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

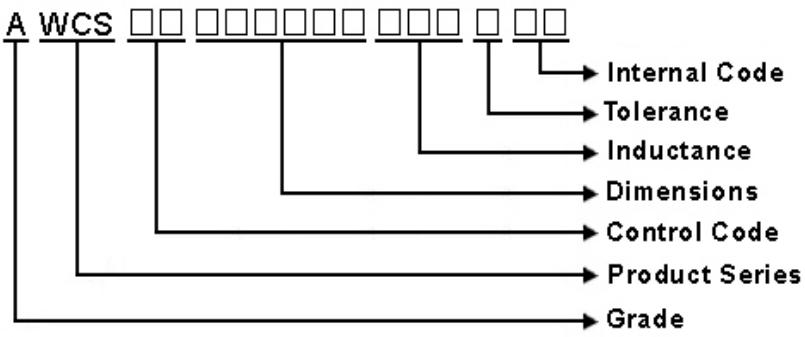
AWCS00161008 Series Specification

AEC-Q200

1 Scope:

This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:



3 Rating:

Operating Temperature: - 5 5℃ ~ 1 2 5℃
(Including self - temperature rise)
Storage Temperature: - 4 0℃ ~ 1 2 5℃
(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

AWCS00161008 Series Specification

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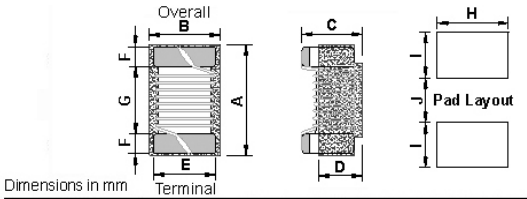
6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
161008	$1.6^{+0.2}_{-0.1}$	1.02±0.1	$0.82^{+0.2}_{-0.1}$	0.51	0.76	0.33	0.86	1.02	0.64	0.64

Net Weight (grms)

SIZE CODE	Net Weight (grms)
161008	0.00335 (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
AWCS001610081N6□00	1.6	250/250	24	12500	0.03	700	K,J,B
AWCS001610081N8□00	1.8	250/250	16	12500	0.045	700	K,J,B
AWCS001610082N2□00	2.2	250/250	13	12500	0.25	700	K,J,B
AWCS001610083N3□00	3.3	250/250	35	5900	0.045	700	K,J,H,G
AWCS001610083N6□00	3.6	250/250	22	5900	0.063	700	K,J,H,G
AWCS001610083N9□00	3.9	250/250	22	6900	0.08	700	K,J,H,G
AWCS001610084N3□00	4.3	250/250	22	5900	0.063	700	K,J,H,G
AWCS001610084N7□00	4.7	250/250	20	5800	0.116	700	K,J,H,G
AWCS001610085N1□00	5.1	250/250	20	5700	0.14	700	K,J,H,G
AWCS001610085N6□00	5.6	250/250	20	5800	0.17	700	K,J,H,G
AWCS001610086N3□00	6.3	250/250	20	5700	0.14	700	K,J,H,G
AWCS001610086N8□00	6.8	250/250	27	5800	0.11	700	K,J,H,G
AWCS001610087N5□00	7.5	250/250	28	4800	0.106	700	K,J,H,G
AWCS001610088N2□00	8.2	250/250	28	4700	0.109	700	K,J,H,G
AWCS001610088N7□00	8.7	250/250	28	4600	0.109	700	K,J,H,G
AWCS001610089N1□00	9.1	250/250	28	4800	0.12	700	K,J,H,G
AWCS001610089N5□00	9.5	250/250	28	5400	0.135	700	K,J,H,G
AWCS0016100810N□00	10	250/250	31	4800	0.13	700	K,J,H,G
AWCS0016100811N□00	11	250/250	33	4000	0.086	700	K,J,H,G
AWCS0016100812N□00	12	250/250	35	4000	0.13	700	K,J,H,G
AWCS0016100813N□00	13	250/250	30	4000	0.16	700	K,J,H,G
AWCS0016100815N□00	15	250/250	35	4000	0.17	700	K,J,H,G
AWCS0016100816N□00	16	250/250	34	3300	0.104	700	K,J,H,G
AWCS0016100818N□00	18	250/250	35	3100	0.17	700	K,J,H,G
AWCS0016100820N□00	20	250/250	38	3000	0.19	700	K,J,H,G

NOTE: □-tolerance B=±0.1nH / G=±2% / H=±3% / 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.

AWCS00161008 Series Specification

AEC-Q200

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Min.	SRF (MHz)Min.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance
AWCS0016100822N□00	22	250/250	38	3000	0.19	700	K,J,H,G
AWCS0016100823N□00	23	250/250	38	2850	0.19	700	K,J,H,G
AWCS0016100824N□00	24	250/250	37	2650	0.135	700	K,J,H,G
AWCS0016100827N□00	27	250/250	40	2800	0.220	600	K,J,H,G
AWCS0016100830N□00	30	250/250	37	2250	0.144	600	K,J,H,G
AWCS0016100833N□00	33	250/250	40	2300	0.22	600	K,J,H,G
AWCS0016100836N□00	36	250/250	38	2080	0.25	600	K,J,H,G
AWCS0016100839N□00	39	250/250	40	2200	0.25	600	K,J,H,G
AWCS0016100843N□00	43	250/250	39	2000	0.28	600	K,J,H,G
AWCS0016100847N□00	47	200/200	38	2000	0.28	600	K,J,H,G
AWCS0016100851N□00	51	200/200	38	1900	0.31	600	K,J,H,G
AWCS0016100856N□00	56	200/200	38	1900	0.31	600	K,J,H,G
AWCS0016100868N□00	68	200/200	37	1700	0.34	600	K,J,H,G
AWCS0016100872N□00	72	150/150	34	1700	0.49	400	K,J,H,G
AWCS0016100882N□00	82	150/150	34	1700	0.54	400	K,J,H,G
AWCS0016100891N□00	91	150/150	34	1400	0.58	400	K,J,H,G
AWCS00161008R10□00	100	150/150	34	1400	0.58	400	K,J,H,G
AWCS00161008R11□00	110	150/150	32	1350	0.61	300	K,J,H,G
AWCS00161008R12□00	120	150/150	32	1300	0.75	300	K,J,H,G
AWCS00161008R15□00	150	150/150	28	990	0.92	280	K,J,H,G
AWCS00161008R16□00	160	100/100	25	990	1.25	240	K,J,H,G
AWCS00161008R18□00	180	100/100	25	990	1.25	240	K,J,H,G
AWCS00161008R20□00	200	100/100	25	900	2.1	200	K,J,H,G
AWCS00161008R21□00	210	100/100	27	895	2.06	200	K,J,H,G
AWCS00161008R22□00	220	100/100	25	900	2.1	200	K,J,H,G
AWCS00161008R24□00	240	100/100	25	900	2.2	200	K,J,H,G
AWCS00161008R25□00	250	100/100	25	822	3.55	120	K,J,H,G
AWCS00161008R27□00	270	100/100	24	900	2.8	170	K,J,H,G
AWCS00161008R33□00	330	100/100	25	900	3.89	100	K,J,H,G
AWCS00161008R39□00	390	100/100	25	900	4.35	100	K,J,H,G
AWCS00161008R47□00	470	100/100	25	500	4.5	100	K,J,H,G
AWCS00161008R56□00	560	100/100	23	460	4.7	90	K,J,H,G

