RF Inductor
Automotive Grade
AWCS 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. Wide Frequency Range
3. Low Signal Loss
4. High Current Handling
5. Can maintain excellent thermal stability at different temperatures

Applications

1. Automotive Electronics: infotainment systems, ADAS, and car keyless entry systems.
2. Industrial and Medical Equipmen: RFID systems and medical imaging equipment.
3. Data Centers and Networking
4. Consumer Electronics

Product Information

Series	Size Code (JIS/EIA)	Inductance (nH)
AWCS	1005/0402 1608/0603 2012/0805 2520/1008 3025/1210	1 ~ 4700

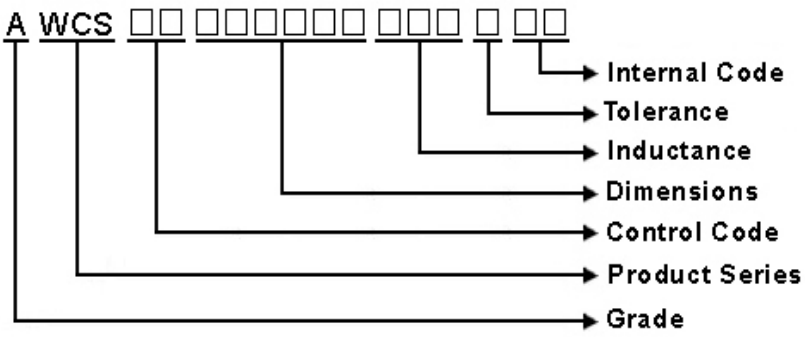
AWCS00231715 Series Specification

AEC-Q200

1 Scope:

This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:



3 Rating:

Operating Temperature: －55℃ ~ 125℃
(Including self - temperature rise)
Storage Temperature: －40℃ ~ 125℃
(The storage temperature range is for after the as

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

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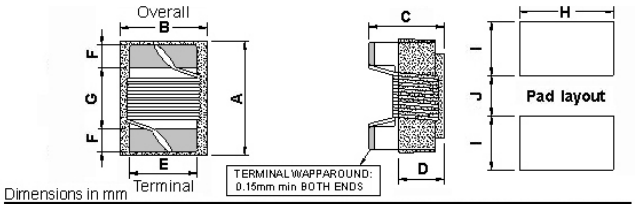
6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
231715	2.35Max.	1.73Max.	1.52Max.	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
AWCS002317152N7□00	2.7	250/1500	50	7900	0.06	800	K,J,G
AWCS002317152N8□00	2.8	250/1500	80	7900	0.06	800	K,J,G
AWCS002317153N0□00	3	250/1500	65	7900	0.06	800	K,J,G
AWCS002317153N3□00	3.3	250/1500	50	7900	0.08	600	K,J,G
AWCS002317155N6□00	5.6	250/1000	65	5500	0.08	600	K,J,G
AWCS002317156N8□00	6.8	250/1000	50	5500	0.11	600	K,J,G
AWCS002317157N5□00	7.5	250/1000	50	4500	0.14	600	K,J,G
AWCS002317158N2□00	8.2	250/1000	50	4700	0.12	600	K,J,G
AWCS0023171510N□00	10	250/500	60	4200	0.1	600	K,J,G
AWCS0023171512N□00	12	250/500	50	4000	0.15	600	K,J,G
AWCS0023171515N□00	15	250/500	50	3400	0.17	600	K,J,G
AWCS0023171518N□00	18	250/500	50	3300	0.2	600	K,J,G
AWCS0023171522N□00	22	250/500	55	2600	0.22	500	K,J,G
AWCS0023171524N□00	24	250/500	50	2000	0.22	500	K,J,G
AWCS0023171527N□00	27	250/500	55	2500	0.25	500	K,J,G
AWCS0023171533N□00	33	250/500	60	2050	0.27	500	K,J,G
AWCS0023171536N□00	36	250/500	55	1700	0.27	500	K,J,G
AWCS0023171539N□00	39	250/500	60	2000	0.29	500	K,J,G
AWCS0023171543N□00	43	200/500	60	1650	0.34	500	K,J,G
AWCS0023171547N□00	47	200/500	60	1650	0.31	500	K,J,G
AWCS0023171556N□00	56	200/500	60	1550	0.34	500	K,J,G
AWCS0023171568N□00	68	200/500	60	1450	0.38	500	K,J,G
AWCS0023171582N□00	82	150/500	65	1300	0.42	400	K,J,G
AWCS0023171591N□00	91	150/500	65	1200	0.48	400	K,J,G
AWCS00231715R10□00	100	150/500	65	1200	0.46	400	K,J,G

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

1.Operating temperature range －55℃ ~ 125℃

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

3.L/Q Test OSC @200mV.

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

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Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance
AWCS00231715R11□00	110	150/250	50	1000	0.48	400	K,J,G
AWCS00231715R12□00	120	150/250	50	1100	0.51	400	K,J,G
AWCS00231715R15□00	150	100/250	50	920	0.56	400	K,J,G
AWCS00231715R16□00	160	100/250	50	920	0.56	400	K,J,G
AWCS00231715R18□00	180	100/250	50	870	0.64	400	K,J,G
AWCS00231715R20□00	200	100/250	50	860	0.68	400	K,J,G
AWCS00231715R22□00	220	100/250	50	850	0.7	400	K,J,G
AWCS00231715R24□00	240	100/250	44	690	1	350	K,J,G
AWCS00231715R25□00	250	100/250	45	660	1.2	350	K,J,G
AWCS00231715R27□00	270	100/250	48	650	1	350	K,J,G
AWCS00231715R30□00	300	100/250	25	450	1.4	310	K,J,G
AWCS00231715R33□00	330	100/250	48	600	1.4	310	K,J,G
AWCS00231715R39□00	390	100/250	48	560	1.5	290	K,J,G
AWCS00231715R47□00	470	50/100	33	450	1.76	250	K,J,G
AWCS00231715R51□00	510	25/50	23	340	1.9	230	K,J,G
AWCS00231715R56□00	560	25/50	23	340	1.9	230	K,J,G
AWCS00231715R62□00	620	25/50	23	220	2.2	210	K,J,G
AWCS00231715R68□00	680	25/50	23	188	2.2	190	K,J,G
AWCS00231715R82□00	820	25/50	23	215	2.35	180	K,J,G
AWCS002317151R0□00	1000	25/50	20	100	2.5	170	K,J,G
AWCS002317151R2□00	1200	7.9/25	18	100	2.5	170	K,J
AWCS002317151R8□00	1800	7.9/7.9	16	80	2.5	170	K,J,G
AWCS002317152R2□00	2200	7.9/7.9	16	65	3.9	140	K,J,G
AWCS002317153R3□00	3300	7.9/7.9	15	40	4.4	90	K,J,G
AWCS002317154R7□00	4700	7.9/7.9	15	40	6.4	90	K,J,G

