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

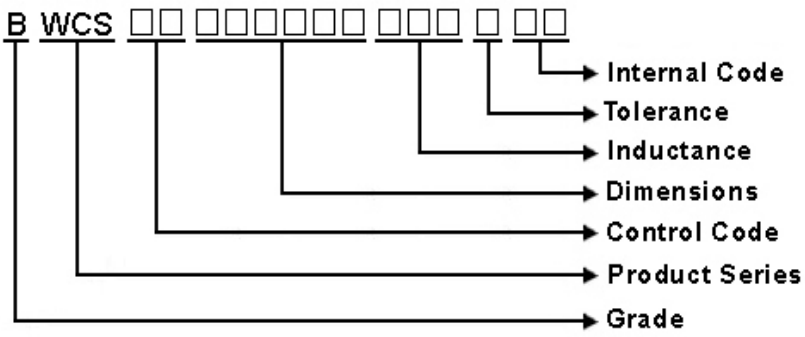
Series	Size Code (JIS/EIA)	Inductance (nH)
BWCS	0603/0201 1005/0402 1608/0603 2012/0805 2520/1008 4938/1812	1 ~ 470

BWCS00292821 Series Specification

1 Scope:

This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:

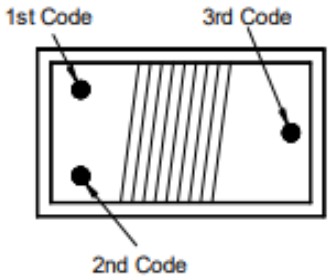


3 Rating:

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

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

4 Marking:



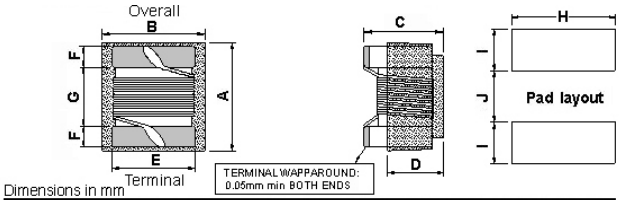
COLOR CODING

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

BWCS00292821 Series Specification

6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
292821	2.92Max.	2.79Max.	2.1Max.	1.16	2.03	0.51	1.52	2.54	1.02	1.27

Net Weight (grms)

SIZE CODE	Net Weight (grms)
292821	0.0306 (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	2nd	3rd	offset value (nH)
BWCS0029282110N□00	10	50/500	50	4100	0.08	1000	K,J,G	BRN	BLK	BLK	-0.4
BWCS0029282112N□00	12	50/500	50	3300	0.09	1000	K,J,G	BRN	RED	BLK	-0.6
BWCS0029282115N□00	15	50/500	50	2500	0.1	1000	K,J,G	BRN	GRN	BLK	-0.9
BWCS0029282118N□00	18	50/350	50	2500	0.11	1000	K,J,G	BRN	GRY	BLK	-0.4
BWCS0029282122N□00	22	50/350	55	2400	0.12	1000	K,J,G	RED	RED	BLK	-0.9
BWCS0029282127N□00	27	50/350	55	1600	0.13	1000	K,J,G	RED	VIO	BLK	-1
BWCS0029282133N□00	33	50/350	60	1600	0.14	1000	K,J,G	ORN	ORN	BLK	-1.3
BWCS0029282139N□00	39	50/350	60	1500	0.15	1000	K,J,G	ORN	WHT	BLK	-1.4
BWCS0029282147N□00	47	50/350	65	1500	0.16	1000	K,J,G	YEL	VIO	BLK	-1
BWCS0029282156N□00	56	50/350	65	1300	0.18	1000	K,J,G	GRN	BLU	BLK	-3.5
BWCS0029282168N□00	68	50/350	65	1300	0.2	1000	K,J,G	BLU	GRY	BLK	-3.5
BWCS0029282182N□00	82	50/350	60	1000	0.22	1000	K,J,G	GRY	RED	BLK	-3.6
BWCS00292821R10□00	100	25/350	60	1000	0.56	650	K,J,G	BRN	BLK	BRN	-6
BWCS00292821R12□00	120	25/350	60	950	0.63	650	K,J,G	BRN	RED	BRN	-5
BWCS00292821R15□00	150	25/100	45	850	0.7	580	K,J,G	BRN	GRN	BRN	-5
BWCS00292821R18□00	180	25/100	45	750	0.77	620	K,J,H,G	BRN	GRY	BRN	-2
BWCS00292821R20□00	200	25/100	45	700	0.84	500	K,J,G	RED	BLK	BRN	0
BWCS00292821R22□00	220	25/100	45	700	0.84	500	K,J,G	RED	RED	BRN	-15
BWCS00292821R27□00	270	25/100	45	600	0.91	500	K,J,G	RED	VIO	BRN	-15
BWCS00292821R33□00	330	25/100	45	570	1.05	450	K,J,G	ORN	ORN	BRN	-20
BWCS00292821R39□00	390	25/100	45	500	1.12	470	K,J,G	ORN	WHT	BRN	-25
BWCS00292821R47□00	470	25/100	45	450	1.19	470	K,J,G	YEL	VIO	BRN	-35
BWCS00292821R56□00	560	25/100	45	415	1.33	400	K,J,G	GRN	BLU	BRN	-32
BWCS00292821R62□00	620	25/100	45	375	1.4	300	K,J,G	BLU	RED	BRN	-40
BWCS00292821R68□00	680	25/100	45	375	1.47	400	K,J,G	BLU	GRY	BRN	-50

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

1.Operating temperature range -40℃~125℃

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

3.L/Q Test OSC @200mV.

4.Inductance would be correct Chilisin standard piece.

