

RF Inductor



BWCM 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

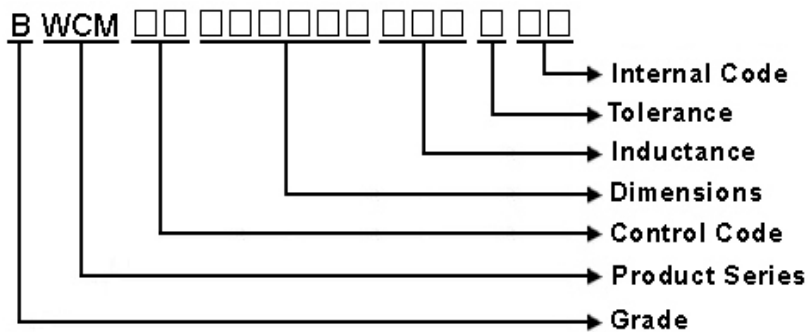
Series	Size Code (JIS/EIA)	Inductance (nH)
BWCM	0603/0201 1005/0402 1608/0603	1 ~ 470



BWCM00060404 Series Specification

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

2 Part Numbering:



3 Rating:

Operating Temperature: - 55°C ~ 125°C
(Including self - temperature rise)

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

4 Marking:

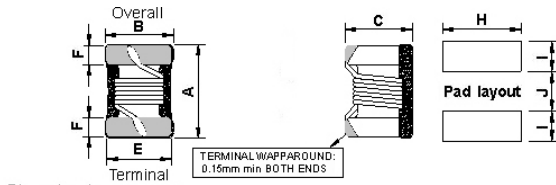
No Marking

5 Standard Testing Condition

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

BWCM00060404 Series Specification

6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	E	F	H	I	J
060404	0.53±0.05	0.40±0.05	0.40±0.05	0.38	0.1	0.4	0.21	0.23

Net Weight (grms)

SIZE CODE	Net Weight (grms)
060404	0.00022 (typ.)

7 Electrical Characteristics:

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Typ.	SRF (GHz)Min.	RDC (Ω)Max.	I _{rms} (mA)	Tolerance
BWCM000604041N0□00	1	250/900	48	19	0.03	900	C
BWCM000604041N1□00	1.1	250/900	41	19	0.06	660	C
BWCM000604041N7□00	1.7	250/900	41	19	0.07	600	C
BWCM000604041N8□00	1.8	250/900	37	19	0.1	520	C
BWCM000604041N9□00	1.9	250/900	41	19	0.08	620	C
BWCM000604042N0□00	2	250/900	42	19	0.1	490	C
BWCM000604042N1□00	2.1	250/900	35	19	0.16	400	C
BWCM000604042N2□00	2.2	250/900	33	19	0.16	400	C
BWCM000604042N7□00	2.7	250/900	46	15	0.06	720	C
BWCM000604042N8□00	2.8	250/900	44	14	0.08	600	C
BWCM000604042N9□00	2.9	250/900	41	13	0.1	540	C
BWCM000604043N0□00	3	250/900	34	14	0.22	350	C
BWCM000604043N1□00	3.1	250/900	48	12	0.07	720	C
BWCM000604043N2□00	3.2	250/900	48	10	0.08	580	C
BWCM000604043N3□00	3.3	250/900	47	11	0.11	520	C
BWCM000604043N4□00	3.4	250/900	43	11	0.15	440	C
BWCM000604043N5□00	3.5	250/900	43	12	0.15	440	C
BWCM000604043N6□00	3.6	250/900	36	11	0.23	340	J,C
BWCM000604043N7□00	3.7	250/900	38	11	0.23	340	C
BWCM000604043N9□00	3.9	250/900	48	11	0.07	650	C
BWCM000604044N3□00	4.3	100/900	45	11	0.12	480	J
BWCM000604044N7□00	4.7	100/900	45	9.5	0.09	620	J
BWCM000604045N1□00	5.1	100/900	45	9.5	0.14	480	J
BWCM000604045N4□00	5.4	100/900	46	9.5	0.21	420	J
BWCM000604045N6□00	5.6	100/900	37	8.3	0.33	330	J

NOTE: □-tolerance C=±0.2nH / J=±5%

1. Operating temperature range - 5 5°C ~ 1 2 5°C (Including self - temperature rise)
2. I_{rms} for a 20°C temperature rise from 25°C ambient.
3. L/Q Test OSC @200mV.
4. Inductance would be correct Chilisin standard piece.
5. Offset value : -0.48nH
6. weight: 0.222(mg) typ.