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

1.Operating temperature range －55℃ ~ 125℃

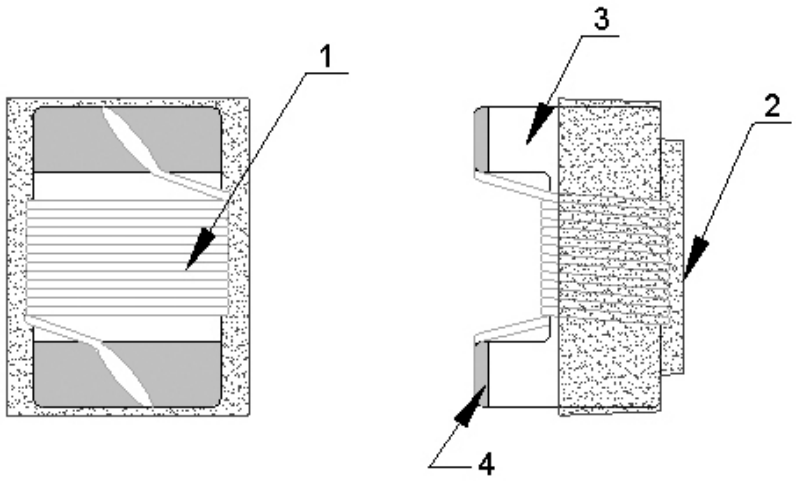
2.Irms for a 15℃ temperature rise from 25℃ ambient.

3.L/Q Test OSC @200mV.

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

8 AWCS00231715 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

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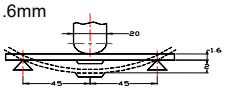
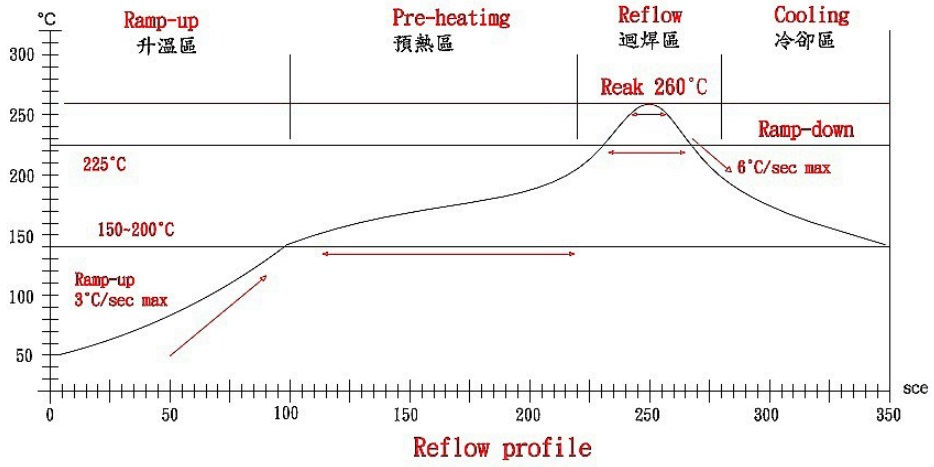
9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

1-1.Mechanical Performance

	Item	Specification	Test Method
1-1-1	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: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60 sec 
1-1-2	Terminal Strength	The chip must not damage the terminal electrode and the ferrite.	Refer to AEC-Q200-006 Test device shall be soldered on the substrate Force 0.5lbs for 60±1 seconds for 0201 series Force 1lbs for 60±1 seconds for 0402 series Force 2lbs for 60±1 seconds for 0603 series Force 1.8Kg for 60±1 seconds for the other series.
1-1-3	Solderability	The electrodes shall be at least 95% covered with new solder coating.	Pre-heating: 150℃, 1min Solder Composition: Sn/3.0Ag/0.5Cu Solder Temperature: 245±5℃ Immersion Time: 4±1sec
1-1-4	Resistance to Soldering Heat	Appearance:No damage Inductance change shall be within ±10%. Q change:within±30% of initial value	Pre-heating: 150℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 260±5℃ Immersion Time: 10±1sec
1-1-5	Resistance to Solvents	There must be no change in appearance or obliteration of marking.	Inductors must withstand 6 minutes of alcohol or water.
1-1-6	Mechanical Shock	The forces applied on the right conditions must not damage the terminal electrode and the ferrite.	Pulse shape：Half-sine waveform Impact acceleration：100 g Pulse duration：6 ms Number of shocks：18 shocks (3 shocks for each face) Orientation：Bottom, top, left, right, front and rear faces
1-1-7	Vibration	Appearance:No damage Inductance change shall be within ±10%. Q change:within±30% of initial value	Vibration waveform: Sine waveform Vibration frequency: 10Hz~2000Hz Vibration acceleration: 5g Sweep rate: 0.764386otcave/minute Duration of test: 12 cycles each of 3 orientations 20 minutes for each cycle Vibration axes: X, Y & Z

1-2.Environmental Performance

No	Item	Specification	Test Method
1-2-1	High Temperature Exposure (Storage)	Appearance:No damage (for microscope of CASTOR MZ-45 20X)Inductance change shall be within ±10%. Q change:within±30% of initial value	Temperature: 125±3℃ Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-2	Low Temperature Exposure (Storage)		Temperature: -55±3℃ Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-3	Biased Humidity		Temperature: 85±2℃ Relative Humidity: 85% Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-4	Temperature Cycling		Total cycles: 1000 cycles Temperature Cycling Test Conditions : -55 to +125 ℃ Soak Mode Condition： 30 minutes Measured after exposure in the room condition for 24hrs
1-2-5	Operational Life	Appearance:No damage Inductance change shall be within ±10%.	Temperature: 125±2℃ Appliend Current : Rated Current Time: 1000± 24 hrs Measured after exposure in the room condition for 24hrs
1-2-6	ESD		Test mode：Contact Discharge Discharge level：±6KV, Discharge interval：1 second Polarity of the output voltage：Positive and negative Number of discharge：Discharge +/- for 1 time for the 2 test points.
			Test Mode：Air Discharge Discharge level：±12KV, ±16KV, ±25KV Discharge interval：＜5 seconds Polarity of the output voltage：Positive and negative Number of discharge：Discharge +/- for 1 time for the 1~2 test points.