NOTE: □-tolerance B=±0.1nH / G=±2% / H=±3% / J=±5% / K=±10%

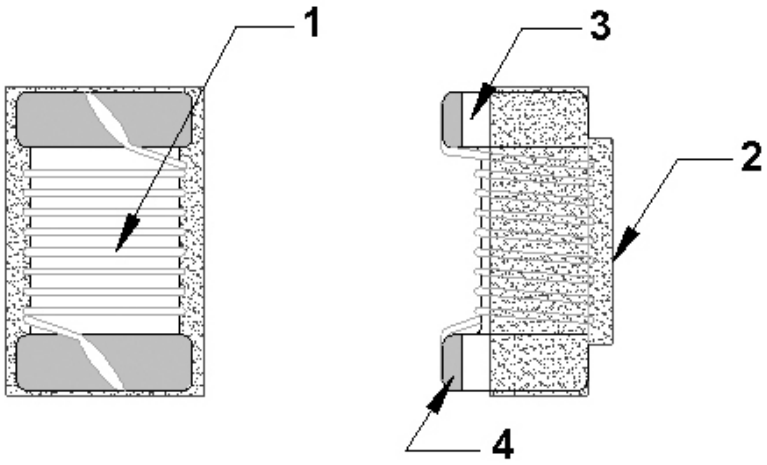
1.Operating temperature range - 5 5℃ ~ 1 2 5℃

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

3.L/Q Test OSC @200mV.

8 AWCS00161008 Series

8.1 Construction:



8.2 Material List:

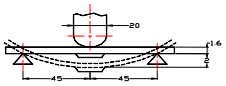
NO	PART	MATERIAL
1	WIRE	Grade 180
2	EPOXY	UV GLUE
3	CORE	CERAMIC
4	TERMINAL	Ag/Cu/Ni/Sn

AWCS00161008 Series Specification

AEC-Q200

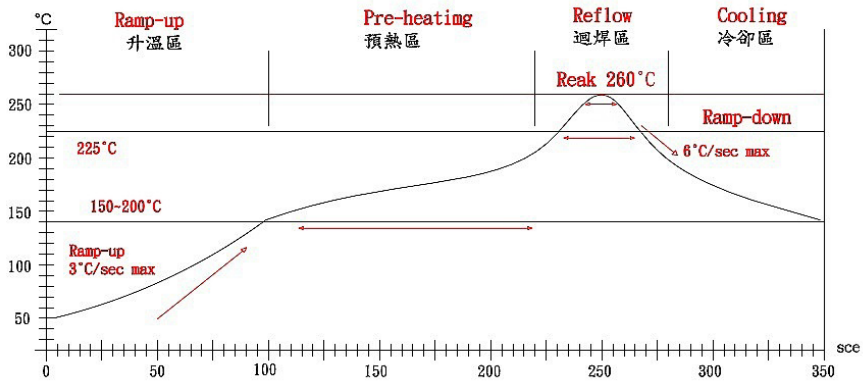
9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

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°C Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-2	Biased Humidity		Temperature: 85±2℃ Relative Humidity: 85% Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-3	Temperature Cycling		Total cycles: 1000 cycles Temperature Cycling Test Conditions : -55 to +125 °C Soak Mode Condition： 30 minutes Measured after exposure in the room condition for 24hrs
1-2-4	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
1-2-5	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°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	-

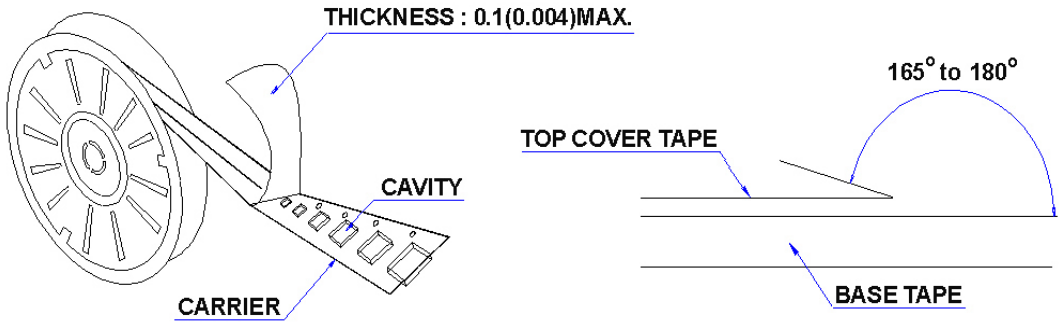
NOTE:

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

10 Packaging:

10.1 Packaging -Cover Tape

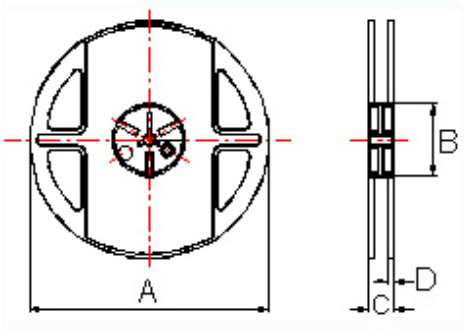
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
161008	4000

10.3 Reel Dimensions

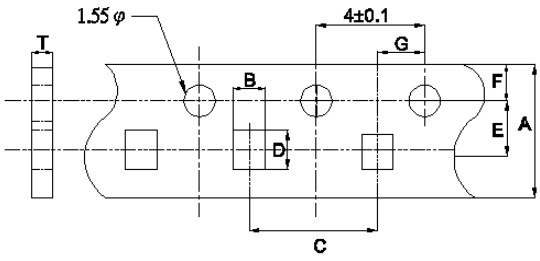


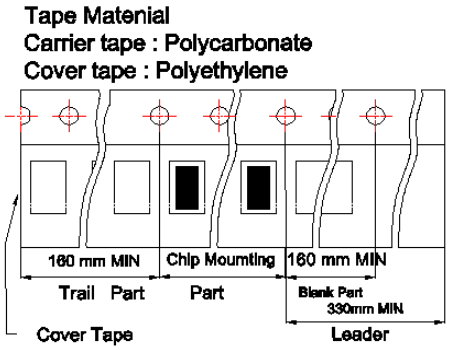
Dimensions in mm

TYPE	A	B	C	D
161008	178±1	60±0.5	12±0.5	1.5±0.5

10 Packaging:

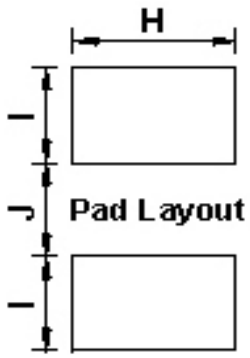
10.4 Tape Dimensions in mm





TYPE	A	B	C	D	E	F	G	T
161008	8.0	1.25	4	1.90	3.5	1.75	2	1.05

11 Recommended Land Pattern:



Dimensions in mm

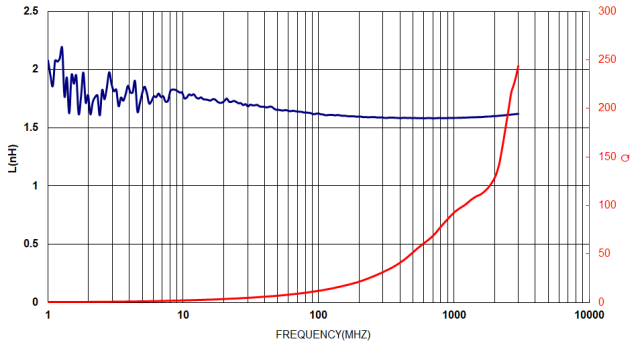
TYPE	H(In/mm)	I(In/mm)	J(In/mm)
161008	0.04/1.02	0.025/0.64	0.025/0.64

