

RF Inductor



BWCT 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

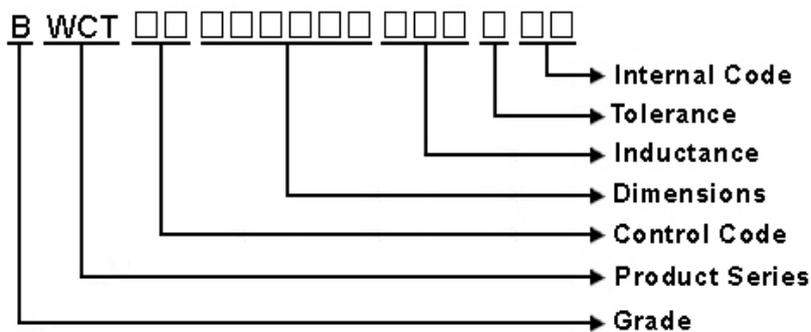
Series	Size Code (JIS/EIA)	Inductance (nH)
BWCT	2012/0805	1.8 ~ 1000



BWCT00231711 Series Specification

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

2 Part Numbering:

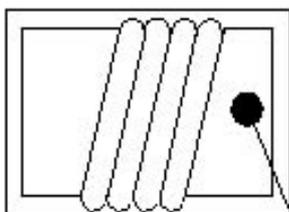


3 Rating:

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

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

4 Marking:



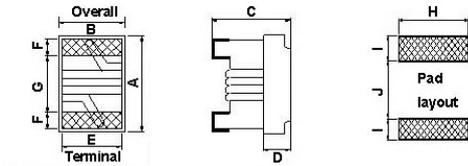
Ex Marking: 1st → BROWN

5 Standard Testing Condition

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

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6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
231711	2.35 Max.	1.73 Max.	1.1 Max.	0.51	1.27	0.51	1.02	1.78	1.02	0.76

Net Weight (grms)

SIZE CODE	Net Weight (grms)
231711	0.01 (typ.)

7 Electrical Characteristics:

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	I _{rms} (mA)Max.	Tolerance (±%)	Color Code 1st
BWCT002317111N8□00	1.8	250/1500	55	9400	0.03	800	10	BLK
BWCT002317113N9□00	3.9	250/1000	50	6100	0.06	800	10	BRN
BWCT002317114N7□00	4.7	250/1000	50	5500	0.06	800	5,10	RED
BWCT002317116N8□00	6.8	250/1000	50	5500	0.08	800	5,10	ORN
BWCT002317118N2□00	8.2	250/1000	50	4800	0.08	800	5,10	YEL
BWCT0023171110N□00	10	250/750	55	3300	0.08	800	2,5,10	GRN
BWCT0023171112N□00	12	250/750	55	3800	0.1	800	2,5,10	BLU
BWCT0023171115N□00	15	250/500	50	2950	0.1	800	2,5,10	VIO
BWCT0023171118N□00	18	250/500	50	3100	0.13	800	2,5,10	GRY
BWCT0023171122N□00	22	250/500	50	2900	0.15	800	2,5,10	WHT
BWCT0023171127N□00	27	250/500	50	2450	0.23	600	2,5,10	BLK
BWCT0023171133N□00	33	250/500	55	2350	0.28	600	2,5,10	BRN
BWCT0023171139N□00	39	250/500	55	2200	0.33	600	2,5,10	RED
BWCT0023171147N□00	47	200/500	50	2000	0.39	600	2,5,10	ORN
BWCT0023171156N□00	56	200/500	50	1850	0.39	500	2,5,10	YEL
BWCT0023171168N□00	68	200/500	50	1500	0.4	500	2,5,10	GRN
BWCT0023171182N□00	82	150/500	50	1500	0.44	500	2,5,10	BLU
BWCT00231711R10□00	100	150/500	50	1200	0.64	400	2,5,10	VIO
BWCT00231711R12□00	120	150/250	40	1150	0.68	300	2,5,10	GRY
BWCT00231711R15□00	150	150/250	40	1050	0.8	300	2,5,10	WHT
BWCT00231711R18□00	180	150/250	40	950	0.9	300	2,5,10	BLK
BWCT00231711R22□00	220	150/250	40	900	0.98	300	2,5,10	BRN
BWCT00231711R27□00	270	150/250	40	850	1.3	300	2,5,10	RED
BWCT00231711R33□00	330	100/250	40	800	1.45	300	2,5,10	ORN