BWCM00060404 Series Specification

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Typ.	SRF (GHz)Min.	RDC (Ω)Max.	I _{rms} (mA)	Tolerance
BWCM000604045N8□00	5.8	100/900	47	8.8	0.16	460	J
BWCM000604046N2□00	6.2	100/900	39	9.9	0.22	360	J
BWCM000604046N8□00	6.8	100/900	42	7.7	0.18	460	J
BWCM000604047N5□00	7.5	100/900	41	7.5	0.24	400	J
BWCM000604048N2□00	8.2	100/900	40	8.5	0.26	290	J
BWCM000604048N7□00	8.7	100/900	39	7.5	0.42	290	J
BWCM000604049N1□00	9.1	100/900	46	6.4	0.22	460	J
BWCM0006040410N□00	10	100/900	37	7.2	0.46	250	J
BWCM0006040411N□00	11	100/900	37	7	0.47	260	J
BWCM0006040412N□00	12.5	100/900	39	6	0.54	280	J
BWCM0006040413N□00	13	100/900	39	5.9	0.54	280	J
BWCM0006040414N□00	13.5	100/900	37	6	0.53	240	J
BWCM0006040415N□00	15.5	100/900	38	5.7	0.6	230	J

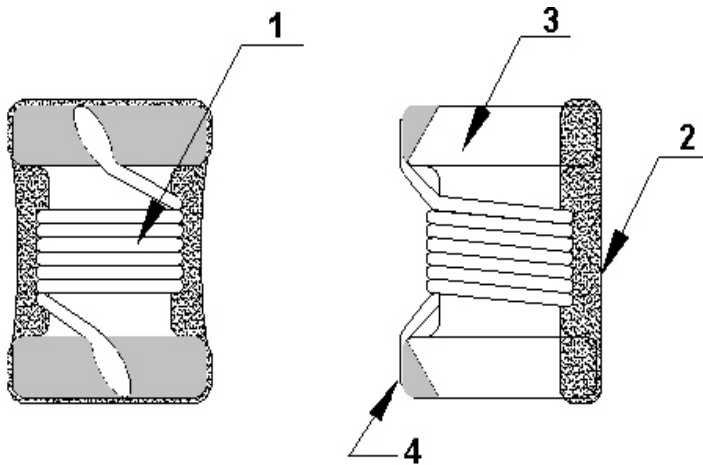
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6. weight: 0.222(mg) typ.

BWCM00060404 Series Specification

8 BWCM00060404 Series

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

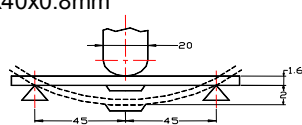
BWCM00060404 Series Specification

9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

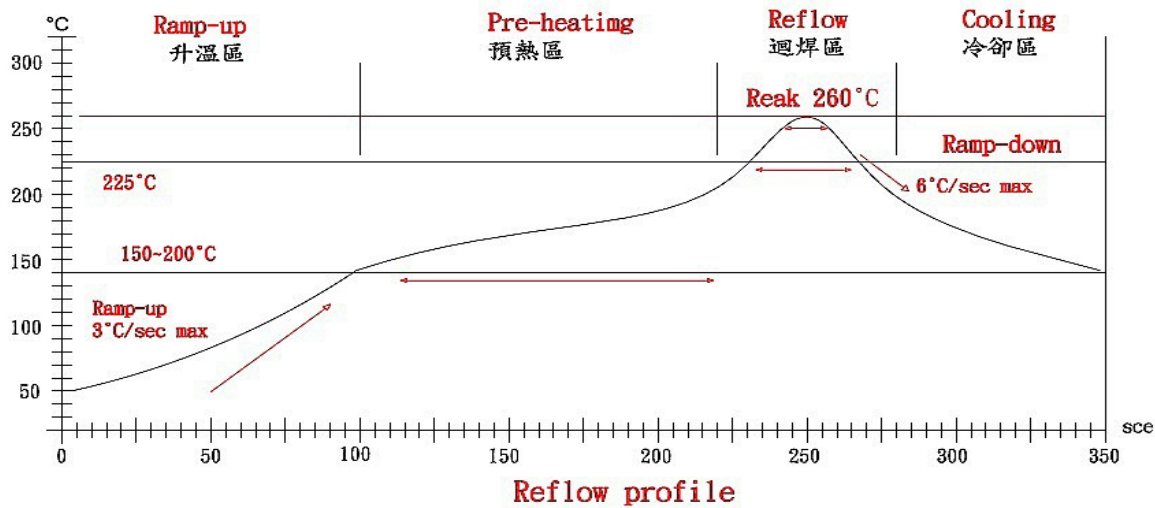
1-1.Environmental Performance

No	Item	Specification	Test Method		
1-1-1	Temperature Cycle	Appearance: No Damage Inductance: within $\pm 5\%$ of initial value Q change: within $\pm 20\%$ of initial value	One cycle:		
			Step	Temperature ($^{\circ}\text{C}$)	Time (min)
			1	-55 \pm 3	30
			2	25 \pm 2	15
			3	125 \pm 3	30
4	25 \pm 2	15			
			Total: 10 cycles Measured After Exposure in The Room Condition For 24hrs		
1-1-2	High Temperature Resistance		Temperature: 125 \pm 2 $^{\circ}\text{C}$ Time: 1000Hrs Measured After Exposure In The Room Condition For 24Hrs		
1-1-3	Low Temperature Resistance		Temperature: -55 \pm 2 $^{\circ}\text{C}$ Time: 1000Hrs Measured After Exposure In The Room Condition For 24Hrs		
1-1-4	Humidity Load Life	There should be no evidence of short or open circle	Temperature: 40 \pm 2 $^{\circ}\text{C}$ Relative Humidity: 90~95% Load: Allowed DC Current Time: 96Hrs		