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:

AWCS001610081N6□00



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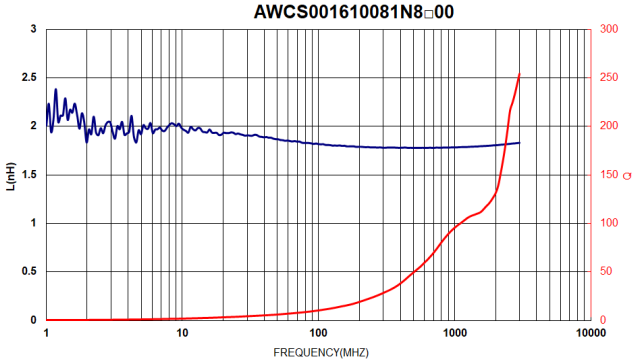

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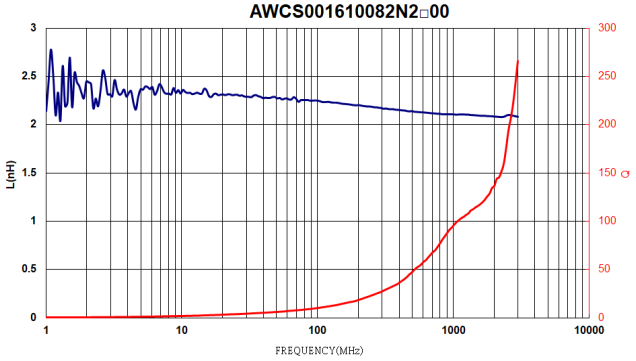

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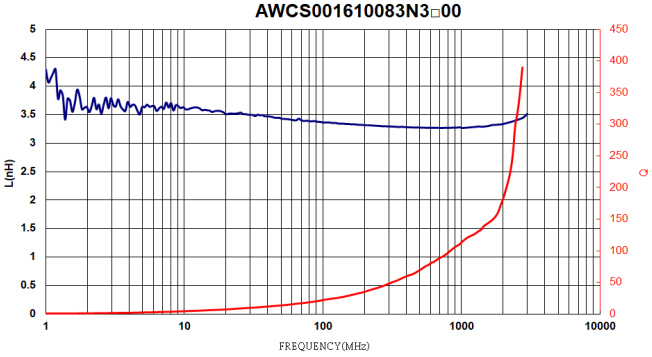

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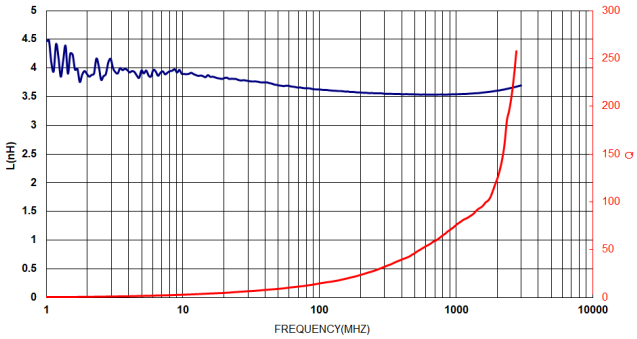

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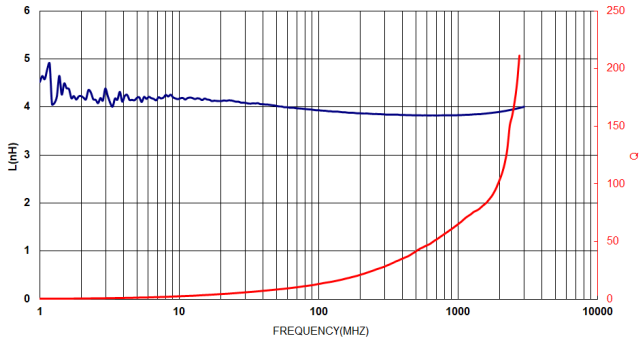

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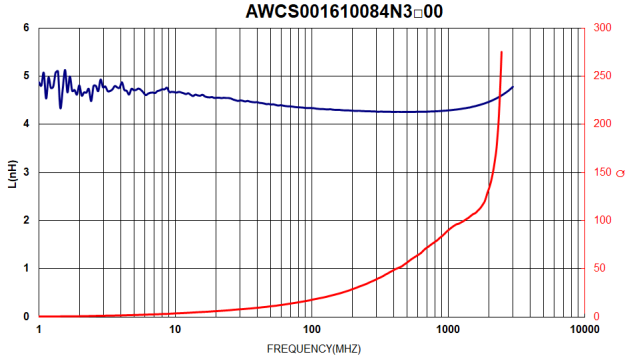

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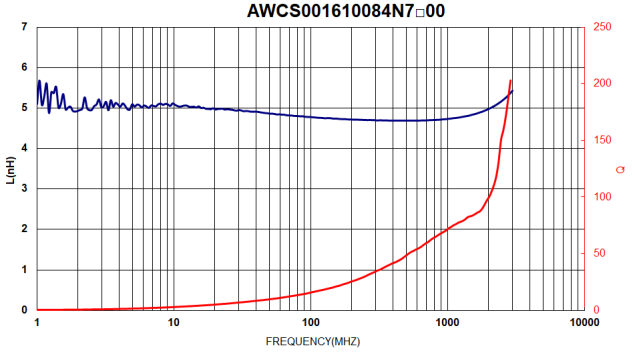

AWCS00161008 Series Specification

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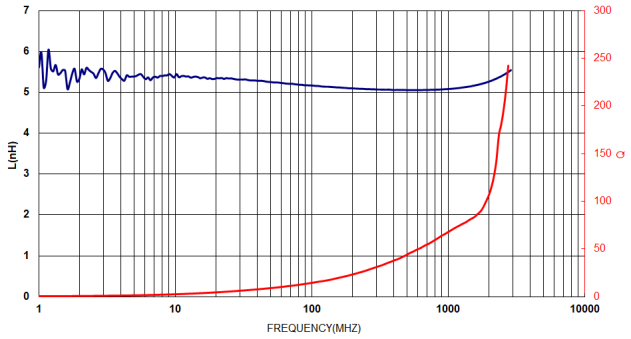
AWCS001610085N1□00