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	-

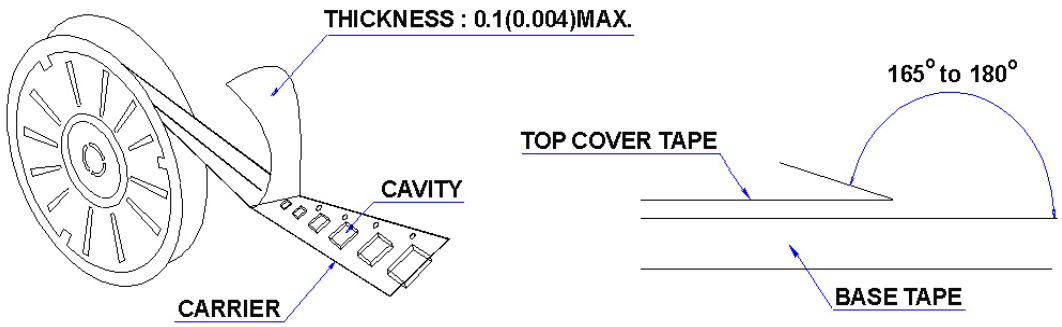
NOTE:

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

10 Packaging:

10.1 Packaging -Cover Tape

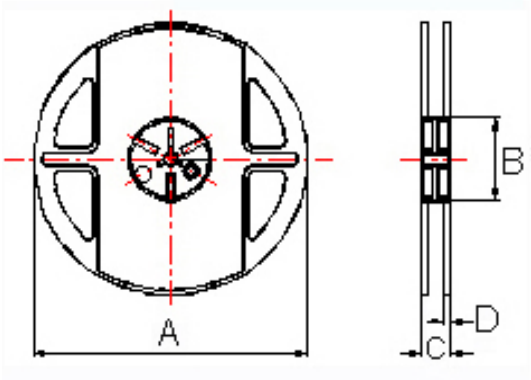
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
231715	2000

10.3 Reel Dimensions



Dimensions in mm

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

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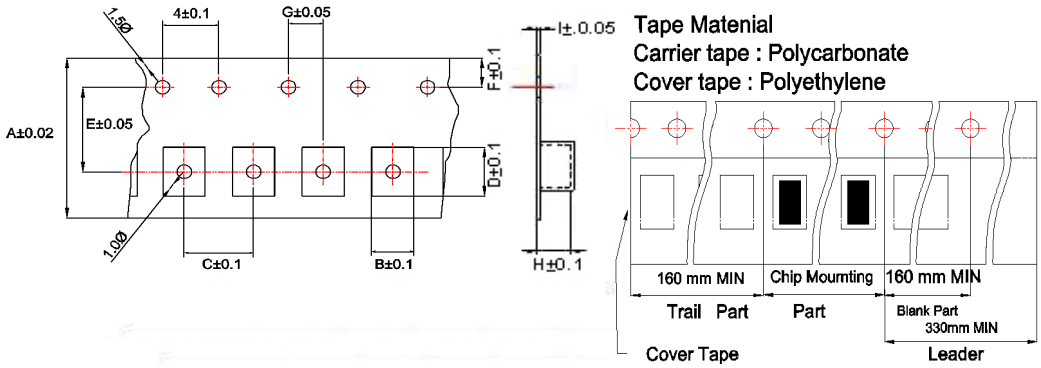
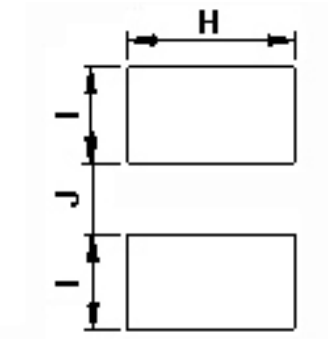
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	H	I
231715	8.0	1.85	4	2.45	3.5	1.75	2	1.70	0.23

11 Recommended Land Pattern:



Dimensions in mm

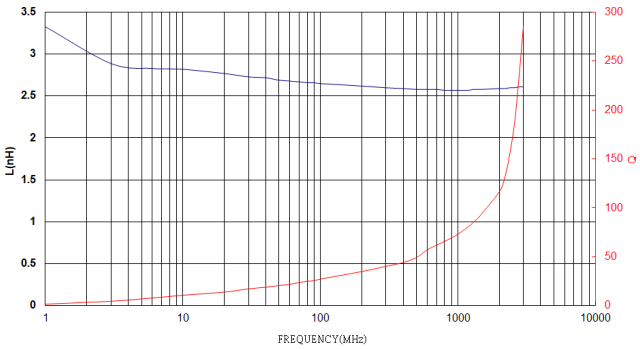
TYPE	H(In/mm)	I(In/mm)	J(In/mm)
231715	0.07/1.78	0.04/1.02	0.03/0.76

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.

13 Graph:

AWCS002317152N7□00



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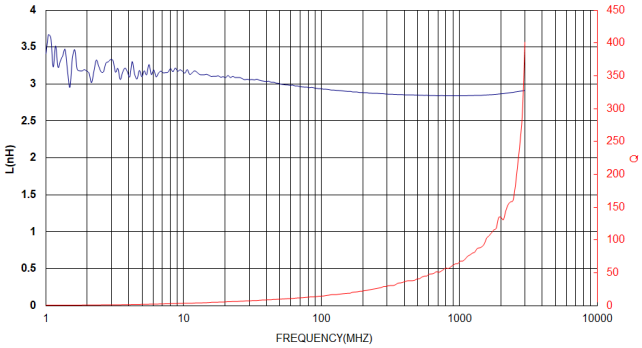

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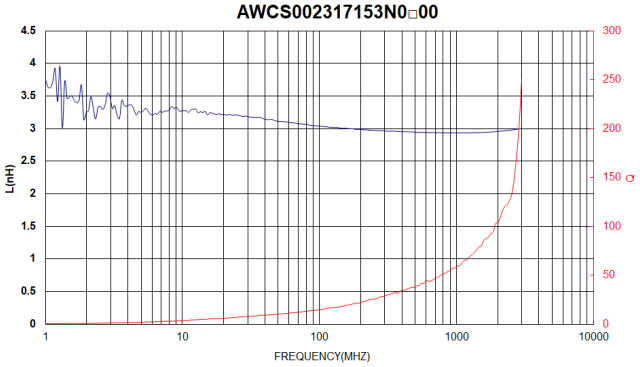

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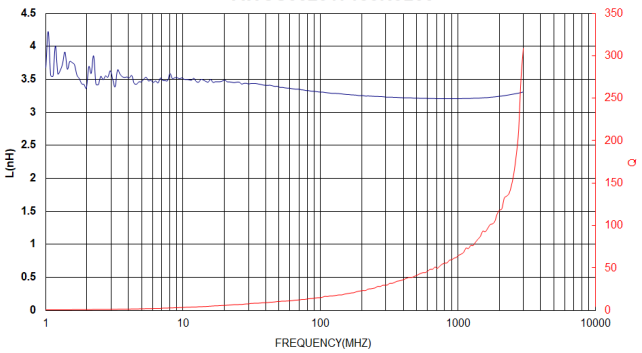

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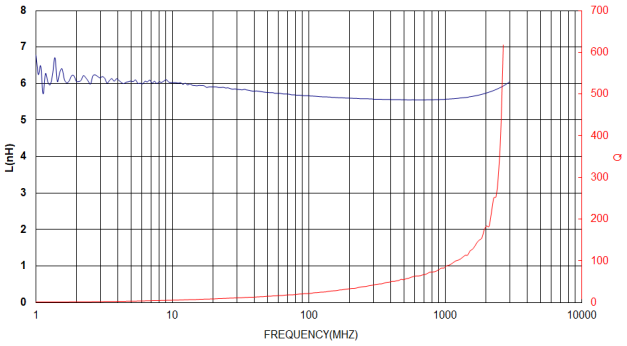