1-2.Mechanical Performance

No	Item	Specification	Test Method
1-2-1	Vibration Test	1.Appearance: No Damage	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 Inductance: within $\pm 5\%$ of initial value	Flux: Ethanol solution of rosin, 25(wt)% Includes activator equivalent to 0.06(wt)% chlorine.(immersed for 5s to 10s) 1. Solder Composition: Sn/Ag3.0/Cu0.5 2. Pre-Heating: 150 $^{\circ}\text{C} \pm 10^{\circ}\text{C}$ / 60s to 90s 3. Solder Temperature: 270 $\pm 5^{\circ}\text{C}$. 4. Immersion Time: 5 ± 1 sec. Measured After Exposure in The Room Condition For 24hrs
1-2-3	Solder ability	The electrodes shall be at least 90% covered with new solder coating	Flux: Ethanol solution of rosin, 25(wt)% Includes activator equivalent to 0.06(wt)% chlorine.(immersed for 5s to 10s) 1. Solder Composition: Sn/Ag3.0/Cu0.5 2. Pre-Heating: 150 $^{\circ}\text{C} \pm 10^{\circ}\text{C}$ / 60s to 90s 3. Solder Temperature: 245 $\pm 5^{\circ}\text{C}$. 4. Immersion Time: 4 ± 1 sec.
1-2-4	Component Adhesion (Push Test)	0.5 Lbs. For 0201 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
1-2-5	Board Flex	The forces applied on the right conditions must not damage the terminal electrode and the ferrite.	Test device shall be soldered on the substrate Substrate Dimension: 100x40x0.8mm Deflection: 2.0mm Keeping Time: 5 sec 

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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:

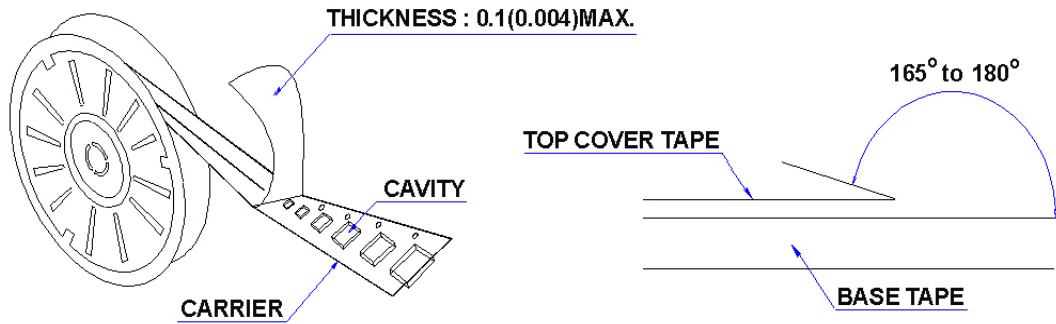
- 1.Re-flow possible times : within 3 times
- 2.Nitrogen adopted is recommends while in re-flow
- 3.Products can only be soldered with reflow

BWCM00060404 Series Specification

10 Packaging:

10.1 Packaging -Cover Tape

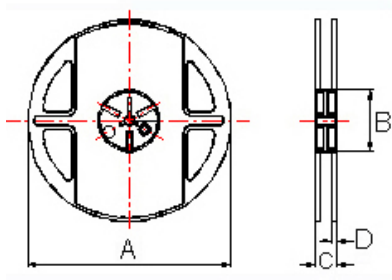
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
060404	4000

10.3 Reel Dimensions



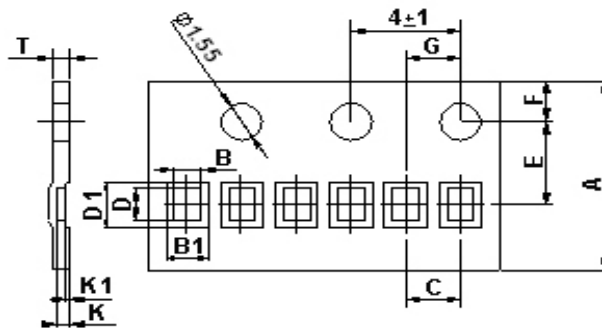
Dimensions in mm

TYPE	A	B	C	D
060404	178	60	12	1.5

BWCM00060404 Series Specification

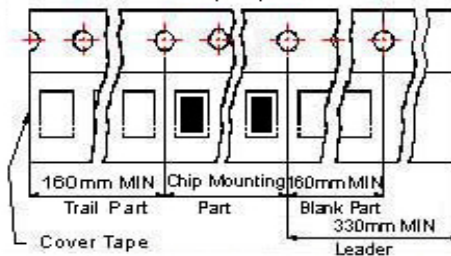
10 Packaging:

10.4 Tape Dimensions in mm



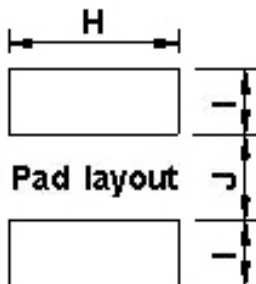
Tape Material

Carrier tape : Paper
Cover tape : Polyethylene



TYPE	A	B	B1	C	D	D1	E	F	G	T	K	K1
060404	8.0	0.47	0.79	2.0	0.60	0.89	3.5	1.8	2.0	0.7	0.45	0.13

11 Recommended Land Pattern:



Dimensions in mm

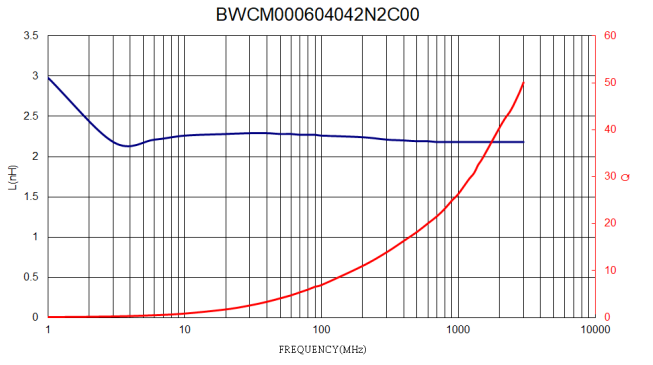
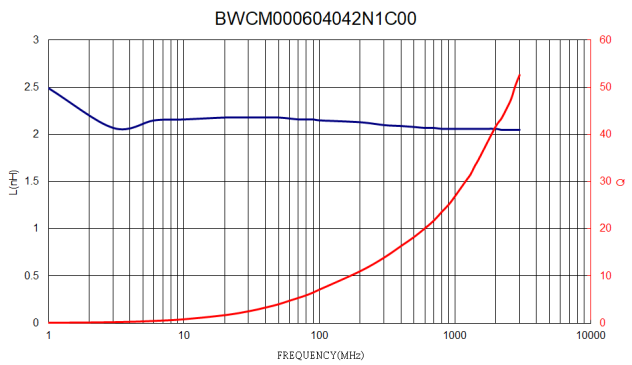
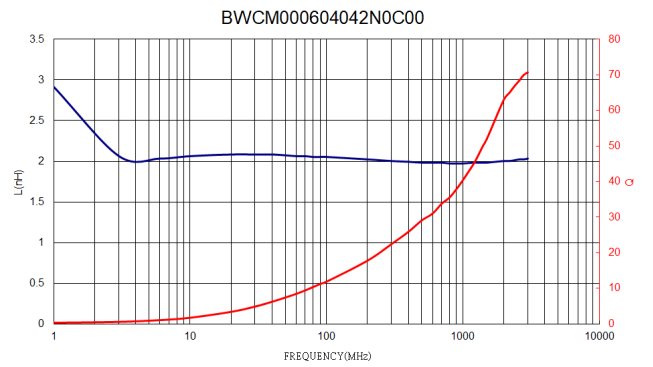
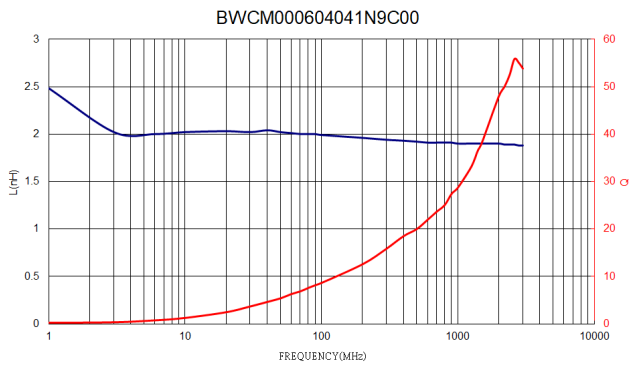
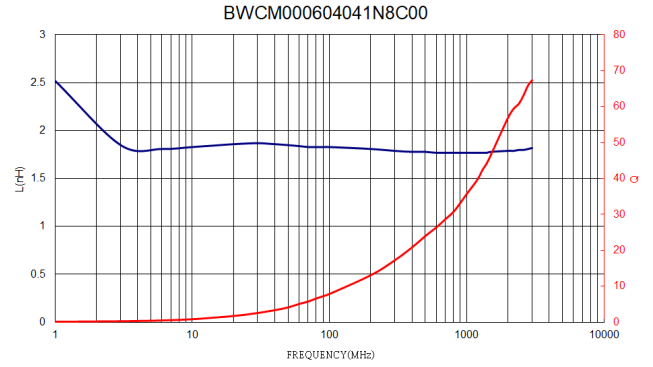
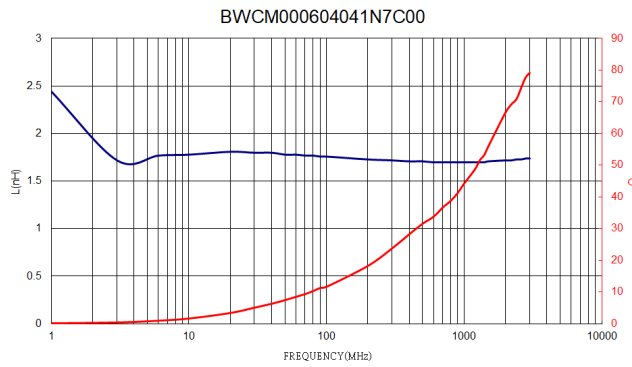
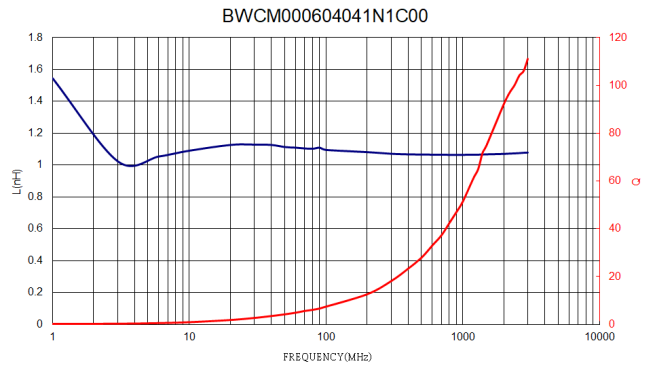
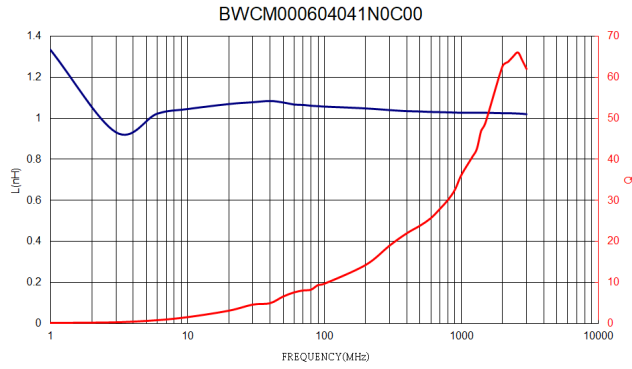
TYPE	H	I	J
060404	0.40	0.21	0.23