BWCS00292821 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	2nd	3rd	offset value (nH)
BWCS00292821R75□00	750	25/100	45	360	1.54	360	K,J,G	VIO	GRN	BRN	-50
BWCS00292821R82□00	820	25/100	45	350	1.61	400	K,J,G	GRY	RED	BRN	-55
BWCS00292821R91□00	910	25/50	35	320	1.68	380	K,J,G	WHT	BRN	BRN	-80
BWCS002928211R0□00	1000	25/50	35	290	1.75	370	K,J,G	BRN	BLK	RED	-80
BWCS002928211R2□00	1200	7.9/50	35	250	2	310	K,J,G	BRN	RED	RED	-17.8
BWCS002928211R5□00	1500	7.9/50	28	200	2.3	330	K,J,G	BRN	GRN	RED	-29.3
BWCS002928211R8□00	1800	7.9/50	28	160	2.6	300	K,J,G	BRN	GRY	RED	-42.2
BWCS002928212R2□00	2200	7.9/50	28	160	2.8	280	K,J,G	RED	RED	RED	-89.6
BWCS002928212R7□00	2700	7.9/25	22	140	3.2	290	K,J,G	RED	VIO	RED	-75
BWCS002928213R3□00	3300	7.9/25	22	110	3.4	290	K,J,G	ORN	ORN	RED	-145.6
BWCS002928213R9□00	3900	7.9/25	20	100	3.6	260	K,J,G	ORN	WHT	RED	-155.5
BWCS002928214R7□00	4700	7.9/25	20	90	4	260	K,J,G	YEL	VIO	RED	-227.7
BWCS002928215R6□00	5600	7.9/7.9	18	45	4	240	K,J,G	GRN	BLU	RED	0
BWCS002928216R8□00	6800	7.9/7.9	18	40	4.9	200	K,J,G	BLU	GRY	RED	0
BWCS002928218R2□00	8200	7.9/7.9	18	25	6	170	K,J,G	GRY	RED	RED	0
BWCS00292821100□00	10000	2.52/7.9	18	25	8	150	K,J,G	BRN	BLK	ORN	0
BWCS00292821150□00	15000	2.52/7.9	15	20	11	100	K,J,G	BRN	GRN	ORN	0

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

1.Operating temperature range - 4 0℃ ~ 1 2 5℃

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

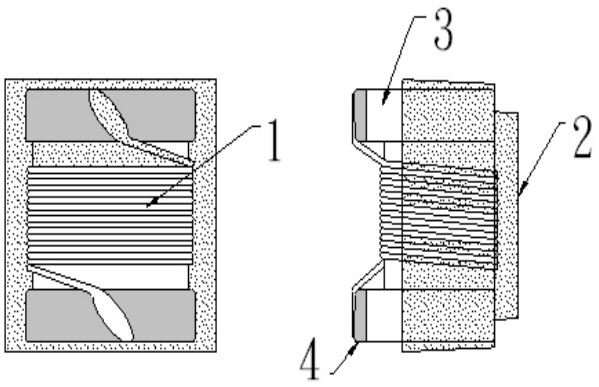
3.L/Q Test OSC @200mV.

4.Inductance would be correct Chilisin standard piece.

BWCS00292821 Series Specification

8 BWCS00292821 Series

8.1 Construction:



8.1 Construction:

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

BWCS00292821 Series Specification

9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

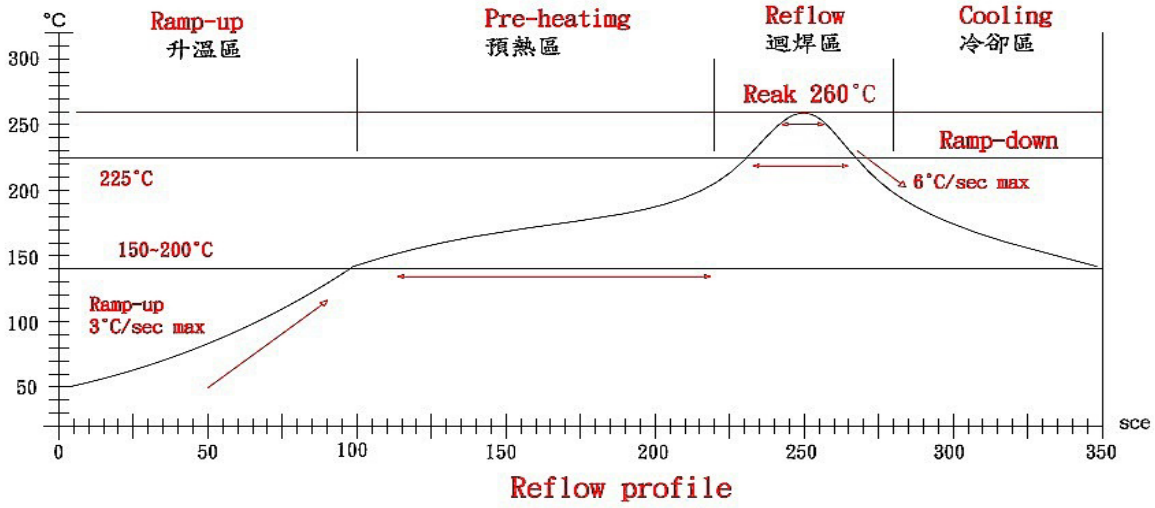
1-1.Environmental Performance

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

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

BWCS00292821 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:

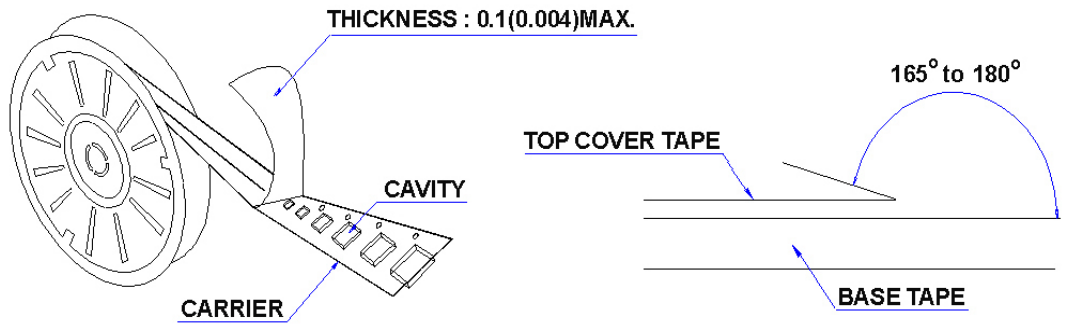
1.Re-flow possible times : within 3 times
2.Nitrogen adopted is recommendes while in re-flow
3.Products can only be soldered with reflow