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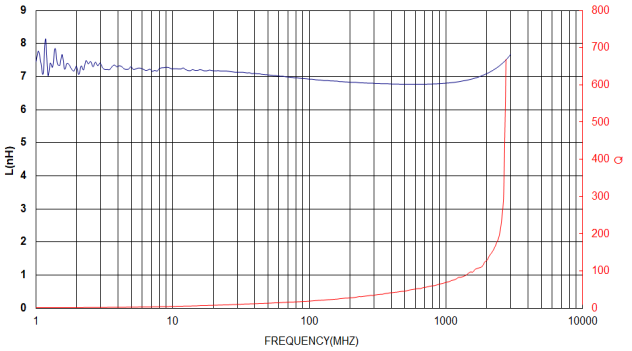

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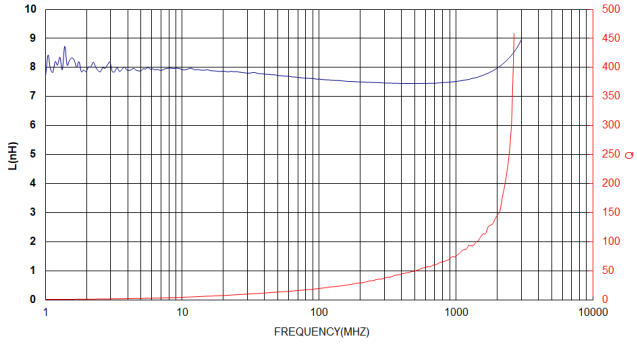

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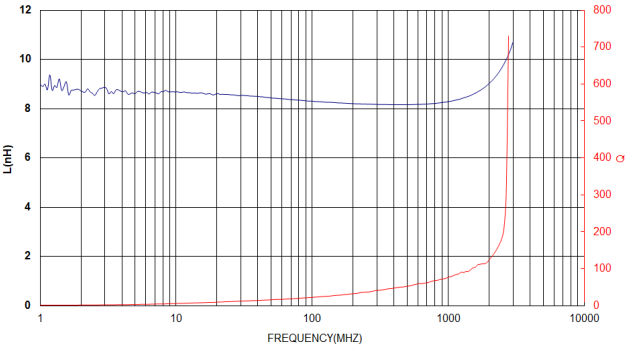

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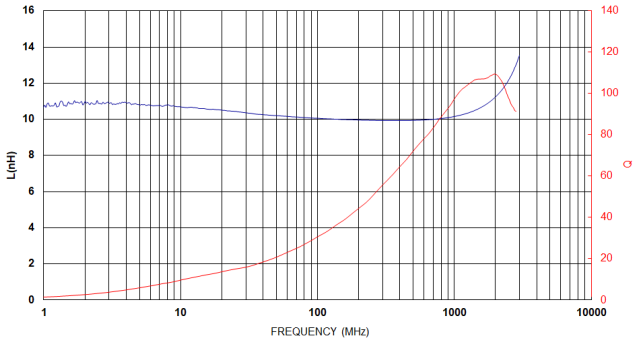
AWCS0023171510N□00



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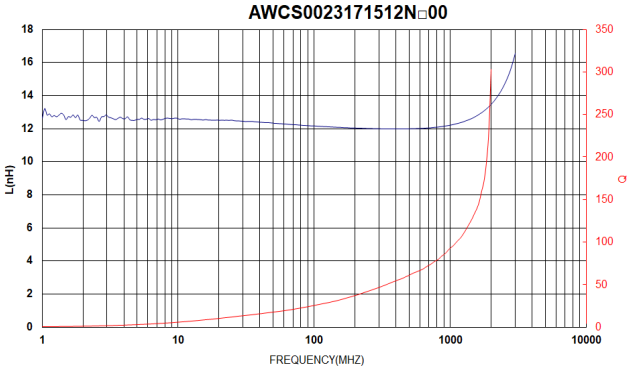

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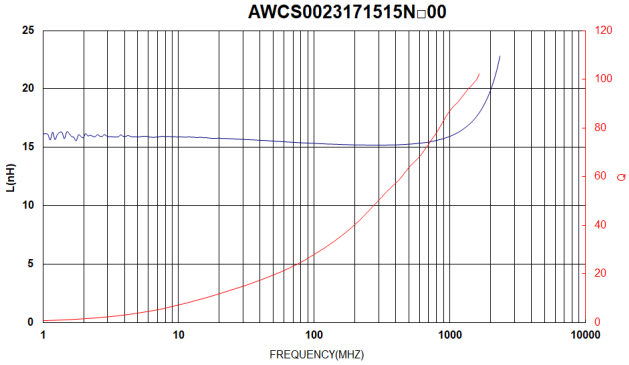

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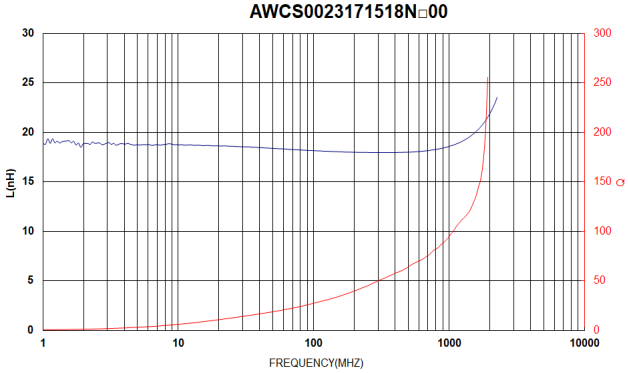

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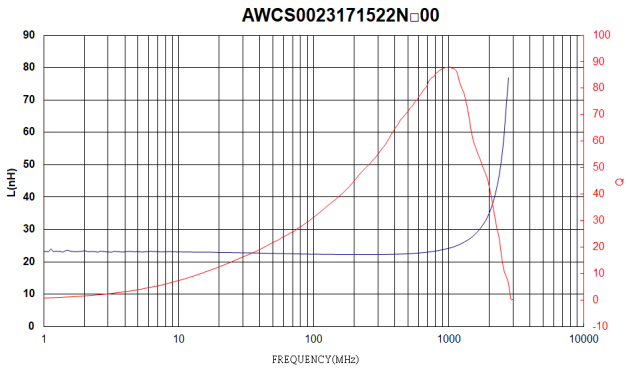

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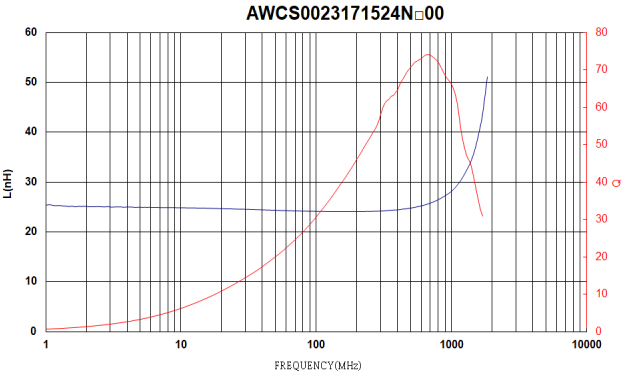