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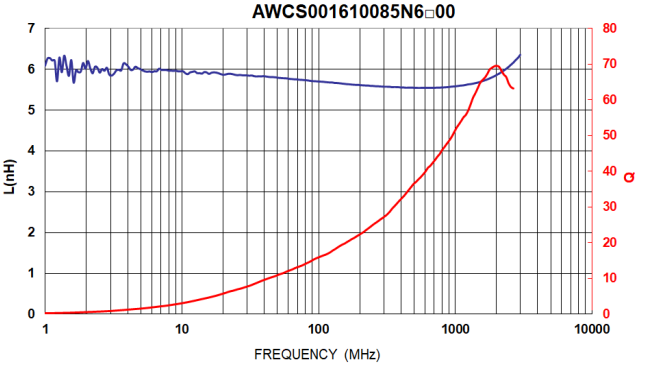

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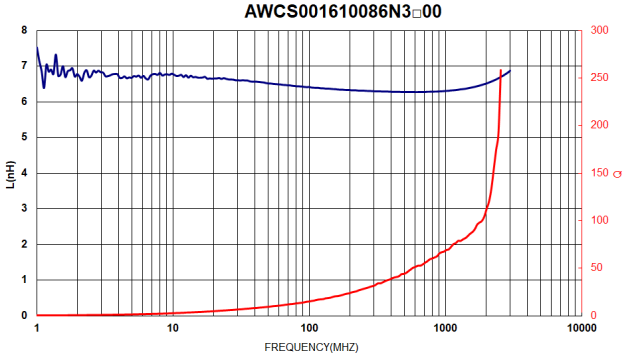

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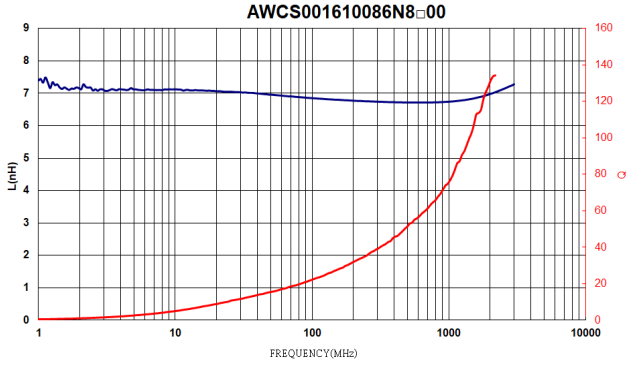

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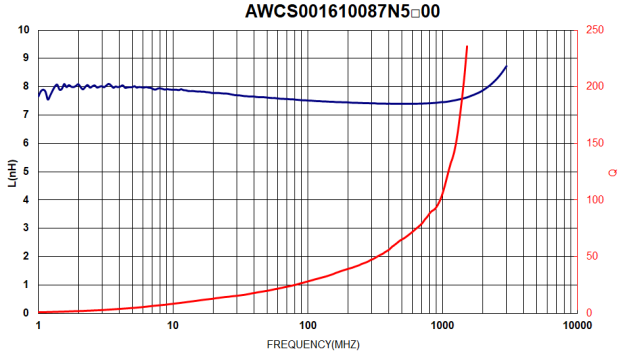

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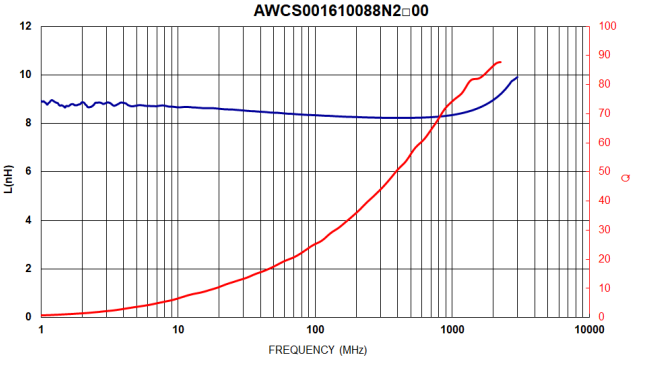

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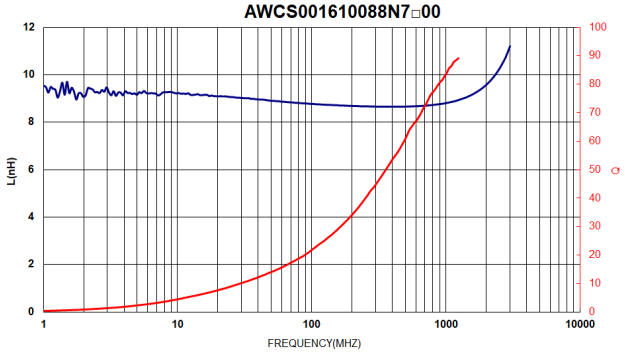

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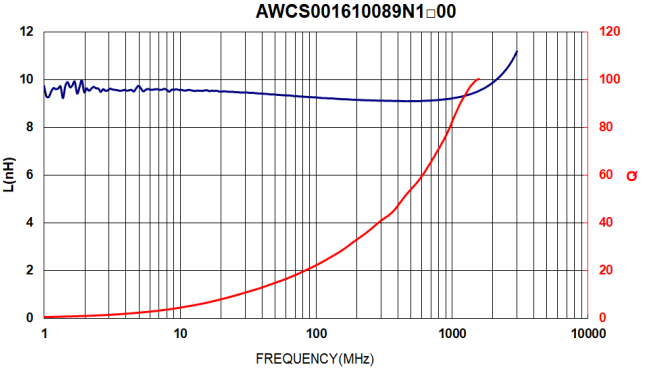

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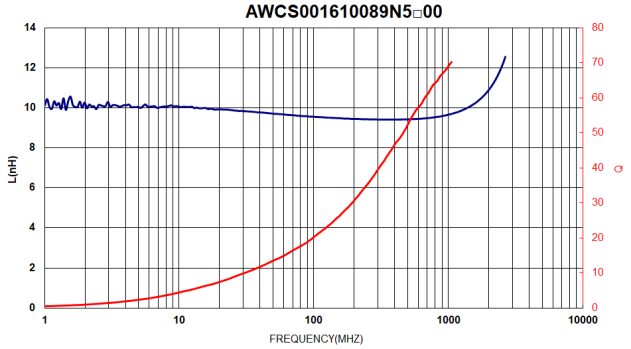

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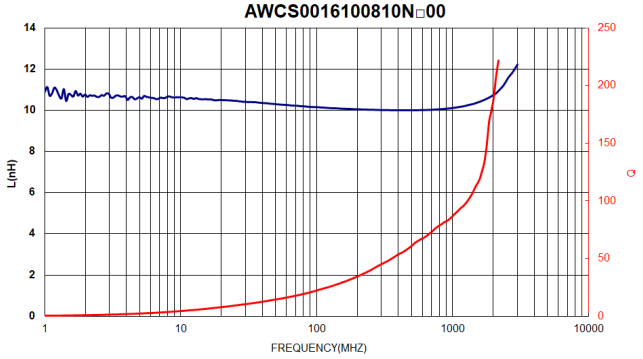