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

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

2. I_{rms} for a 15°C temperature rise from 25°C ambient.

3. L/Q Test OSC @200mV.

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Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	I _{rms} (mA)Max.	Tolerance ($\pm\%$)	Color Code 1st
BWCT00231711R39□00	390	100/250	35	700	1.6	300	2,5,10	YEL
BWCT00231711R47□00	470	50/100	25	600	1.8	300	2,5,10	GRN
BWCT00231711R56□00	560	25/50	18	550	1.9	300	2,5,10	BLU
BWCT00231711R62□00	620	25/50	18	450	2	300	2,5,10	VIO
BWCT00231711R68□00	680	25/50	18	420	2.1	300	2,5,10	GRY
BWCT00231711R75□00	750	25/50	18	400	2.2	300	2,5,10	WHT
BWCT00231711R82□00	820	25/50	18	400	2.5	300	2,5,10	BLK
BWCT00231711R0□00	1000	25/50	17	330	3.1	300	2,5,10	BRN

NOTE: □-tolerance G= $\pm 2\%$ / J= $\pm 5\%$ / K= $\pm 10\%$

1. Operating temperature range - 4 0 °C ~ 1 2 5 °C(Including self - temperature rise)

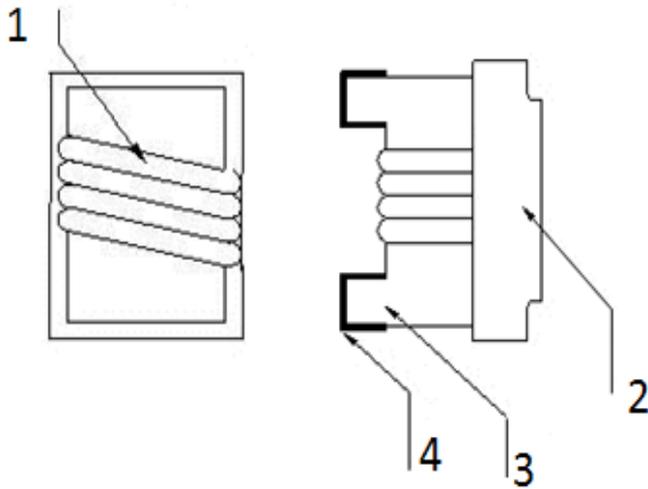
2. I_{rms} for a 15°C temperature rise from 25°C ambient.

3. L/Q Test OSC @200mV.

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8.1 Construction:



8.2 Material List:

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

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9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