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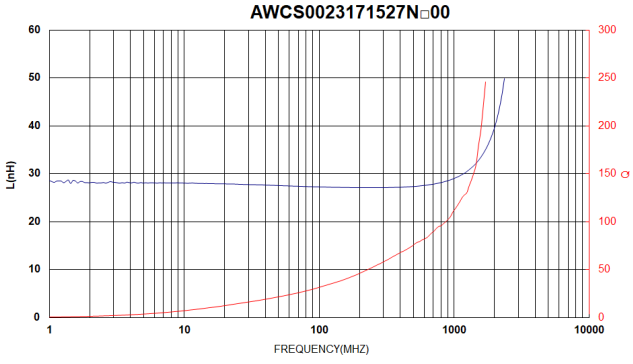

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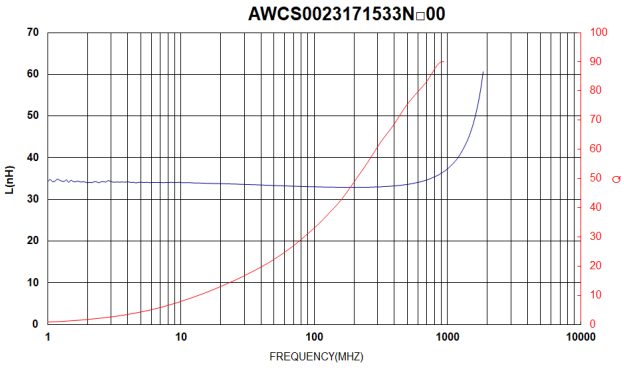

AWCS00231715 Series Specification

AEC-Q200

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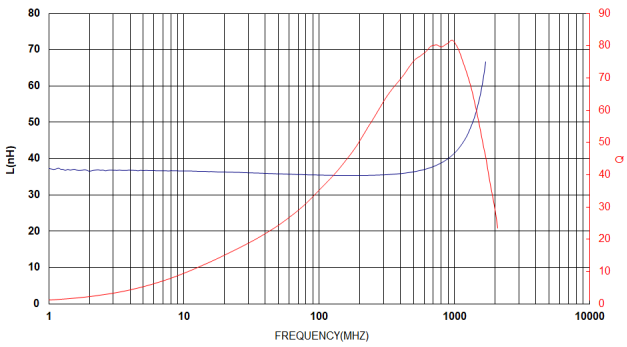

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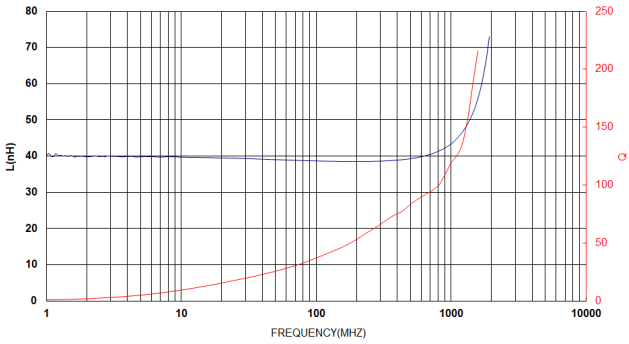

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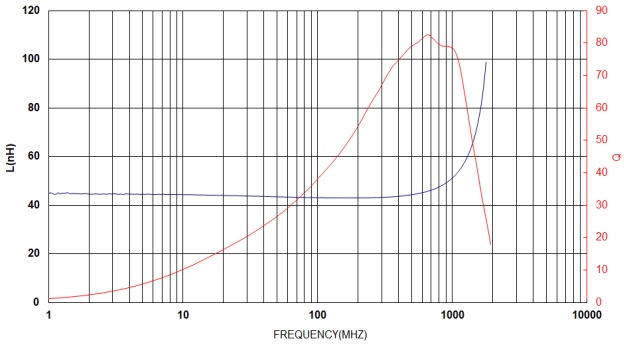

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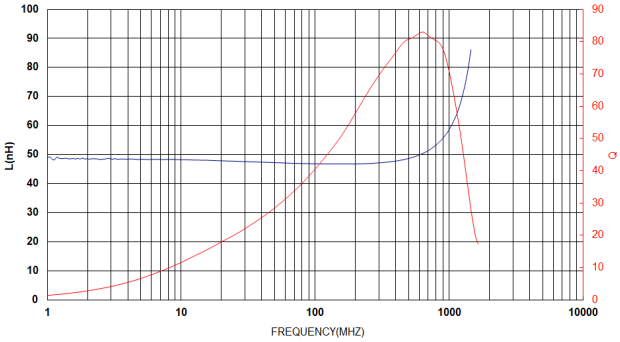

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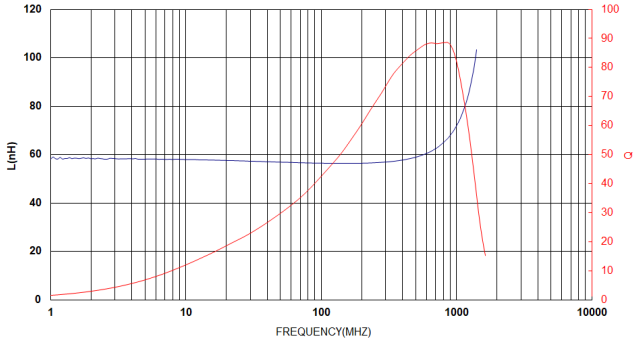

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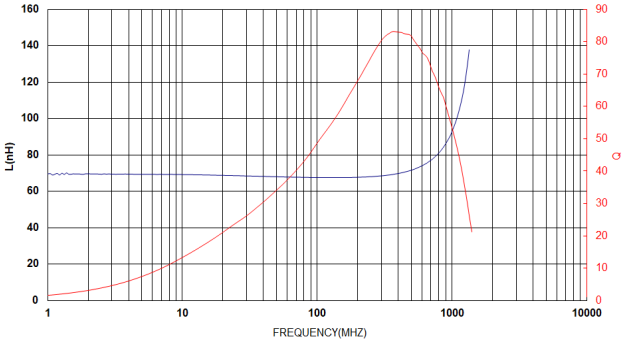

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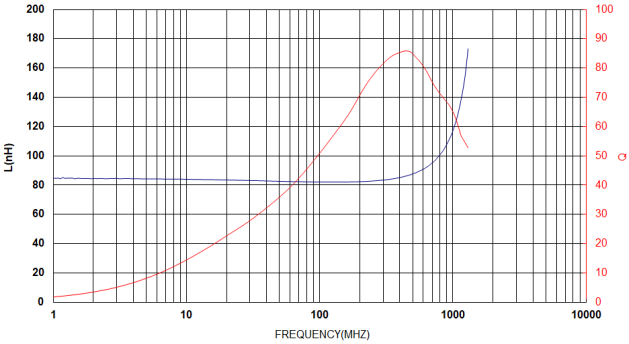