BWCS00292821 Series Specification

10 Packaging:

10.1 Packaging -Cover Tape

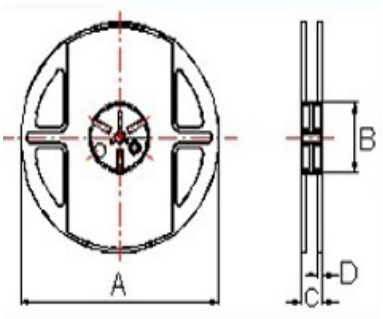
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
292821	2000

10.3 Reel Dimensions



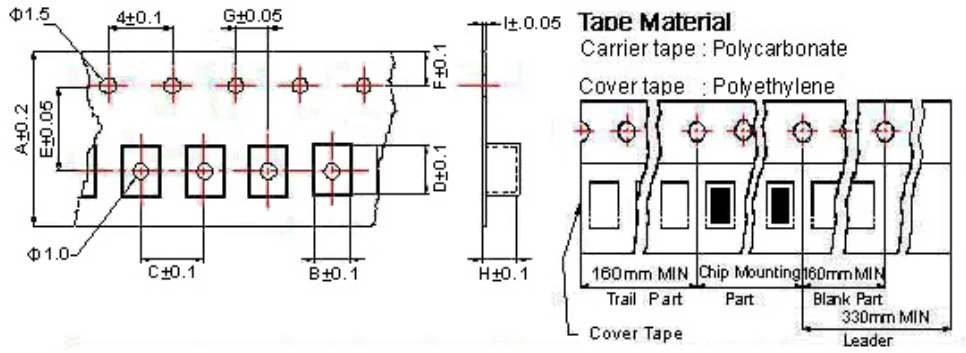
Dimensions in mm

TYPE	A	B	C	D
292821	178±1	60±0.5	12±0.5	1.5±0.5

BWCS00292821 Series Specification

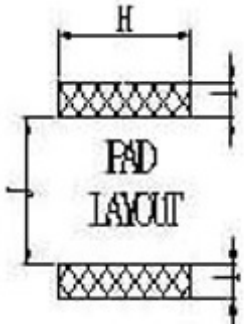
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	H	I
292821	8.0	2.80	4	2.95	3.5	1.75	2	2.20	0.23

11 Recommended Land Pattern:



Dimensions in mm

TYPE	H(In/mm)	I(In/mm)	J(In/mm)
292821	0.10/2.54	0.04/1.02	0.05/1.27

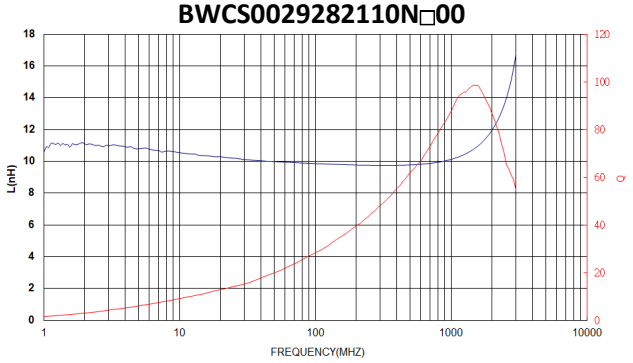
12 Note:

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.