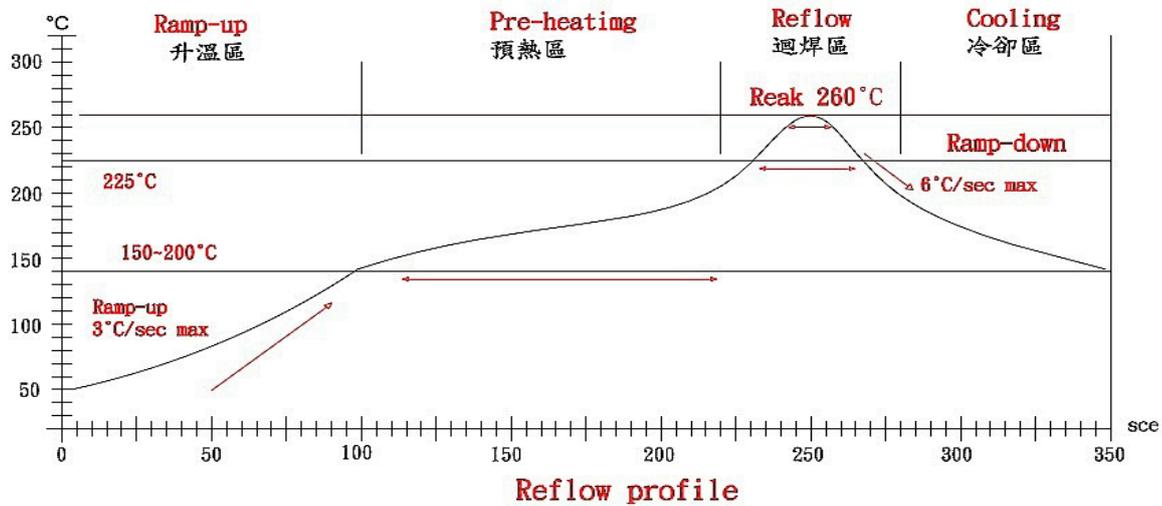
1-1.Environmental Performance

No	Item	Specification	Test Method		
1-1-1	Temperature Cycle	Appearance: No Damage Inductance: within $\pm 10\%$ of initial value Q change: within $\pm 30\%$ of initial value	One cycle:		
			Step	Temperature ($^{\circ}\text{C}$)	Time (min)
			1	-40 \pm 3	30
			2	25 \pm 2	15
			3	125 \pm 3	30
4	25 \pm 2	15			
			Total: 5 cycles Measured After Exposure in The Room Condition For 1hrs		
1-1-2	Humidity Resistance		Temperature: 40 \pm 2 $^{\circ}\text{C}$ Relative Humidity: 90 ~ 95% Time: 100hrs Measured After Exposure In The Room Condition For 1hrs		
1-1-3	High Temperature Resistance		Temperature: 125 \pm 3 $^{\circ}\text{C}$ Time: 50Hrs Measured After Exposure In The Room Condition For 1Hrs		
1-1-4	Low Temperature Resistance		Temperature: -40 \pm 3 $^{\circ}\text{C}$ Time: 50Hrs Measured After Exposure In The Room Condition For 1Hrs		
1-1-5	High Temperature Load Life	There should be no evidence of short or open circle	Temperature: 85 \pm 3 $^{\circ}\text{C}$ Load: Allowed DC Current Time: 1000Hrs		
1-1-6	Humidity Load Life		Temperature: 40 \pm 2 $^{\circ}\text{C}$ Relative Humidity: 90~95% Load: Allowed DC Current Time: 1000Hrs		

1-2.Mechanical Performance

No	Item	Specification	Test Method
1-2-1	Vibration Test (Low Frequency)	1.Appearance: No Damage 2.Inductance: within $\pm 10\%$ of initial value 3.Q change: within $\pm 30\%$ 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 $^{\circ}\text{C}$ \pm 5 $^{\circ}\text{C}$ 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 $^{\circ}\text{C}$, 1min. 2. Solder Composition: Sn/Ag3.0/Cu0.5 3. Solder Temperature: 245 \pm 5 $^{\circ}\text{C}$. 4. Immersion Time: 4 \pm 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 \pm 5 $^{\circ}\text{C}$ 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

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Lead-Free(LF)標準溫度分析範圍

Refer to J-STD-020C

管制項目 Item.	升温區 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°C	150°C ~ 200°C	Above 217°C	260±5°C	Peak Temp.~150°C
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:

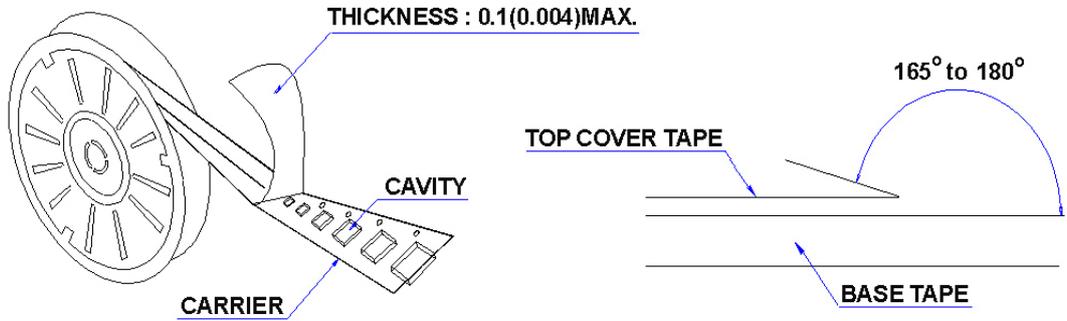
- 1.Re-flow possible times : within 3 times
- 2.Nitrogen adopted is recommends while in re-flow
- 3.Products can only be soldered with reflow

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10 Packaging:

10.1 Packaging -Cover Tape

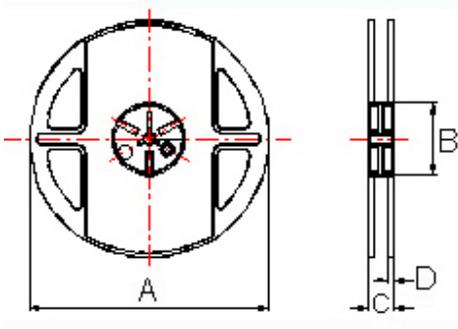
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
231711	2000