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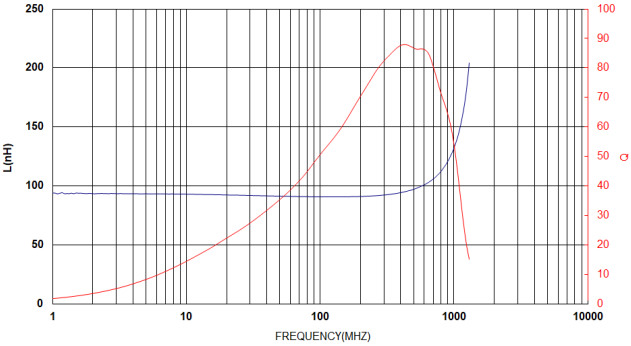

AWCS00231715 Series Specification

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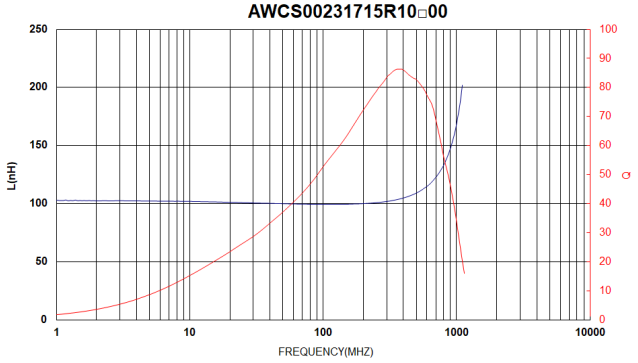

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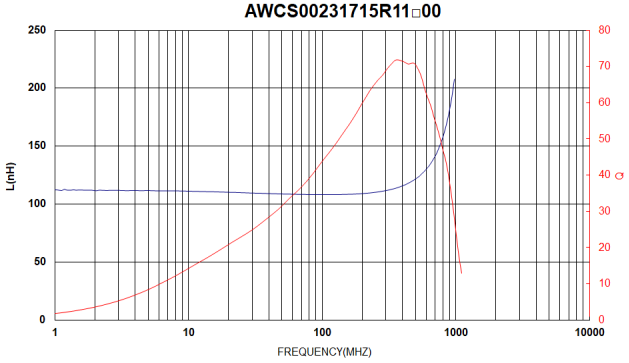

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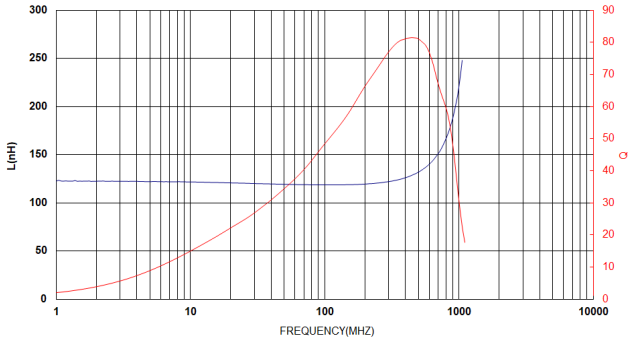

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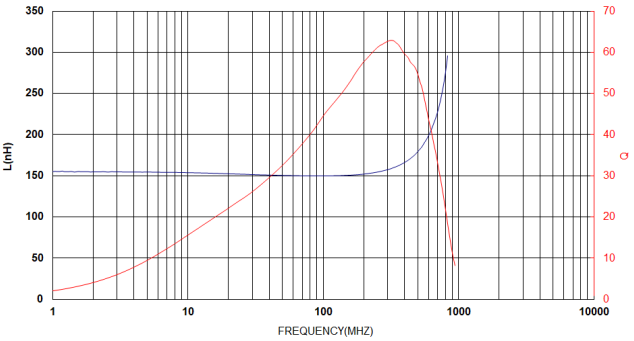

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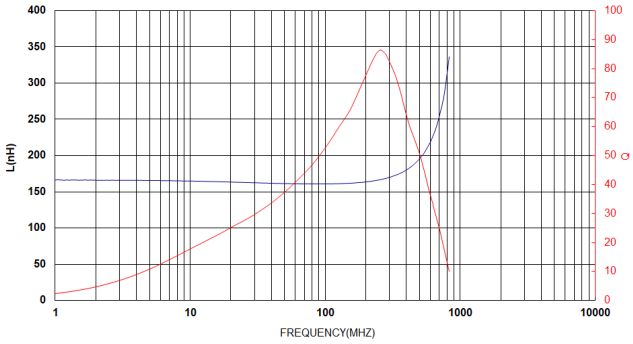

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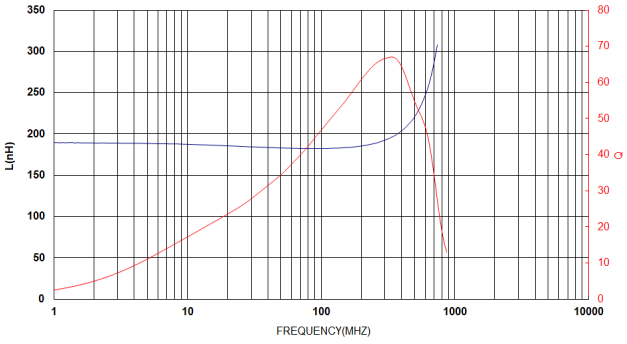

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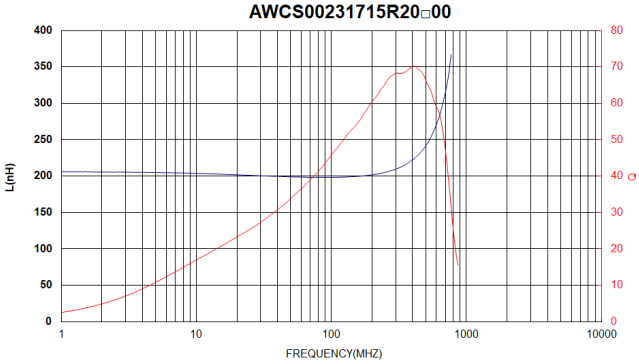

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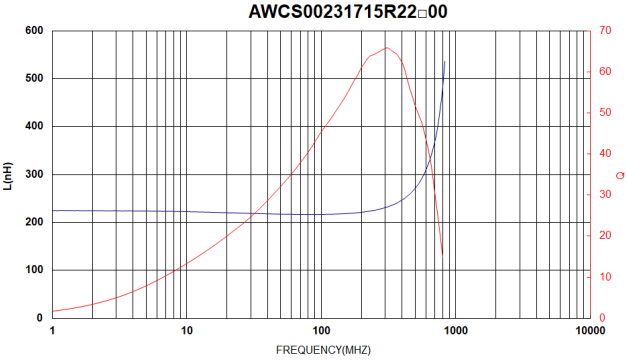