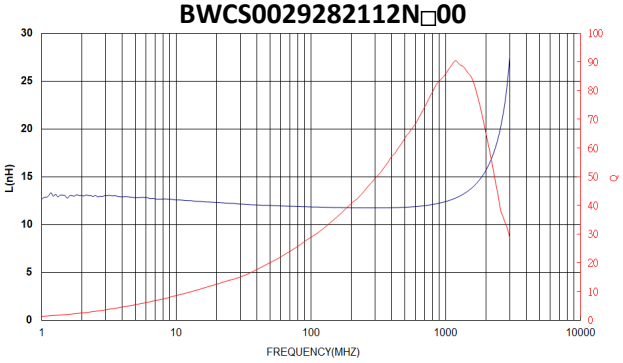
BWCS00292821 Series Specification

13 Graph:

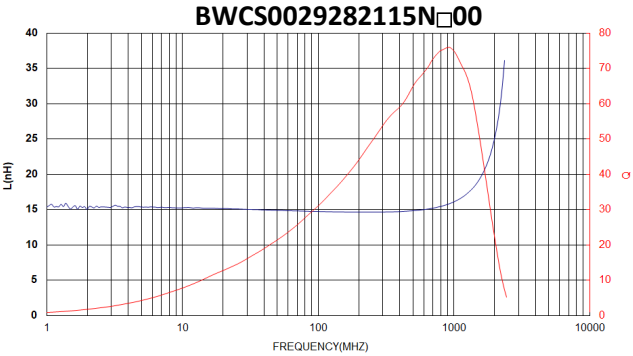
BWCS0029282110N□00



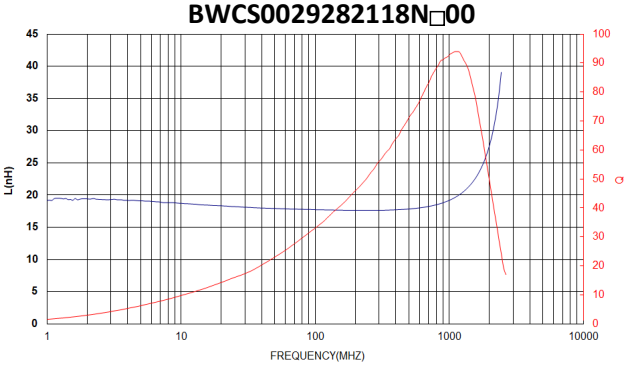
BWCS0029282112N□00



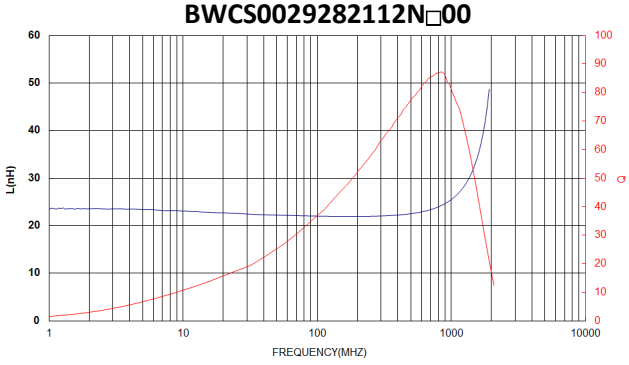
BWCS0029282115N□00



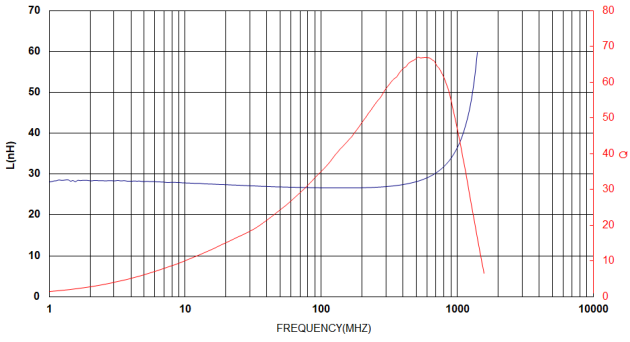
BWCS0029282118N□00



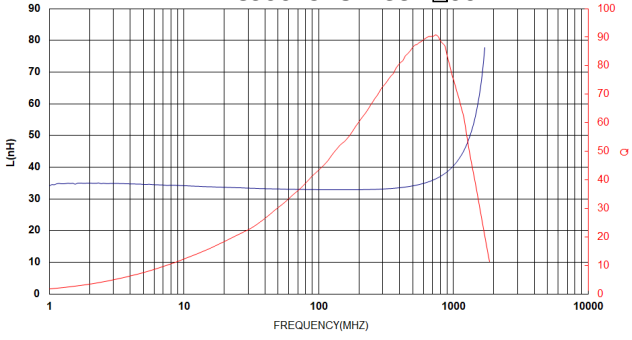
BWCS0029282112N□00



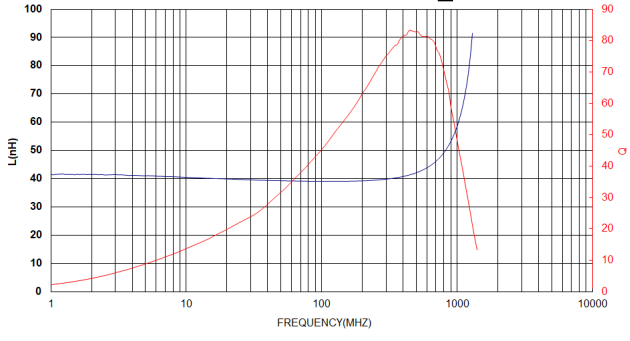
BWCS0029282127N□00



BWCS0029282133N□00

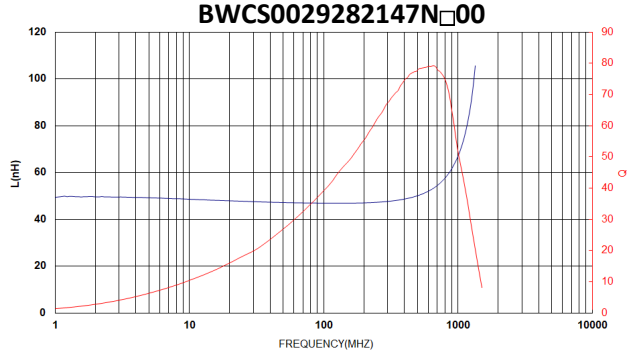


BWCS0029282139N□00