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.

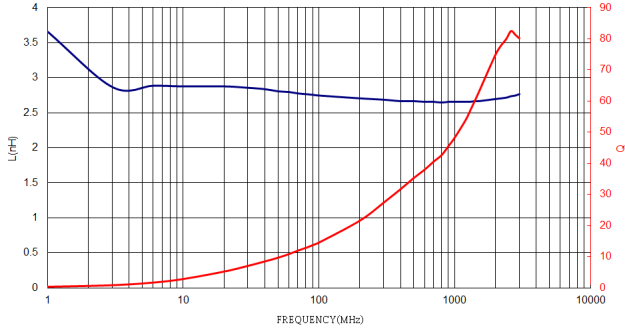
BWCM00060404 Series Specification

13 Graph:

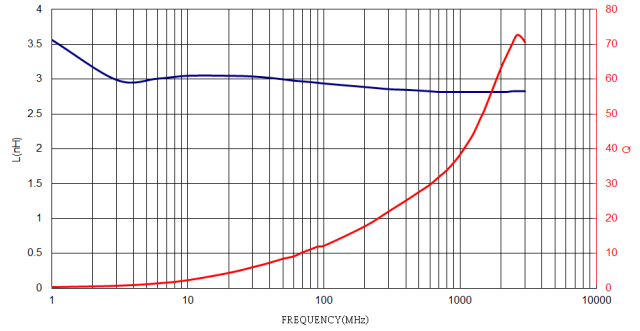


BWCM00060404 Series Specification

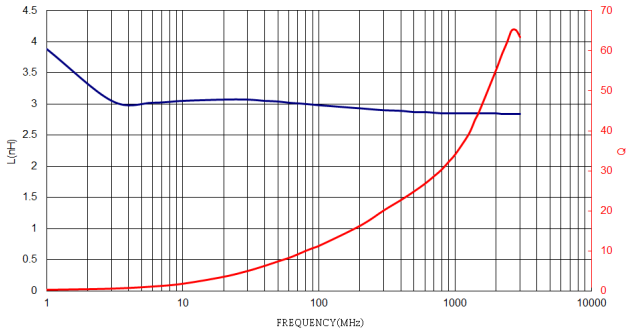
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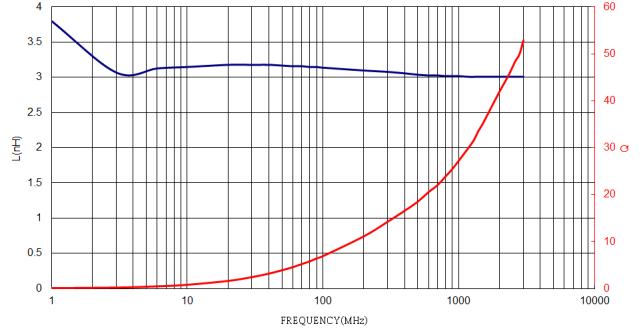
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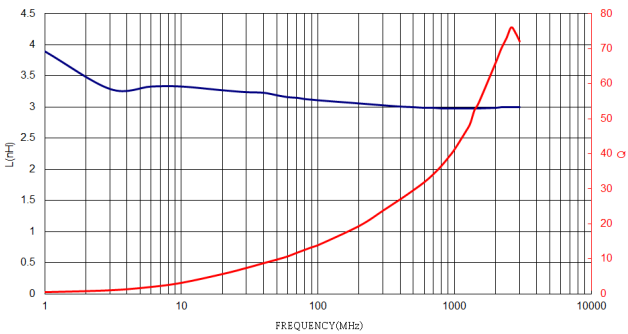