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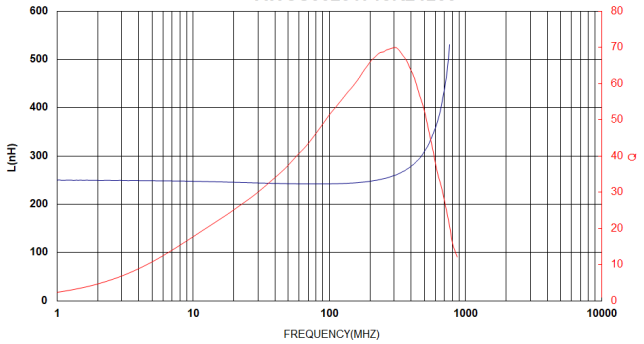

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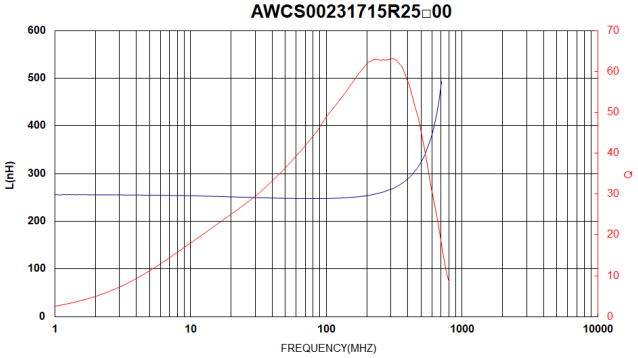

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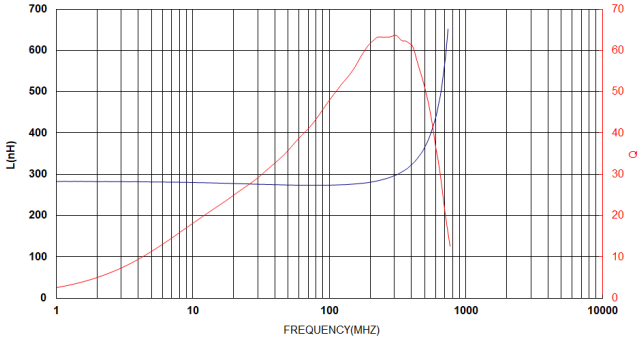

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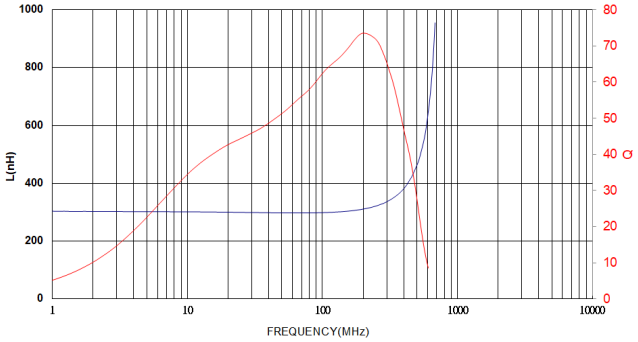

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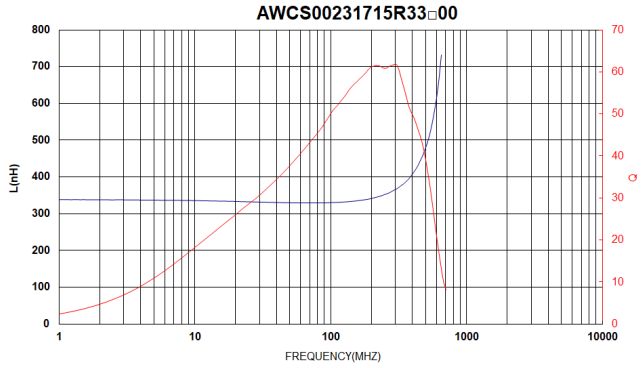

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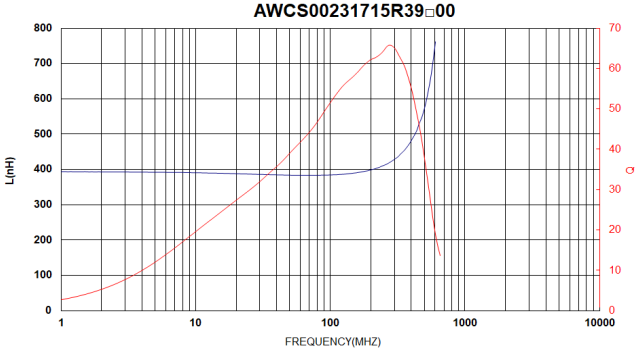

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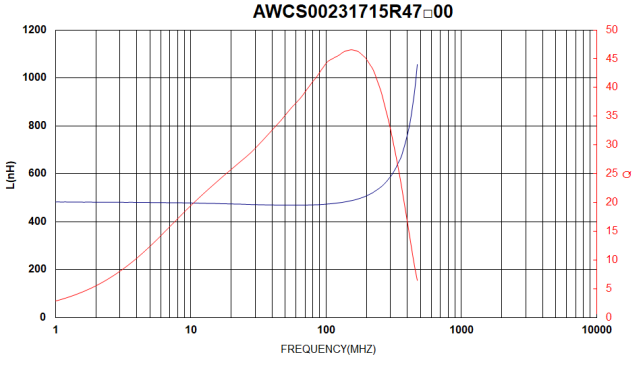

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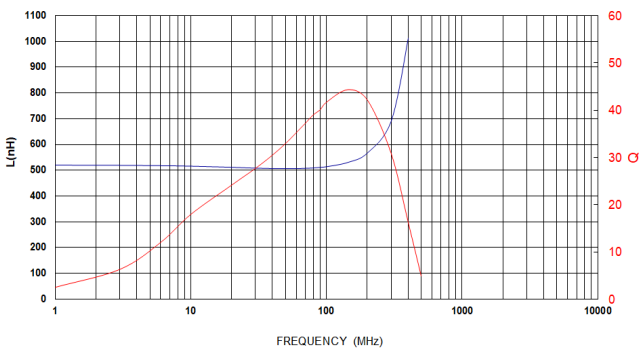

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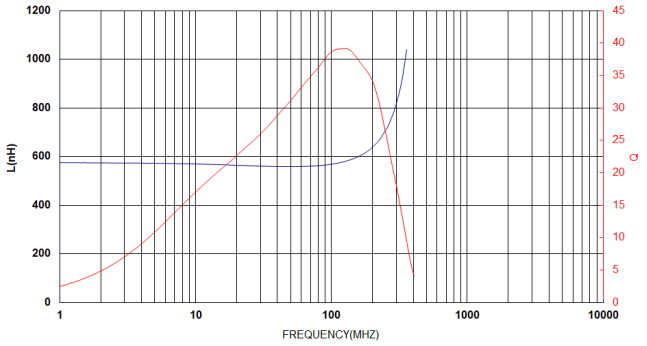