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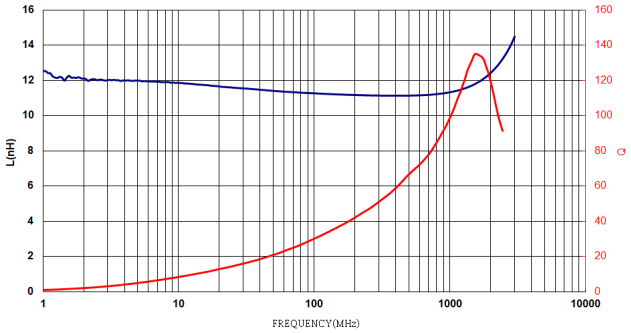

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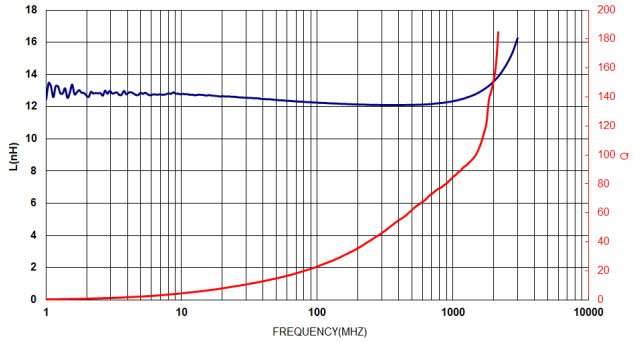

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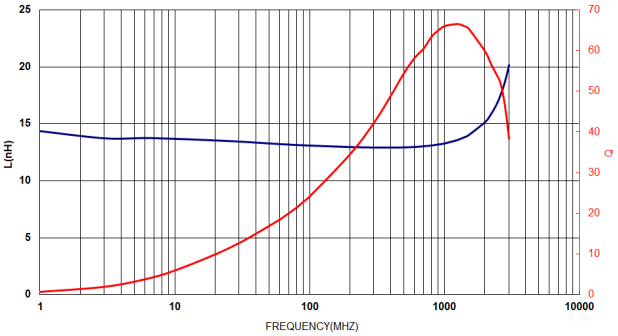

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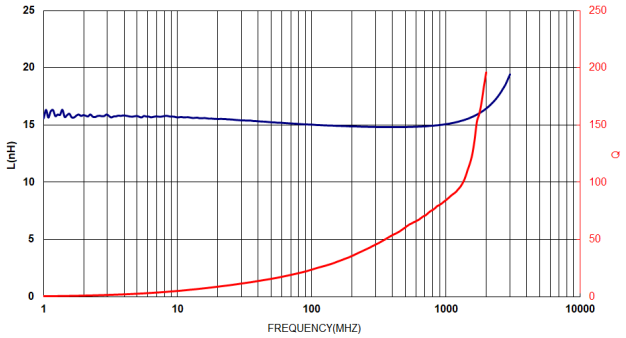

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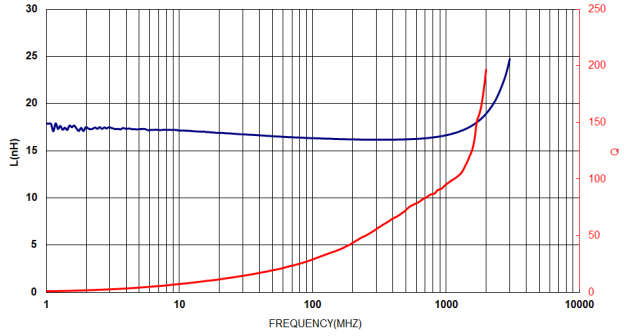

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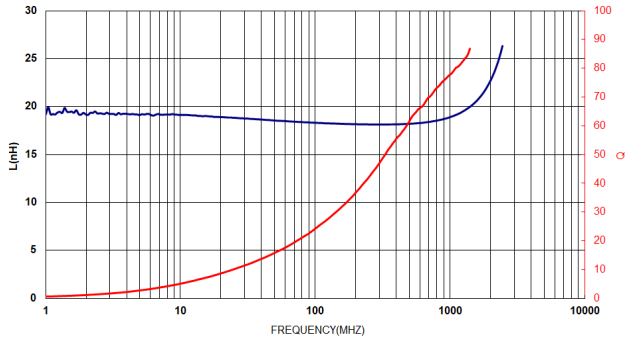

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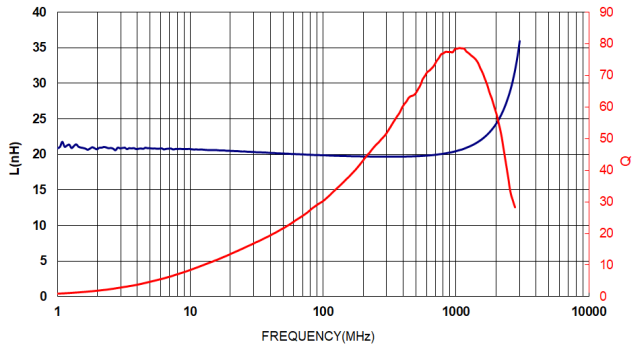

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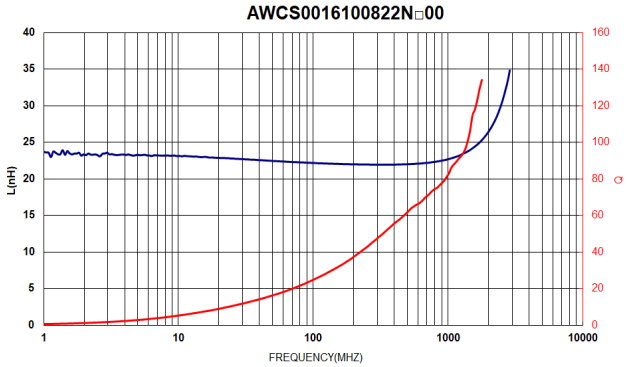

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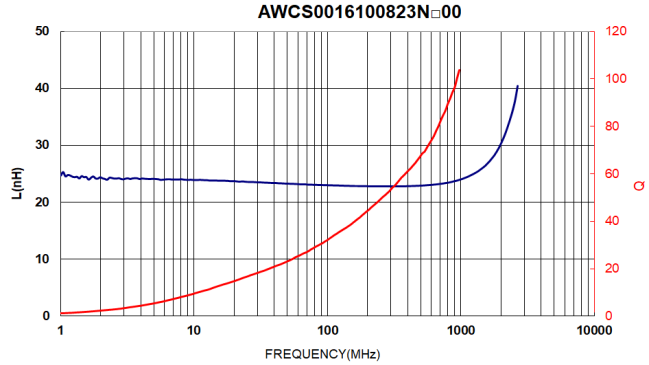

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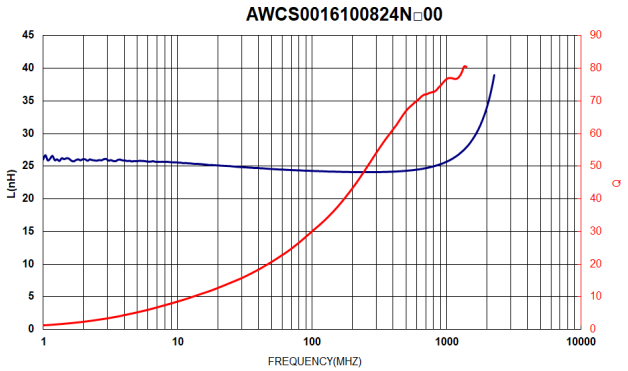