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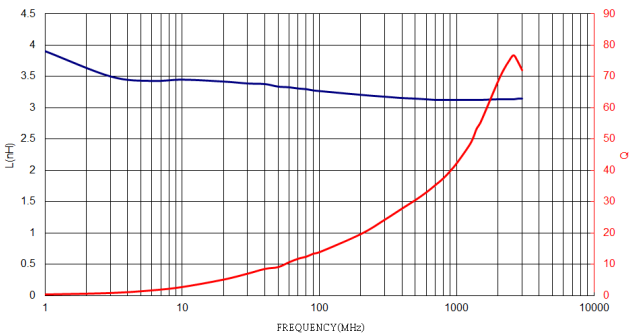
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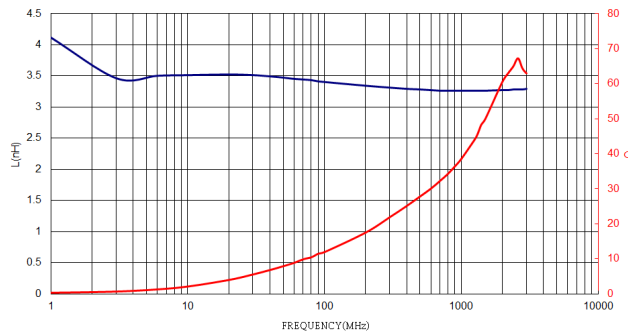
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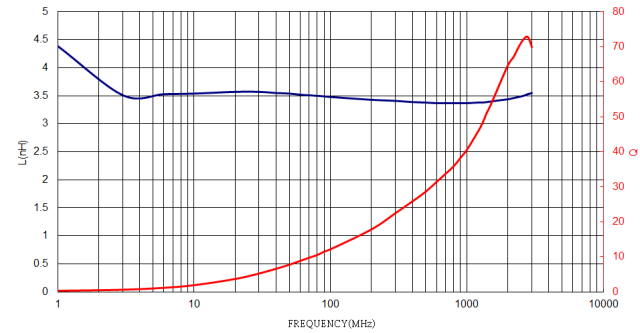
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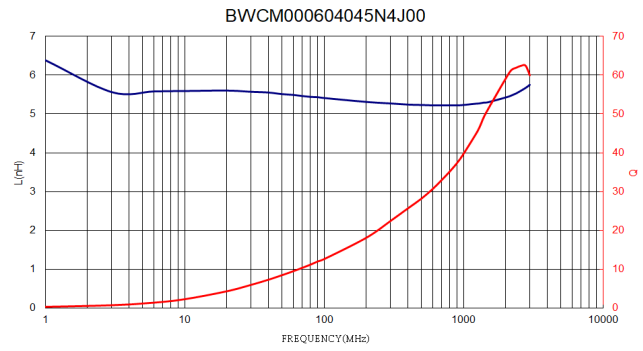