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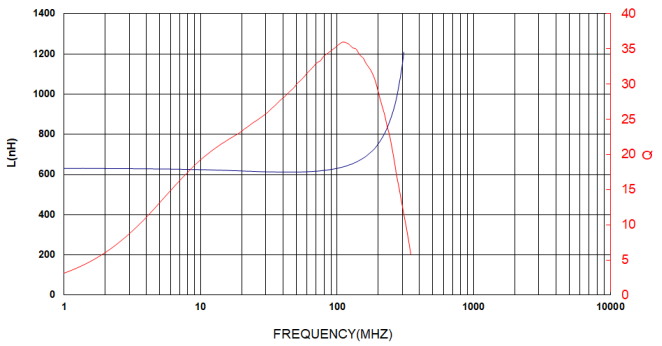

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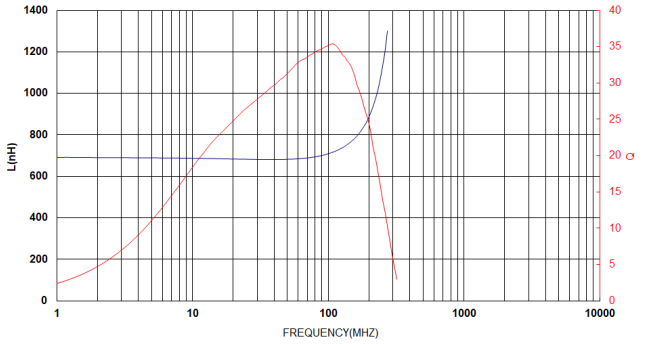

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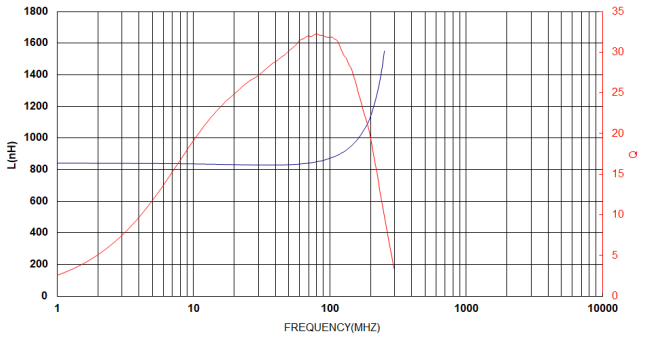

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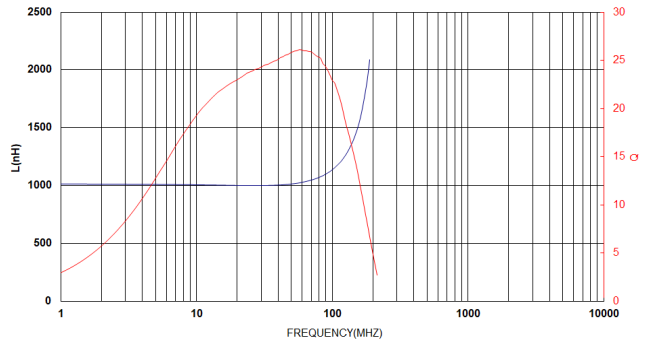

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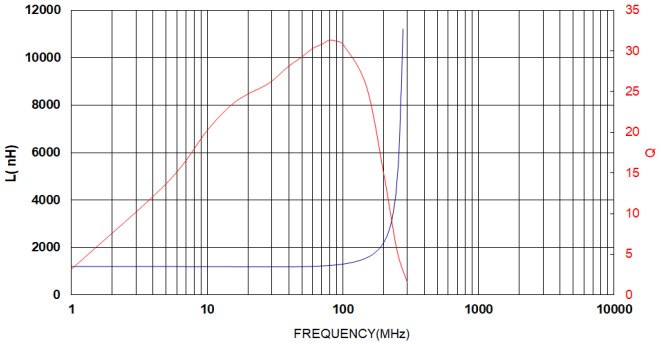

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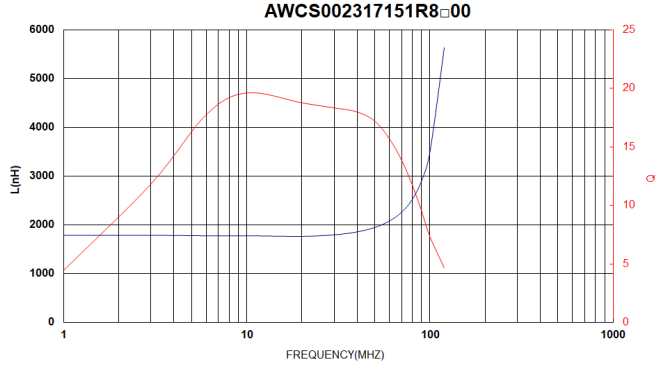

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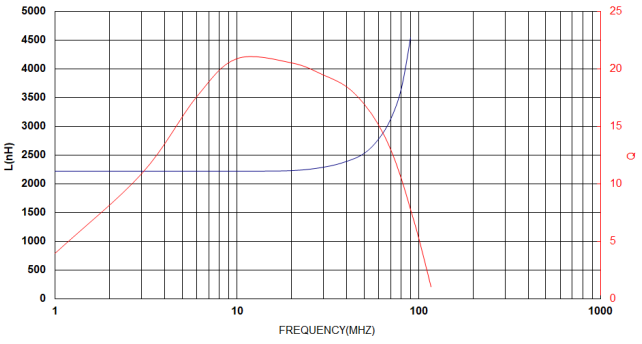

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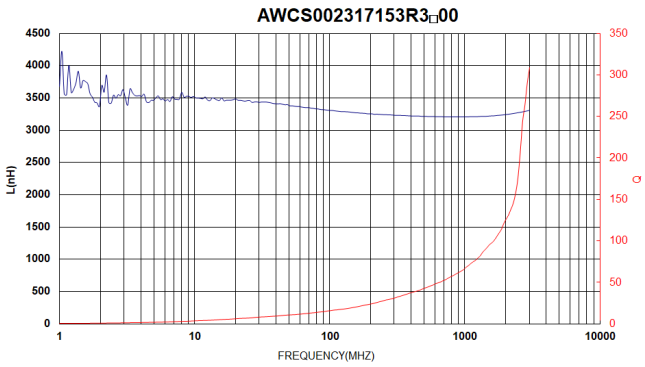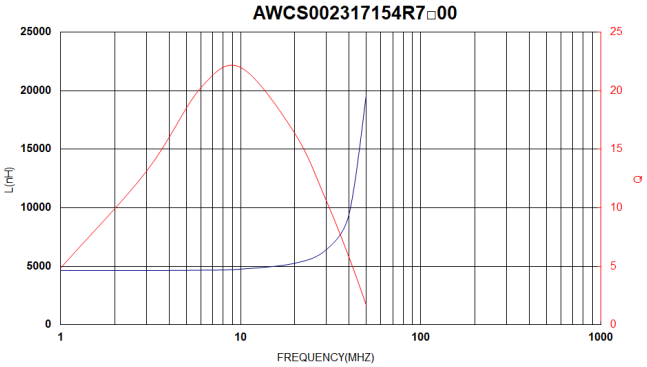
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