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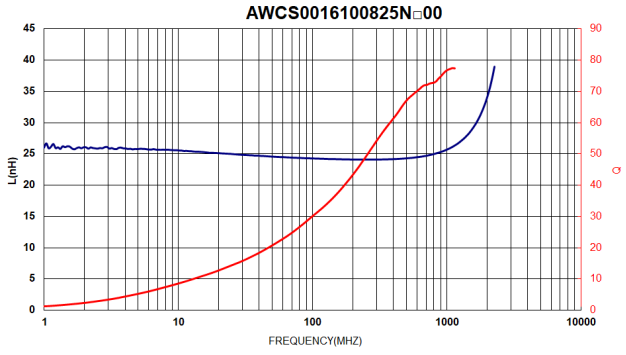

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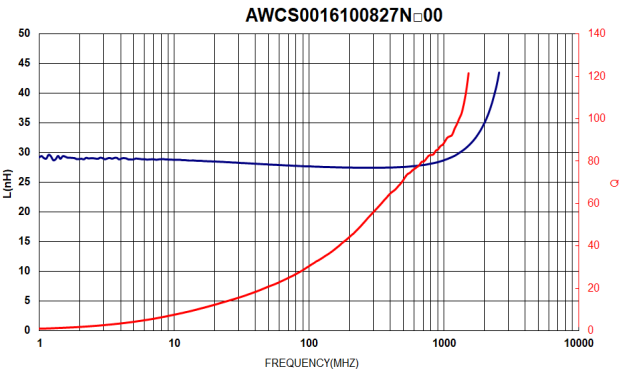

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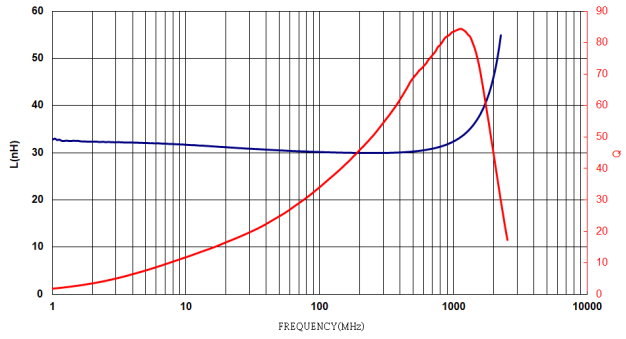

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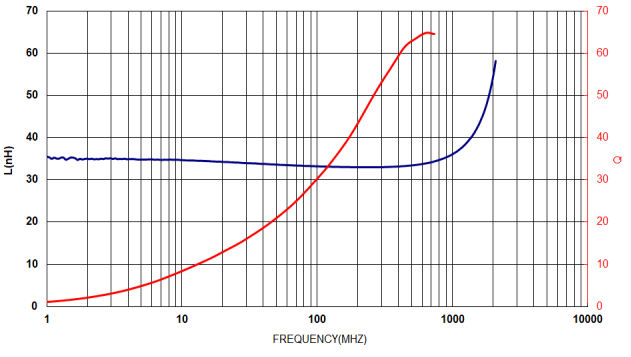

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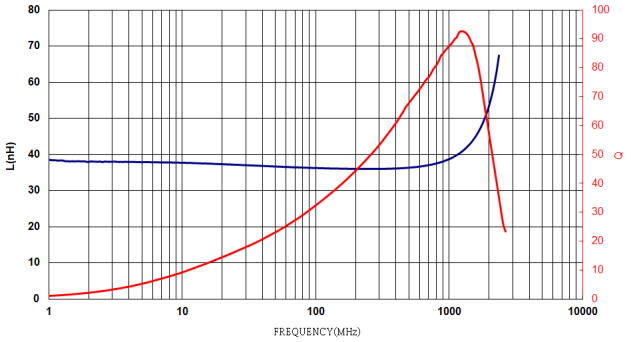

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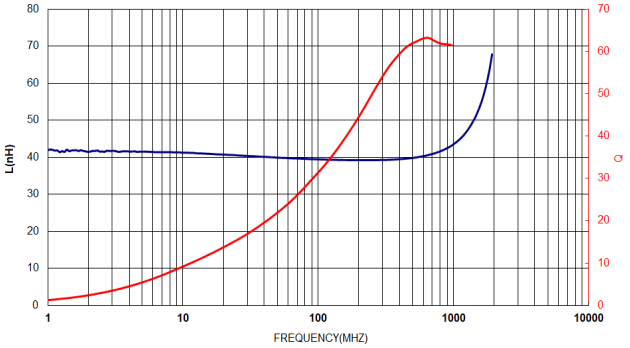

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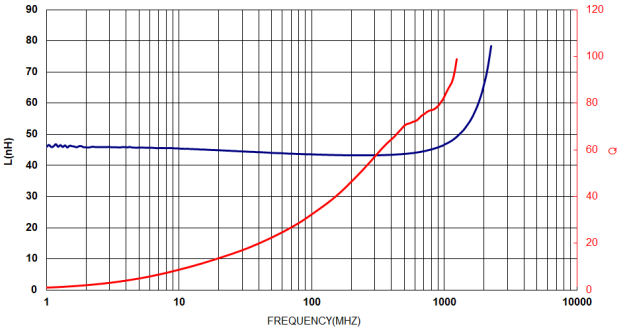

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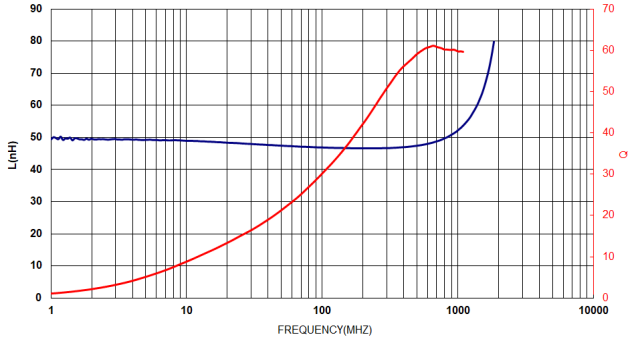

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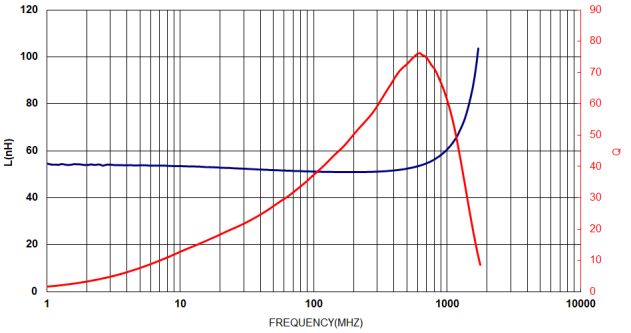