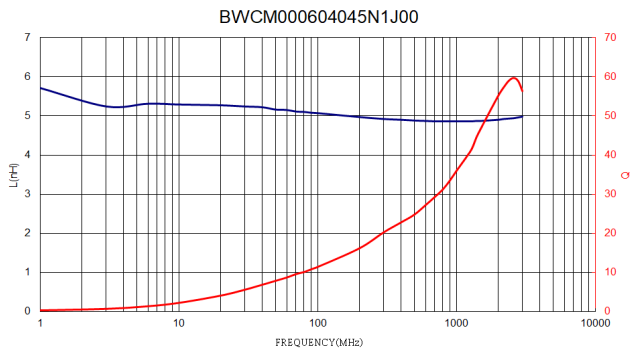
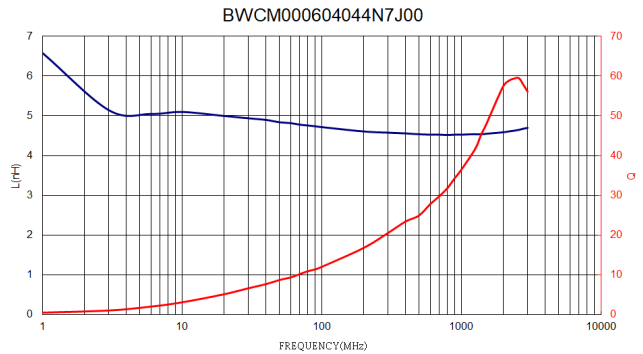
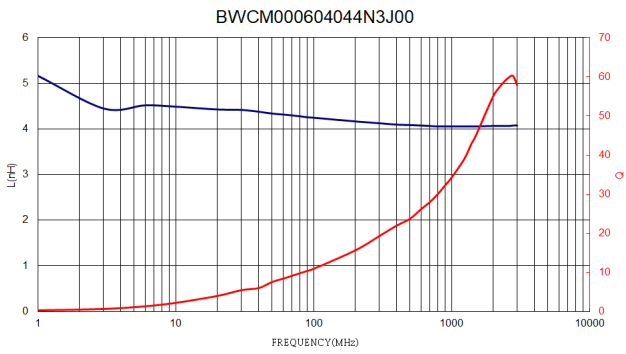
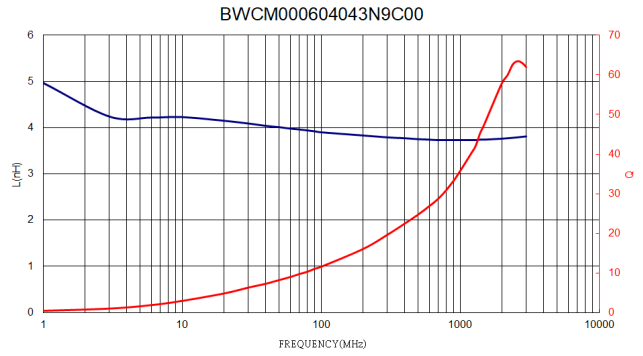
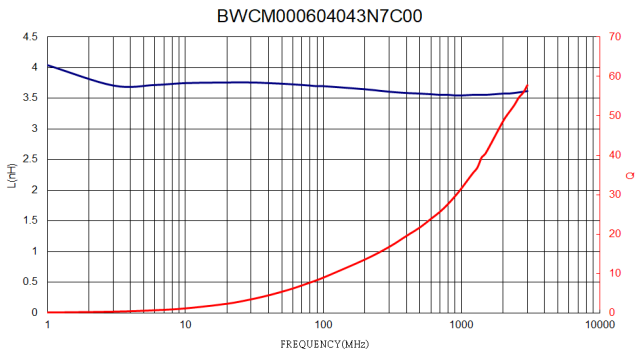
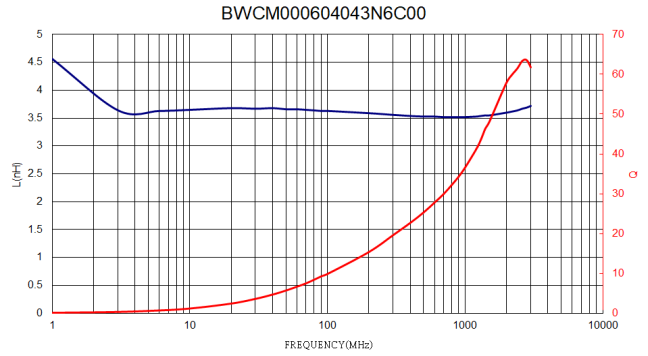
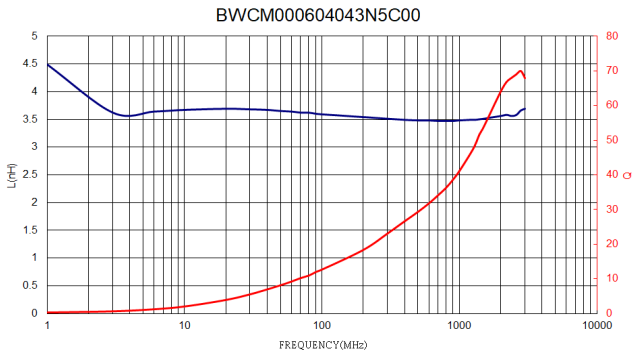
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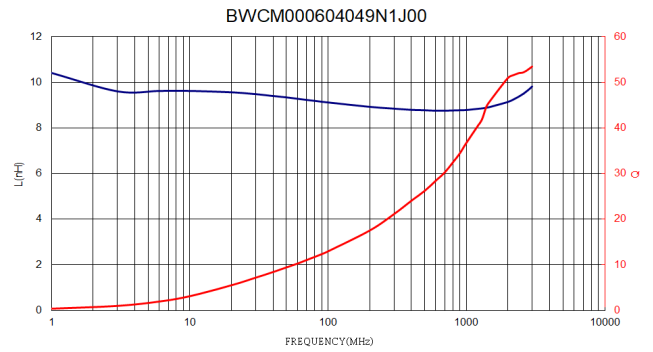
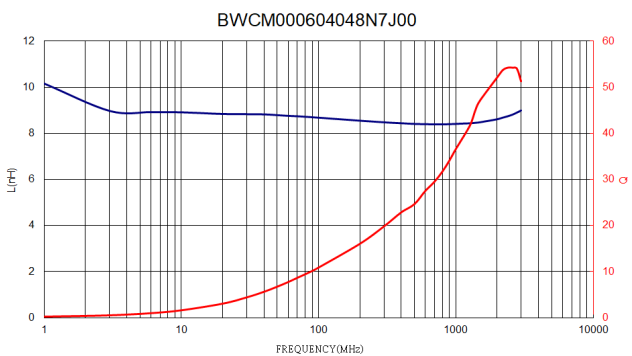