10.3 Reel Dimensions



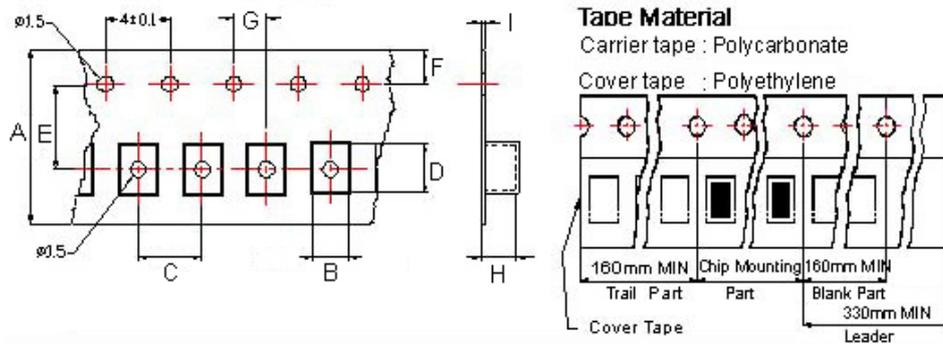
Dimensions in mm

TYPE	A	B	C	D
231711	178±1	60±0.5	12±0.5	1.5±0.5

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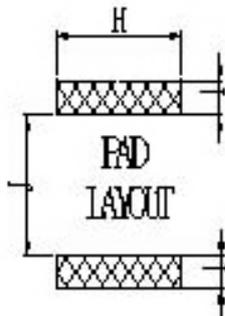
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	H	T
231711	8	1.85	4	2.45	3.5	1.75	2	1.1	0.23