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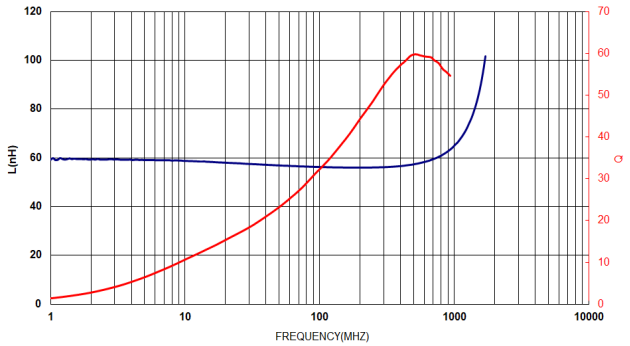

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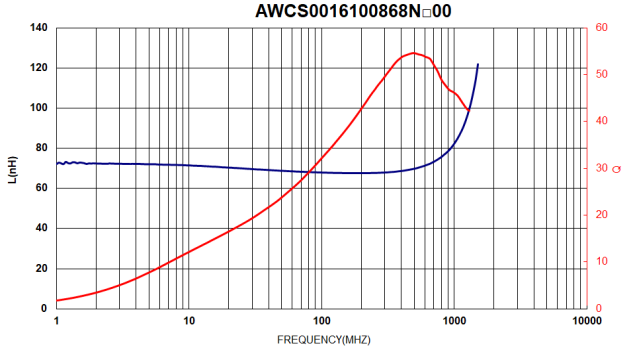

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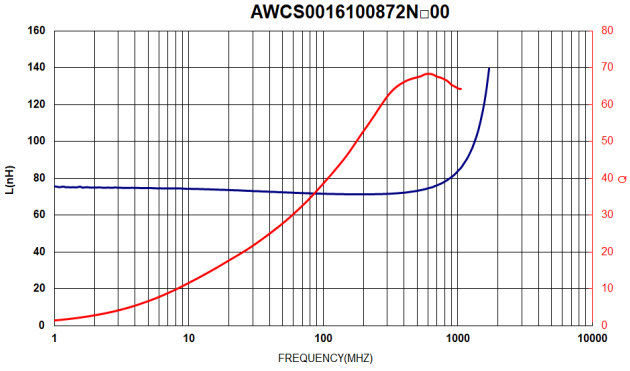

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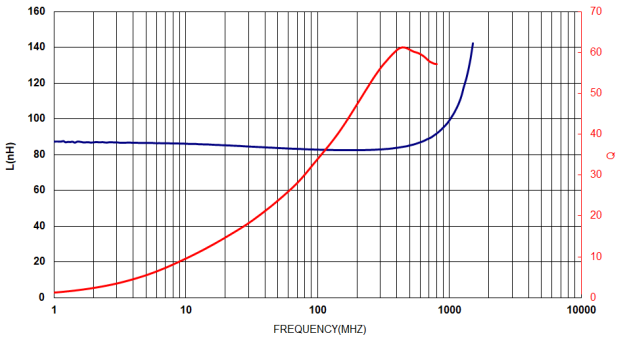

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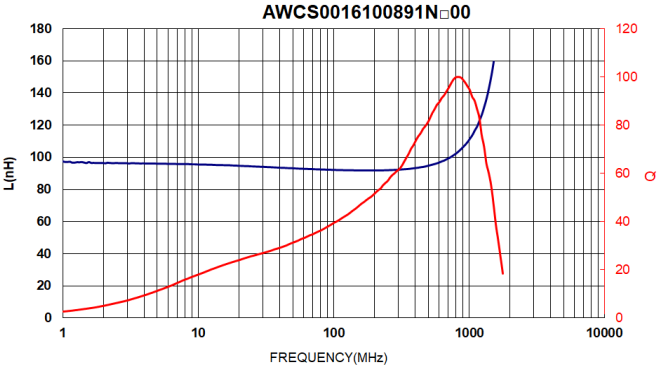

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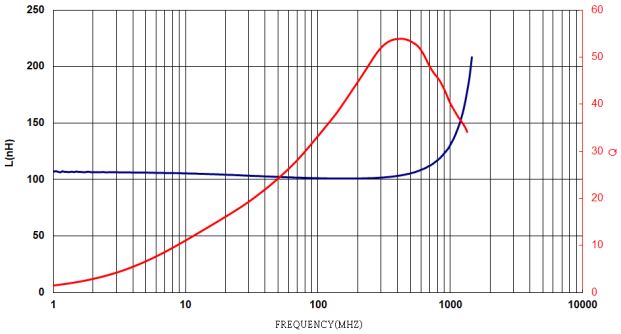

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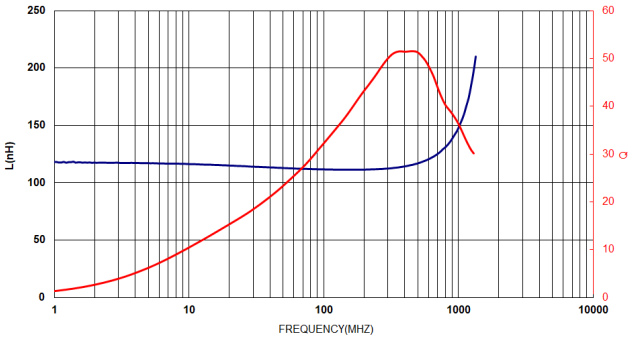

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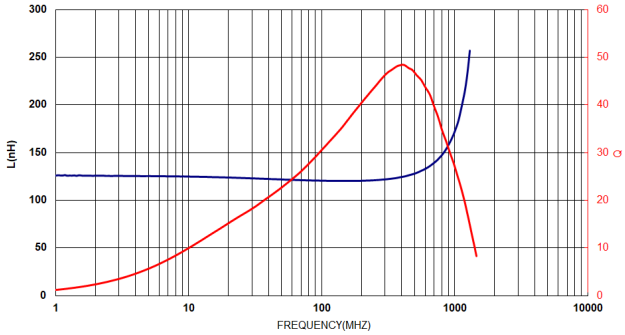

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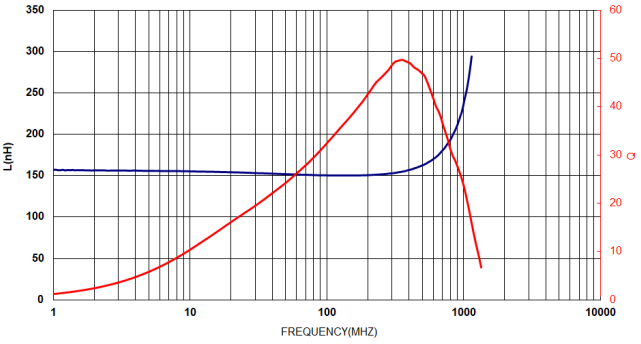

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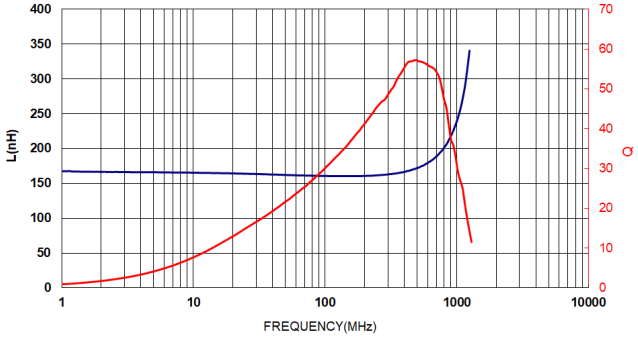

