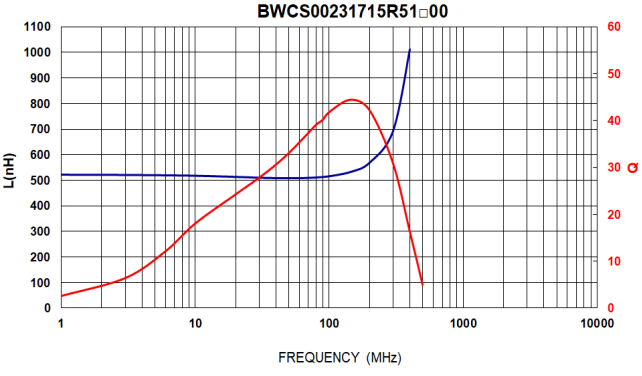
BWCS00231715R39□00



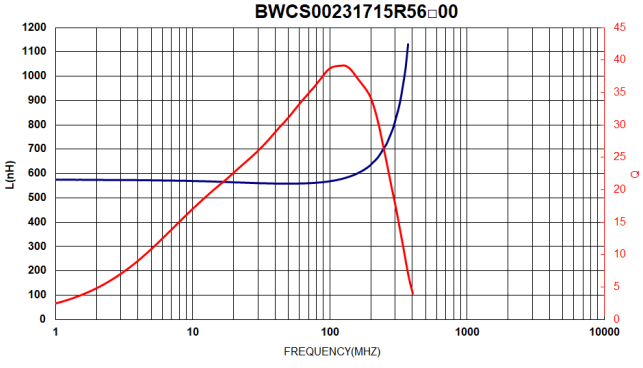
BWCS00231715R47□00



BWCS00231715R51□00

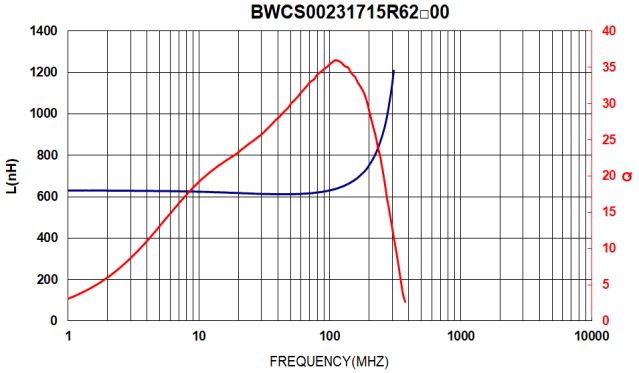


BWCS00231715R56□00

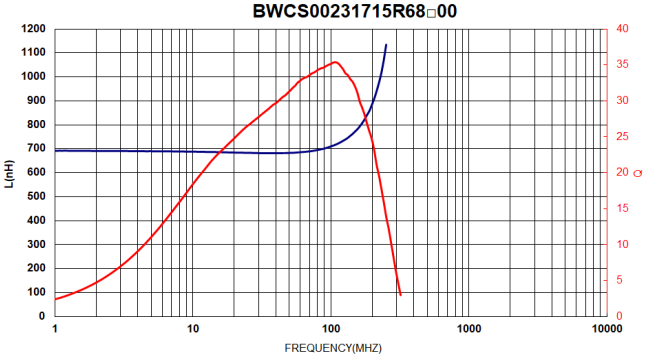


BWCS00231715 Series Specification

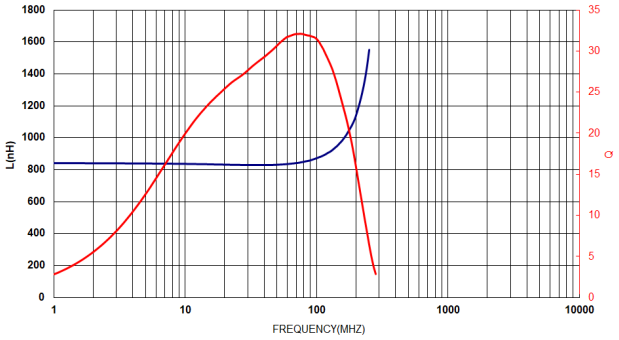
BWCS00231715R62□00



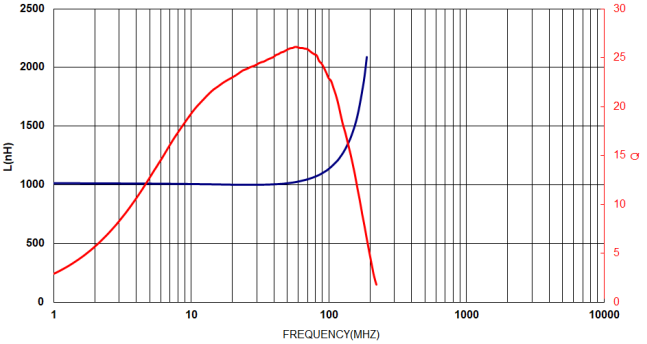
BWCS00231715R68□00