11 Recommended Land Pattern:



Dimensions in mm

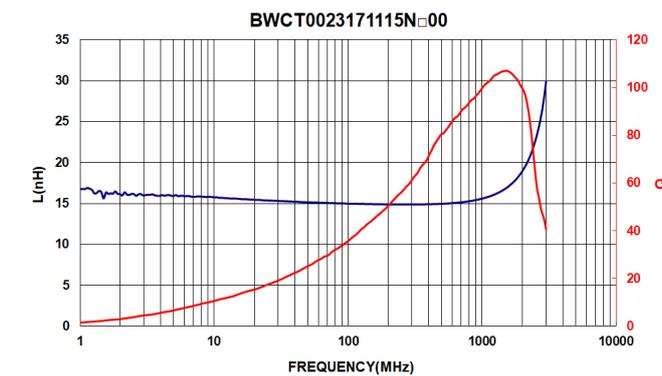
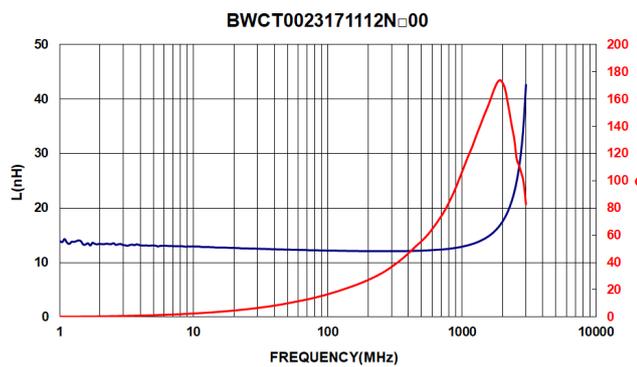
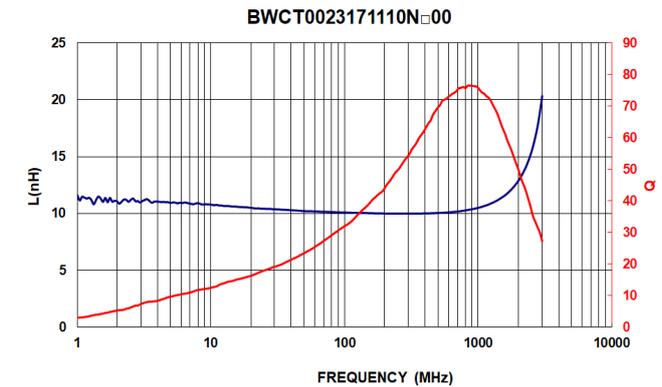
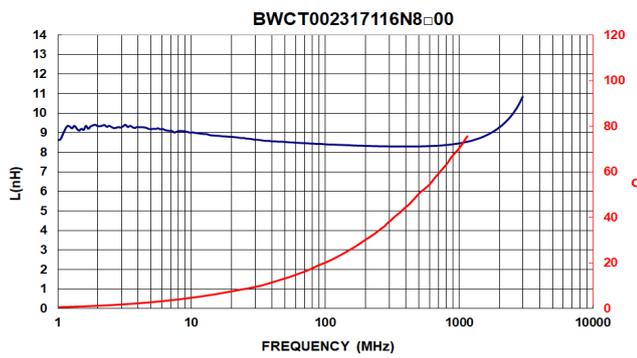
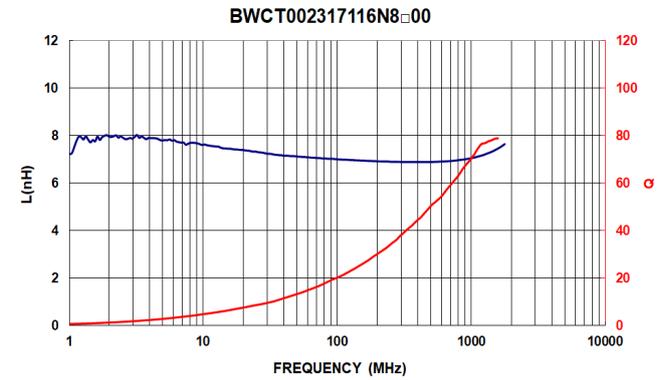
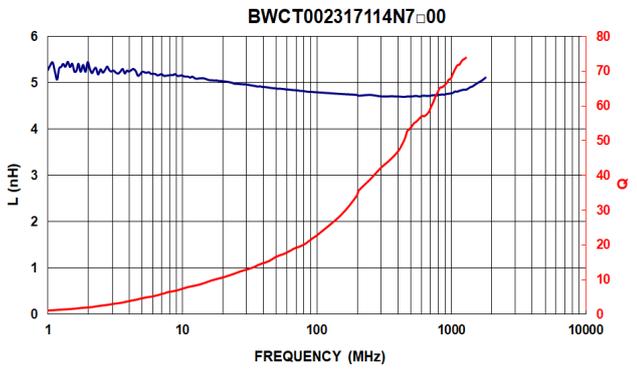
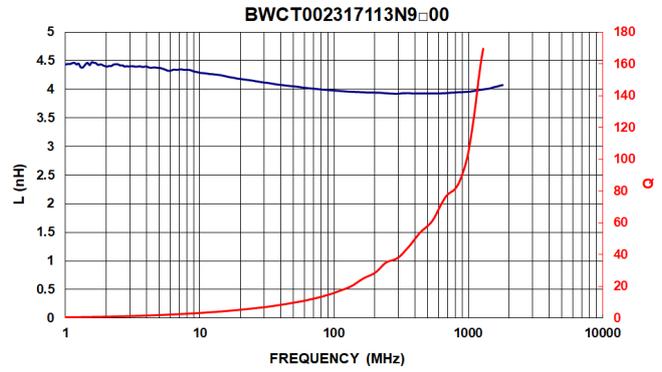
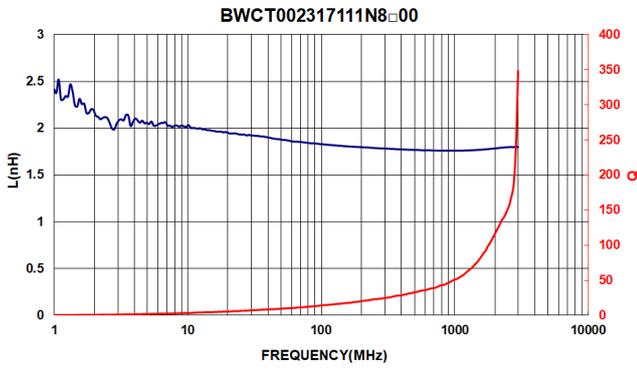
TYPE	H(In/mm)	I(In/mm)	J(In/mm)
231711	0.07/1.78	0.04/1.02	0.03/0.76