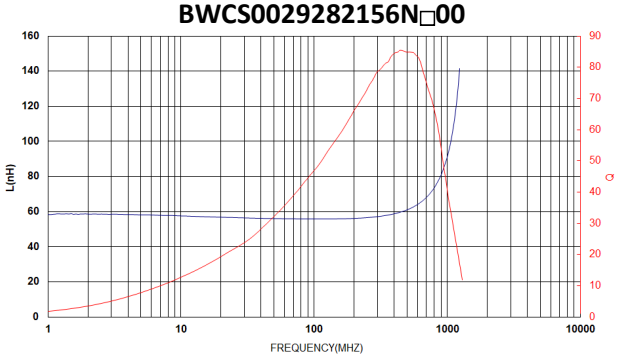


BWCS00292821 Series Specification

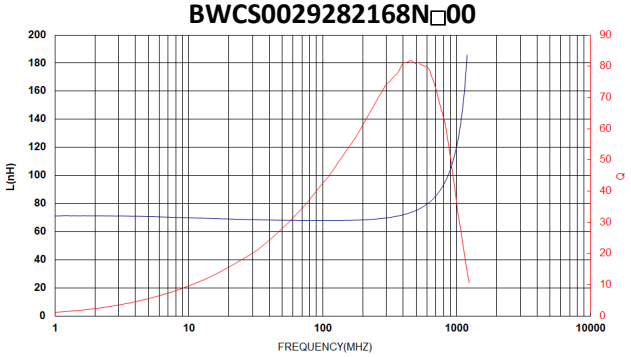
BWCS0029282147N□00



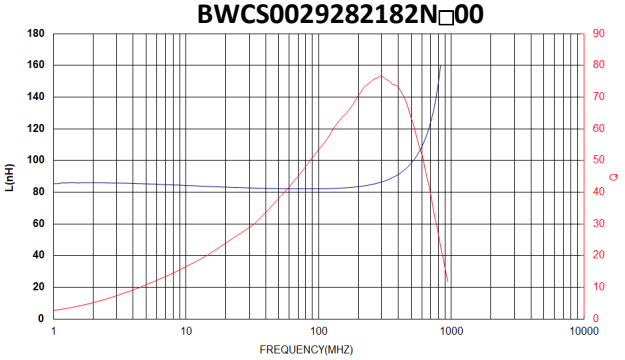
BWCS0029282156N□00



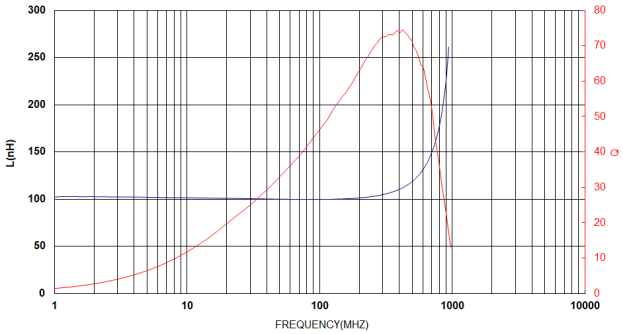
BWCS0029282168N□00



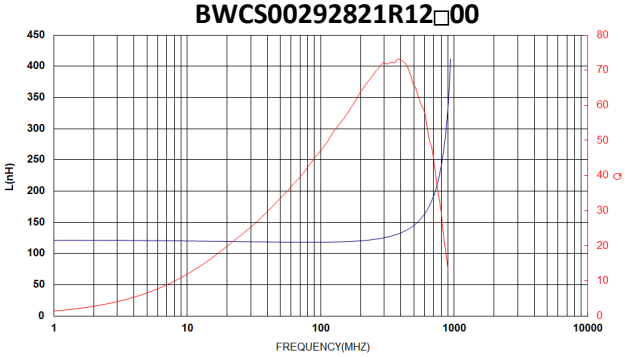
BWCS0029282182N□00



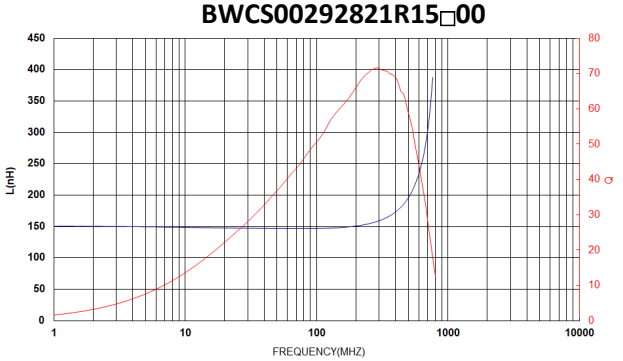
BWCS00292821R10□00



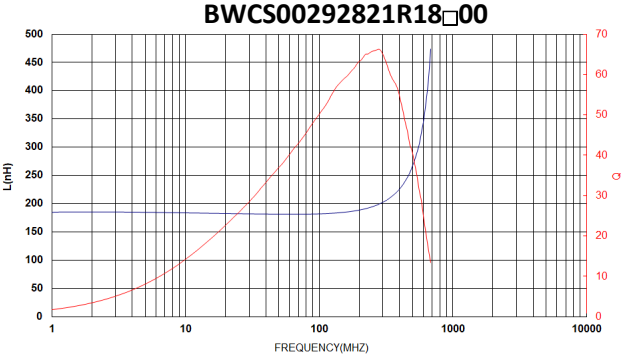
BWCS00292821R12□00



BWCS00292821R15□00

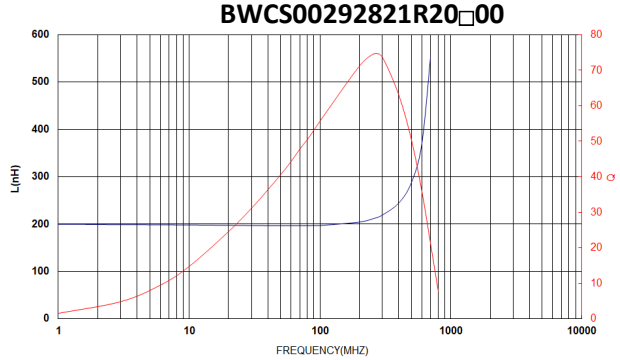


BWCS00292821R18□00

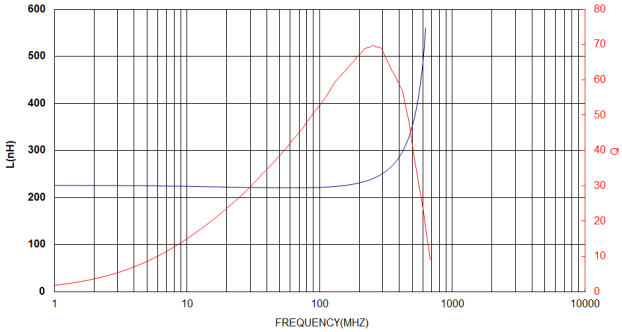