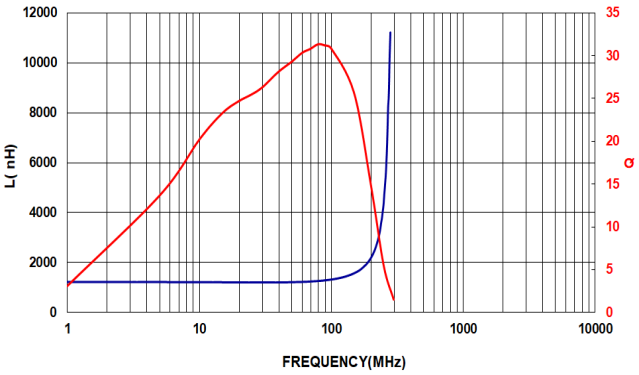
BWCS00231715R82□00



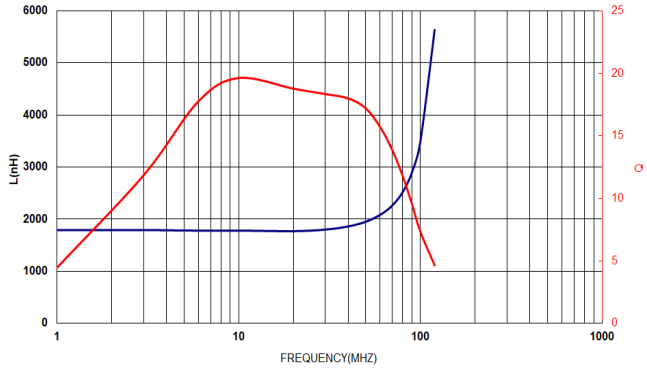
BWCS002317151R0□00



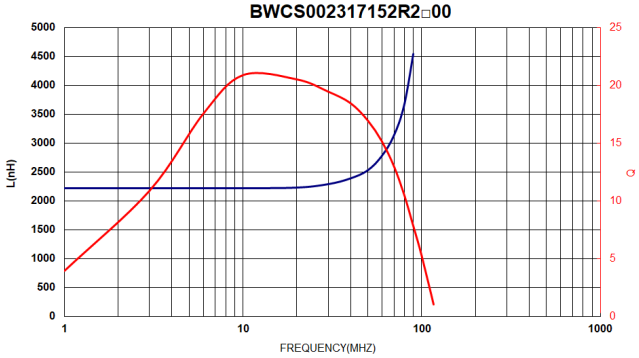
BWCS002317151R2□00



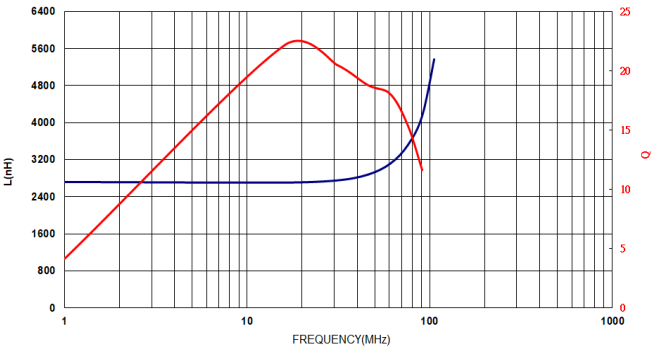
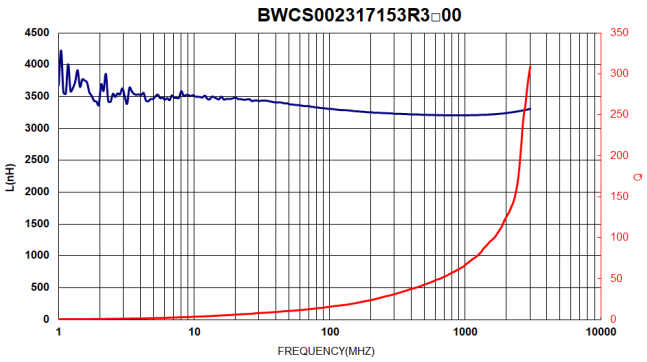
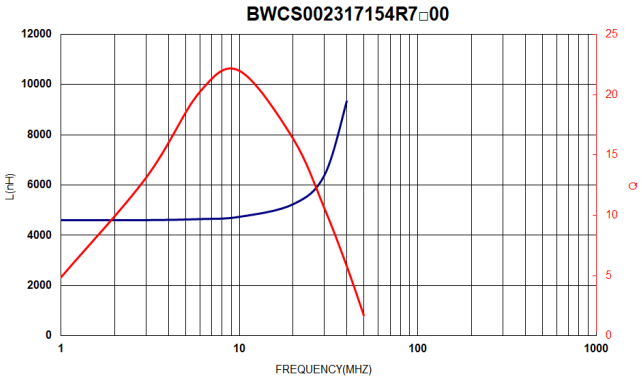
BWCS002317151R8□00



BWCS002317152R2□00



BWCS002317152R7□00



BWCS00231715 Series Specification