12 Note:

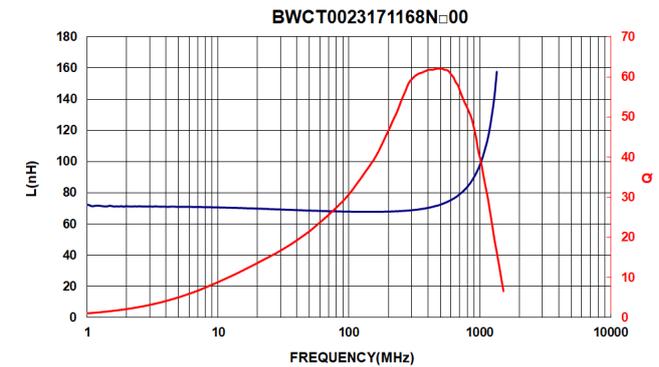
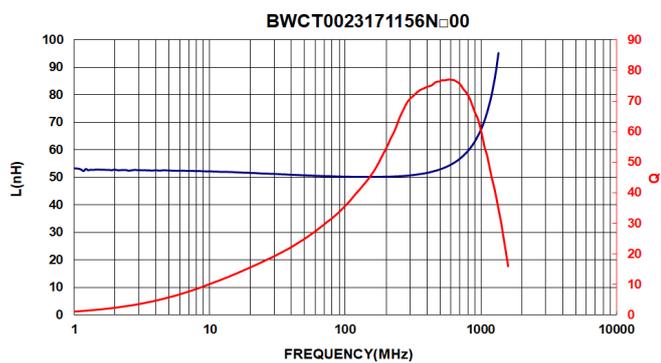
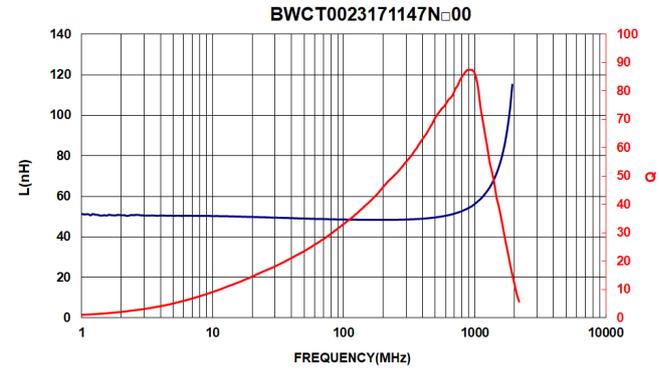
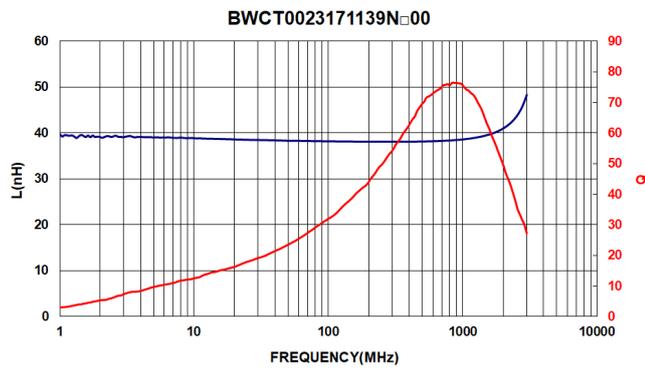
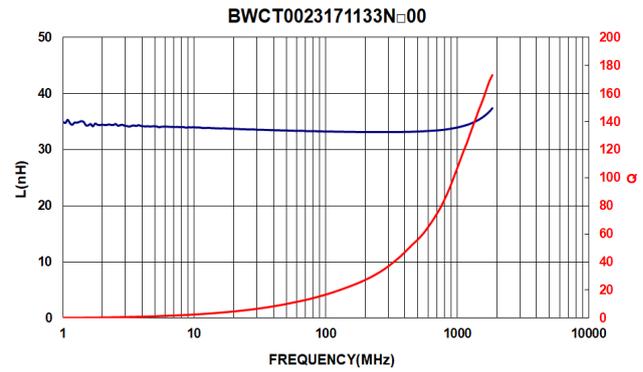
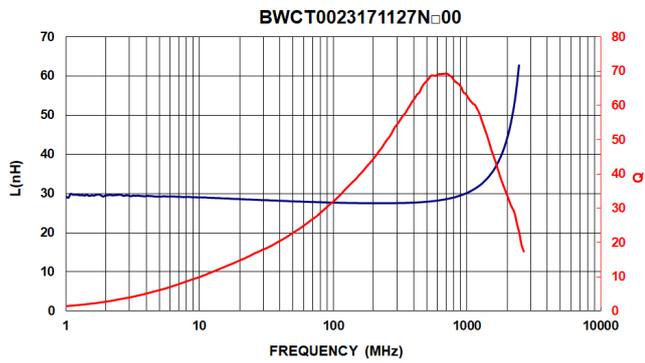
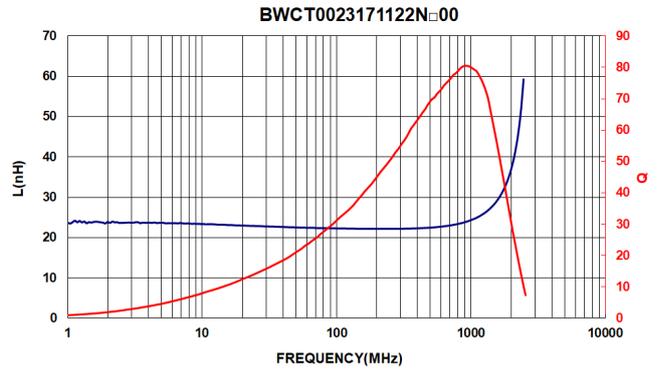
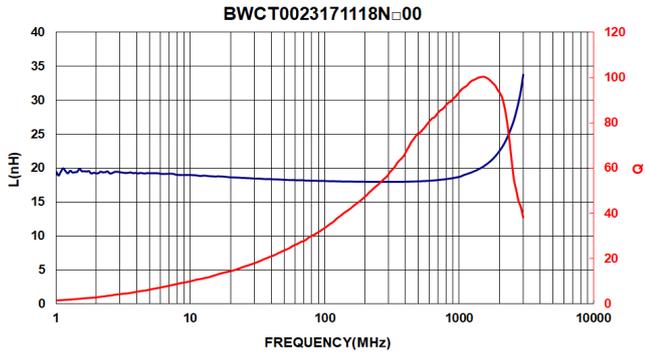
- Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Do not knock nor drop.
- All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, 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.
- The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RH or less).
If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- The moisture sensitivity level (MSL) of products is classified as level 1.