BWCS00292821 Series Specification

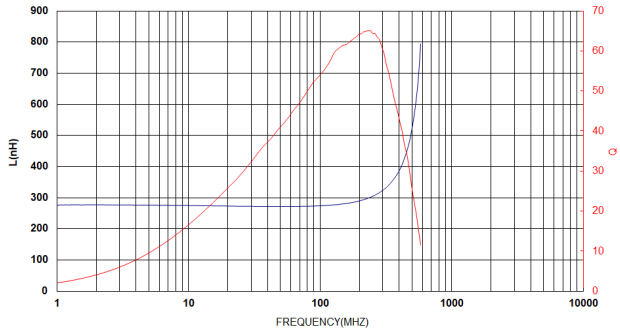
BWCS00292821R20□00



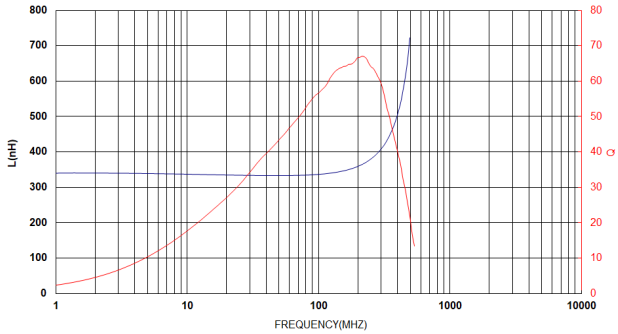
BWCS00292821R22□00



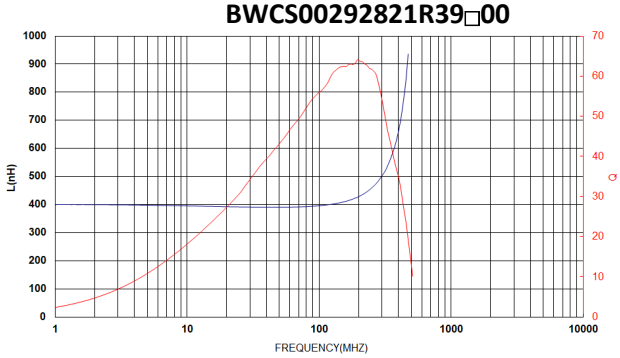
BWCS00292821R27□00



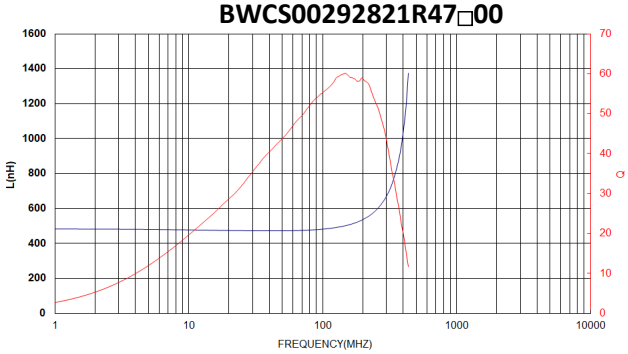
BWCS00292821R33□00



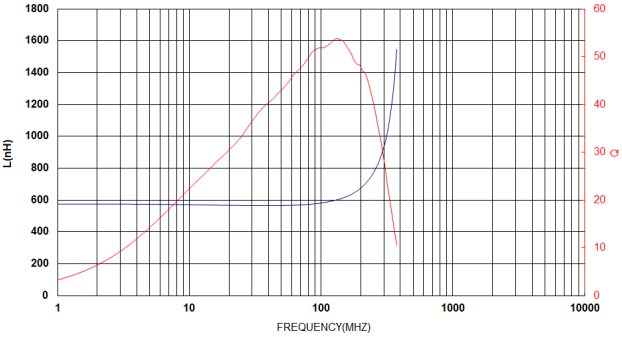
BWCS00292821R39□00



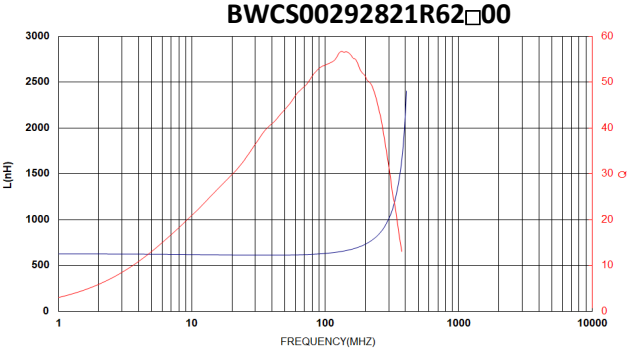
BWCS00292821R47□00



BWCS00292821R56□00

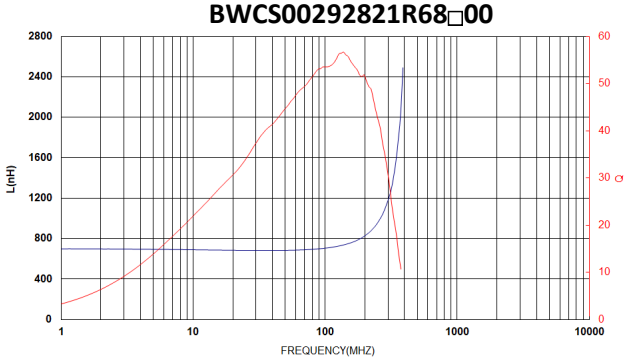


BWCS00292821R62□00

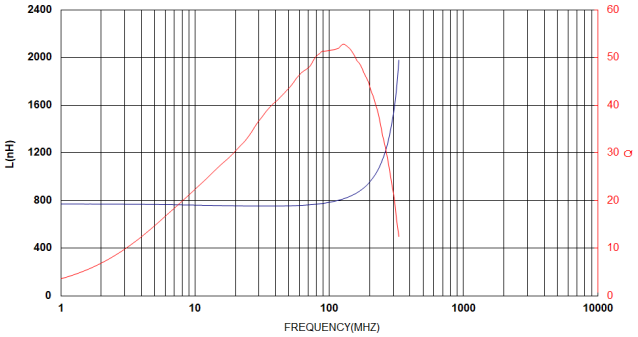


BWCS00292821 Series Specification