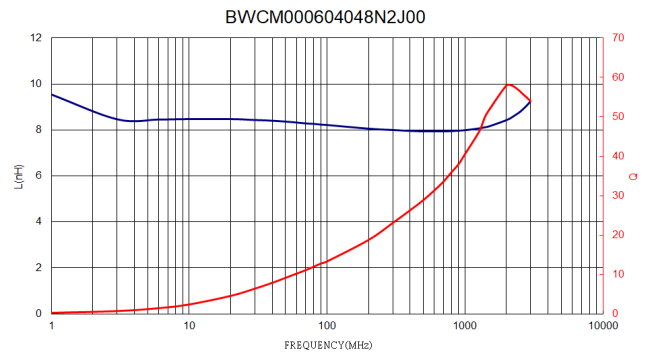
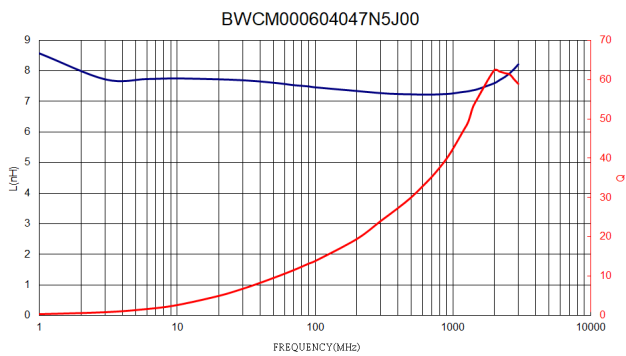
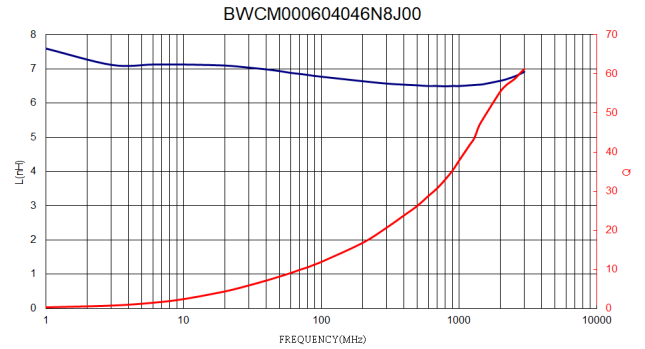
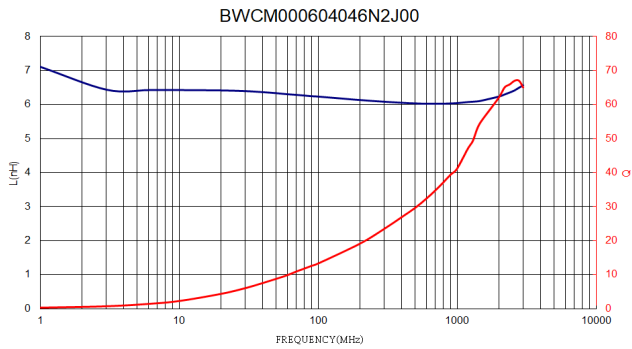
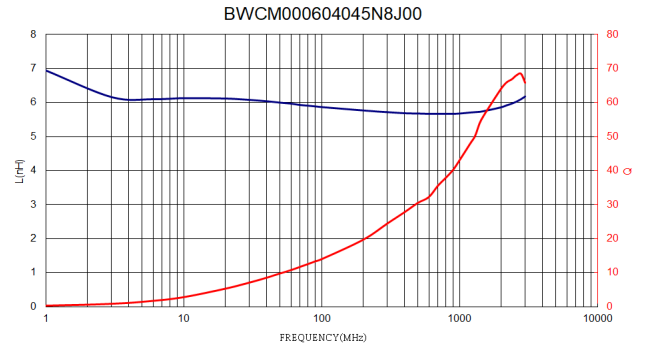
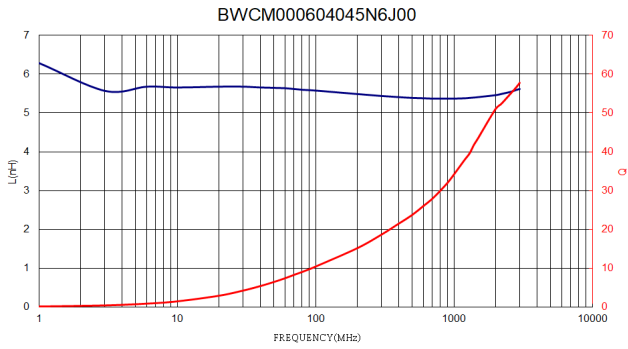
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BWCM00060404 Series Specification



BWCM00060404 Series Specification



BWCM00060404 Series Specification