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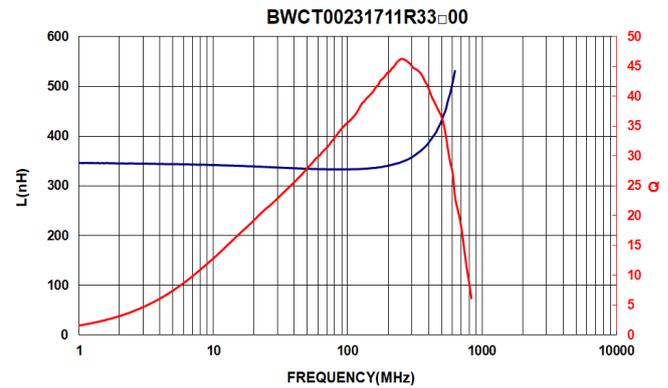
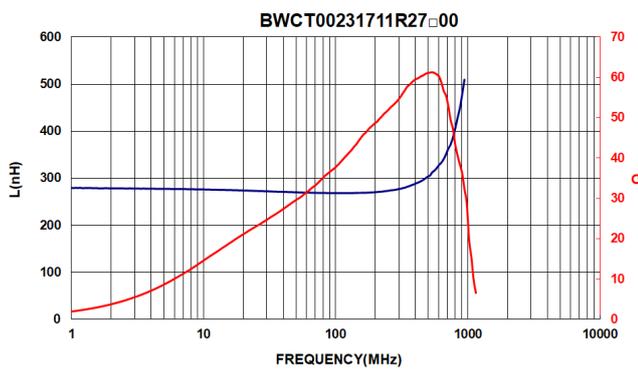
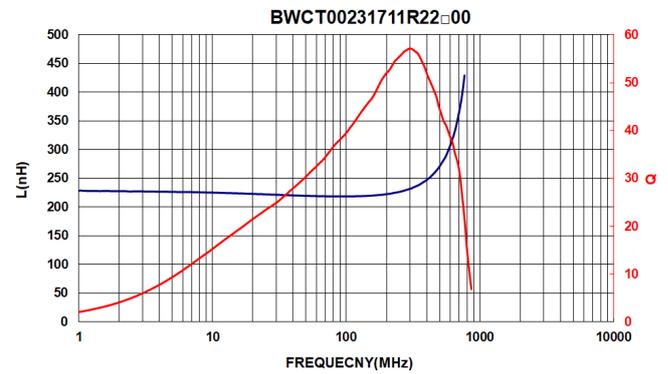
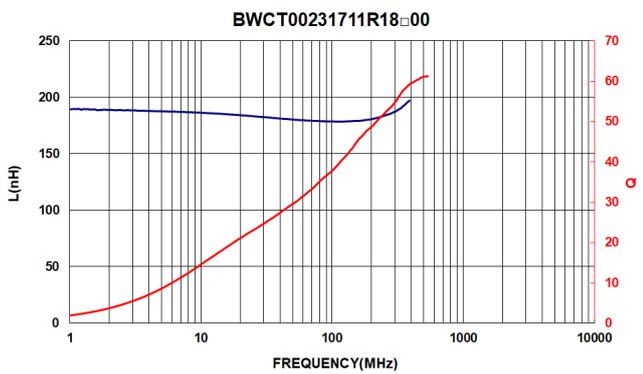
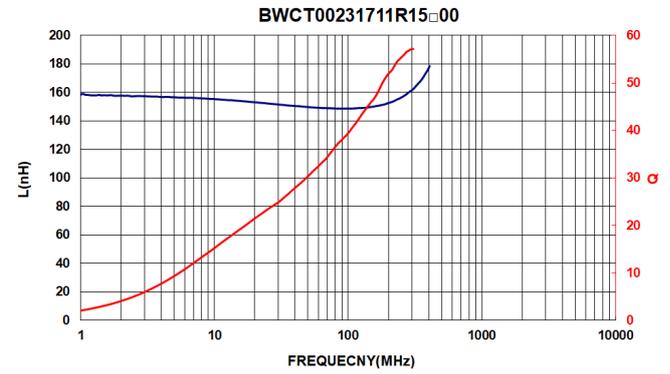