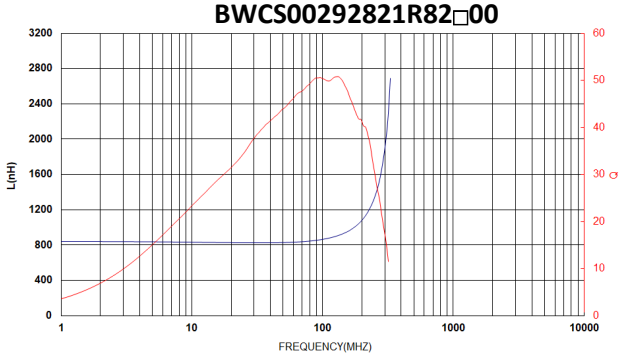
BWCS00292821R68□00



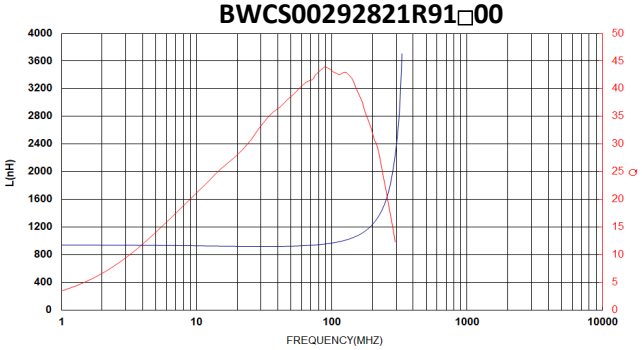
BWCS00292821R75□00



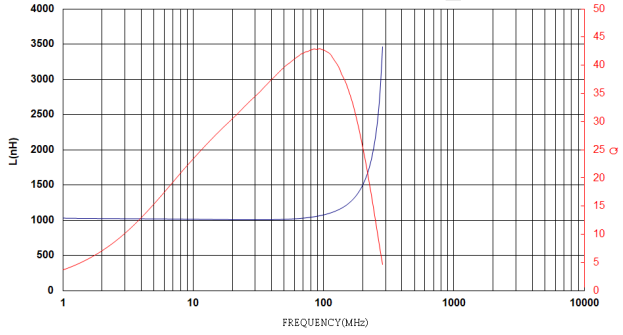
BWCS00292821R82□00



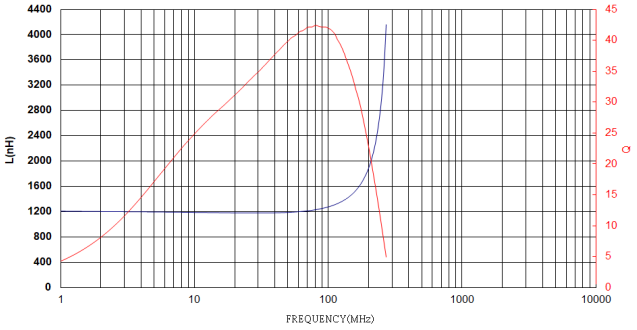
BWCS00292821R91□00



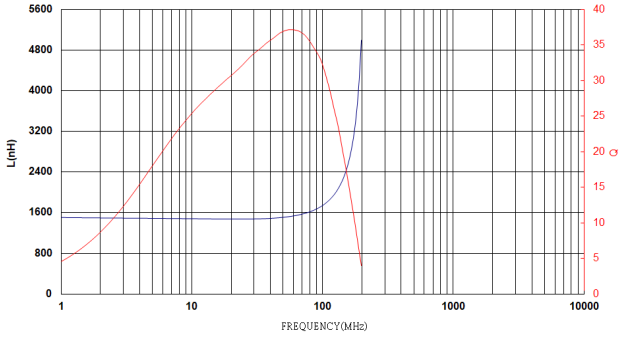
BWCS002928211R0□00



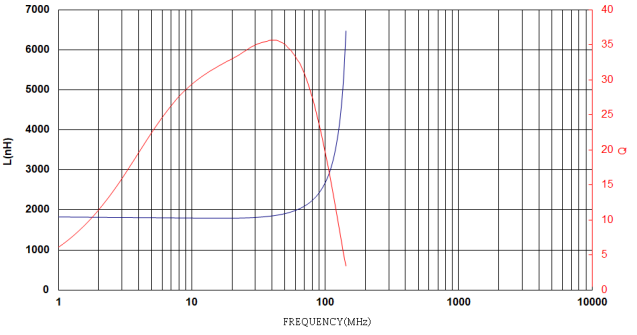
BWCS002928211R2□00



BWCS002928211R5□00

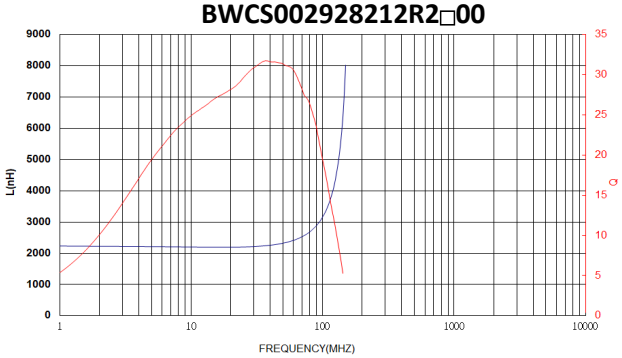


BWCS002928211R8□00

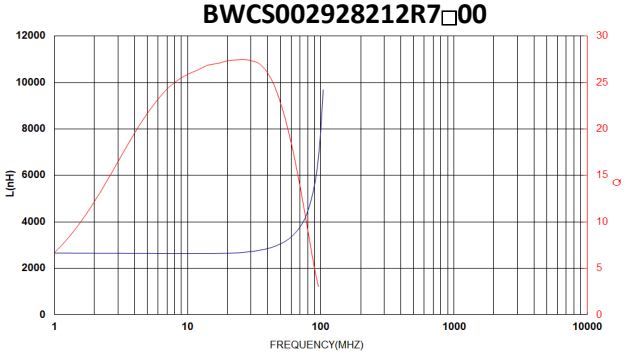


BWCS00292821 Series Specification