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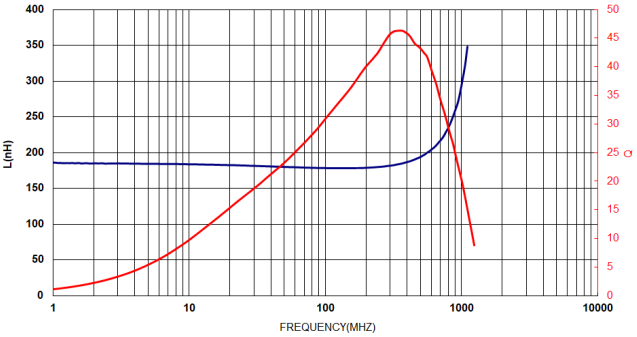

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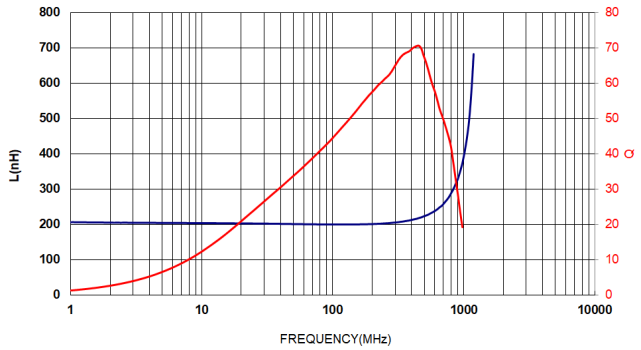

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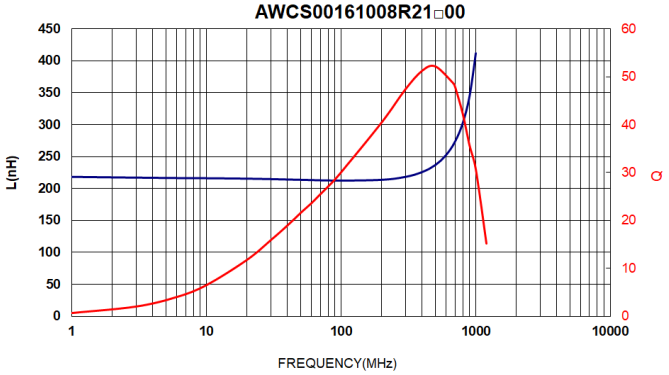

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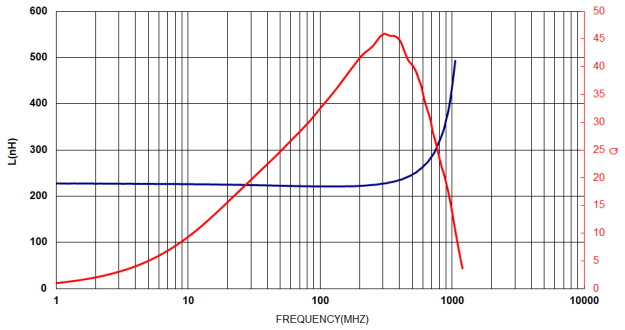

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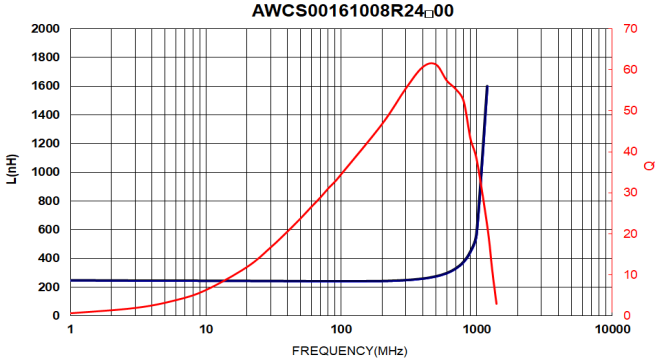

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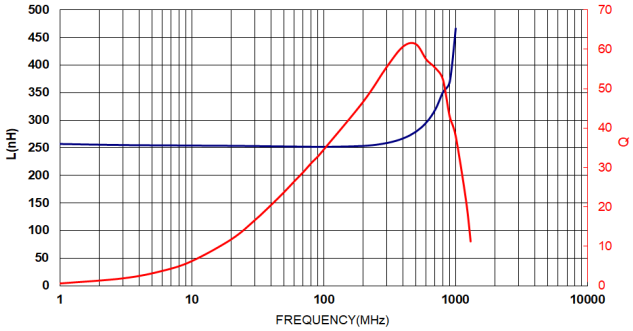

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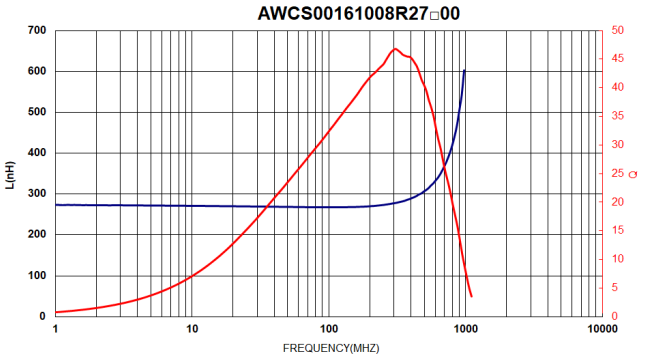

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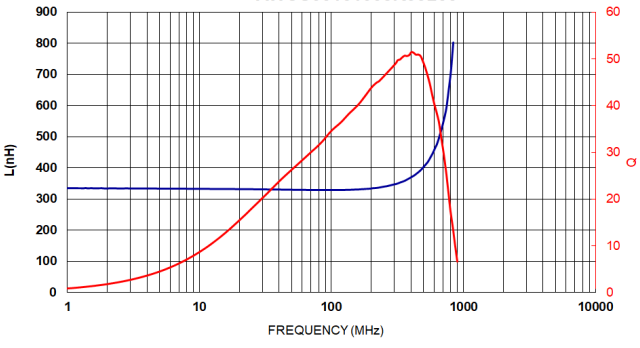

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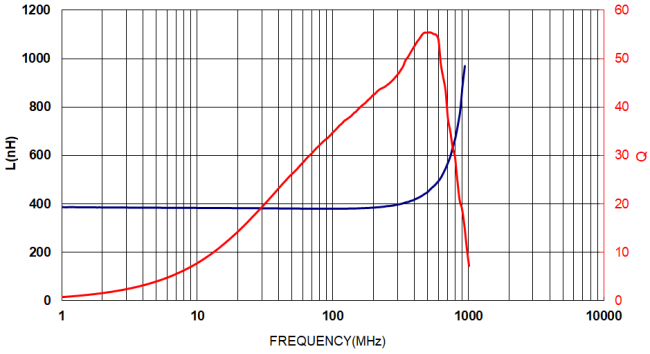

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