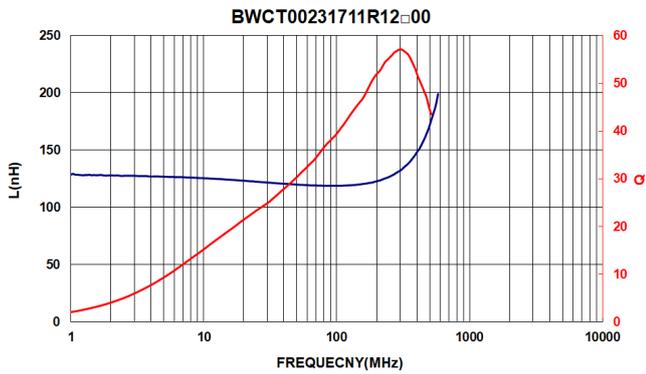
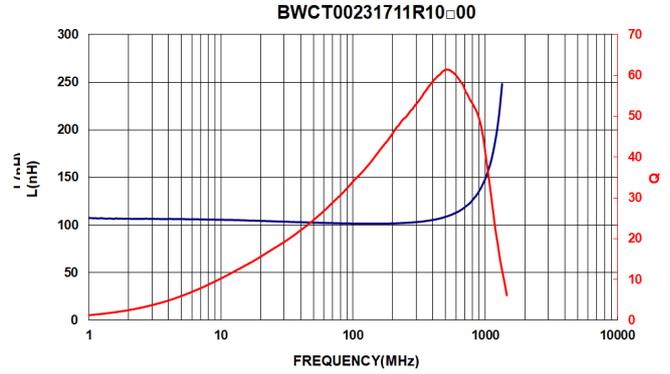
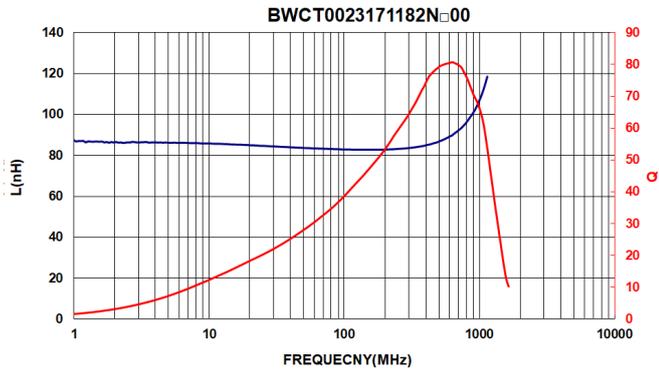
13 Graph:



BWCT00231711 Series Specification



BWCT00231711 Series Specification



BWCT00231711 Series Specification