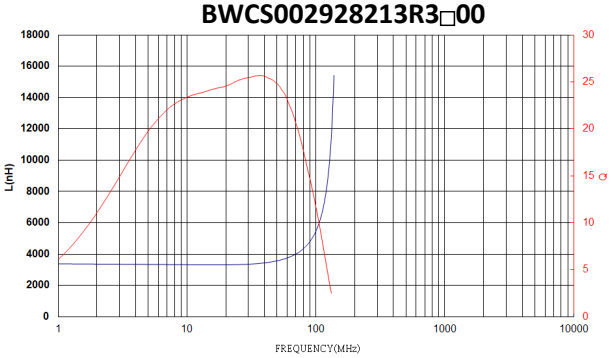
BWCS002928212R2□00



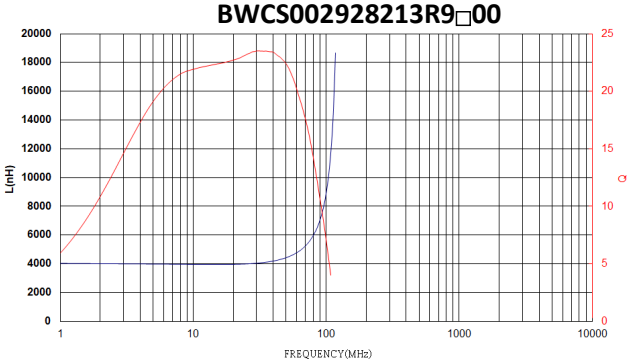
BWCS002928212R7□00



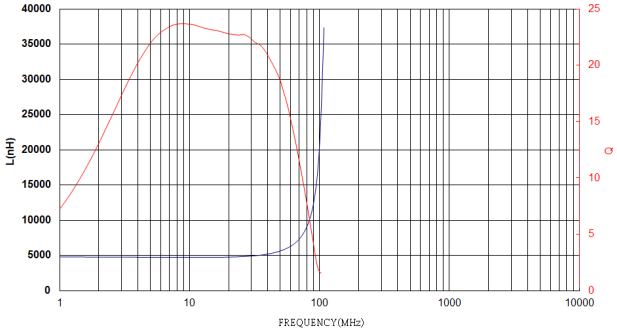
BWCS002928213R3□00



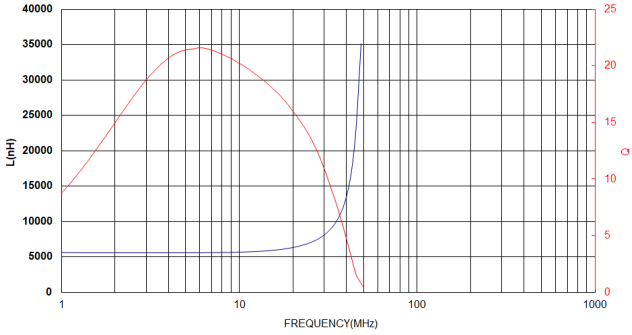
BWCS002928213R9□00



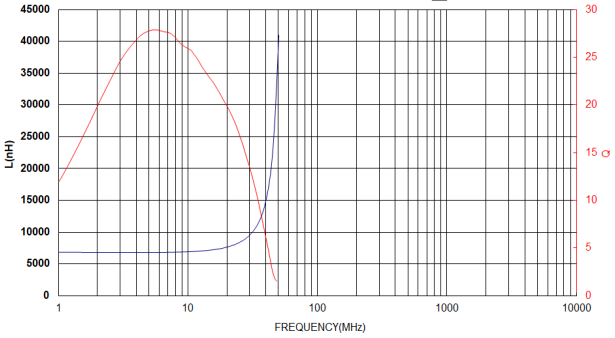
BWCS002928214R7□00



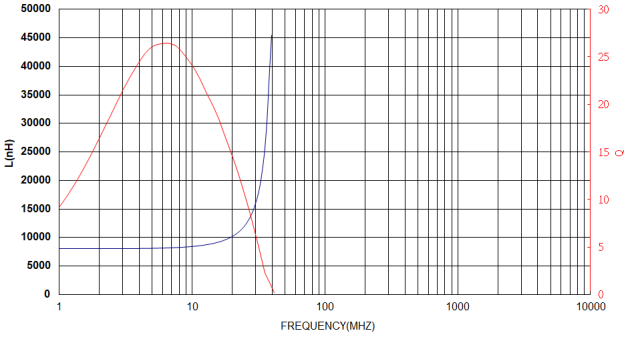
BWCS002928215R6□00



BWCS002928216R8□00

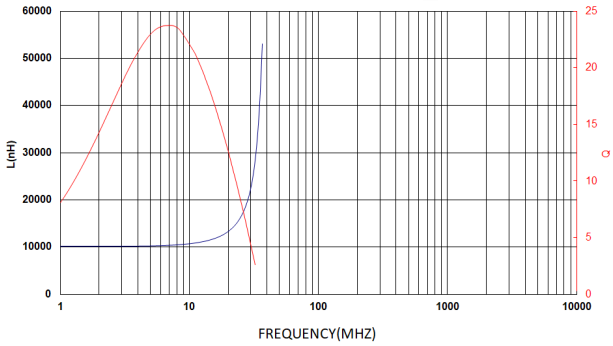
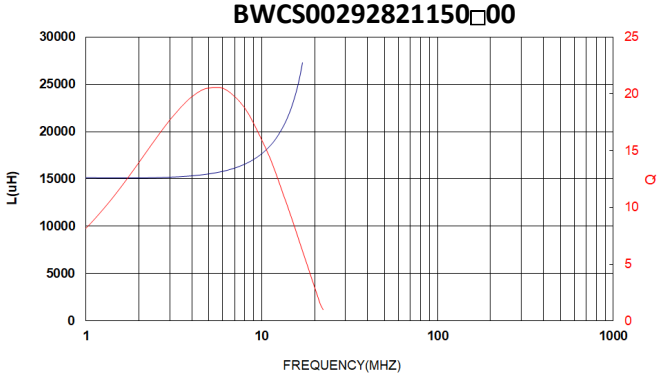


BWCS002928218R2□00



BWCS00292821 Series Specification

BWCS00292821100□00



BWCS00292821150□00