RF Inductor
Automotive Grade
AWHP 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)
AWHP	1005/0402 1608/0603	1 ~ 390

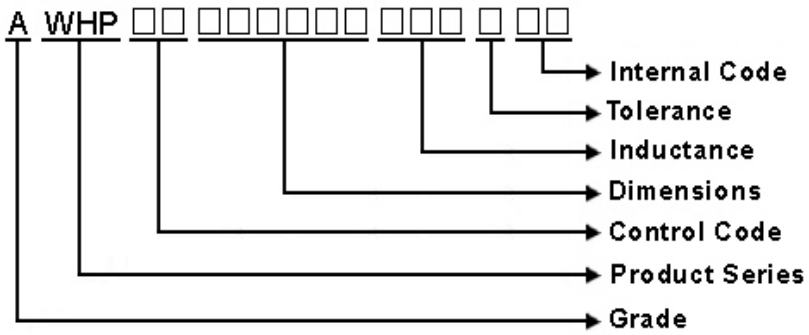
AWHP00161008 Series Specification

AEC-Q200

1 Scope:

This specification applies to Wire Wound Ceramic Chip Inductors

2 Part Numbering:



3 Rating:

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

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

4 Marking:

No Marking

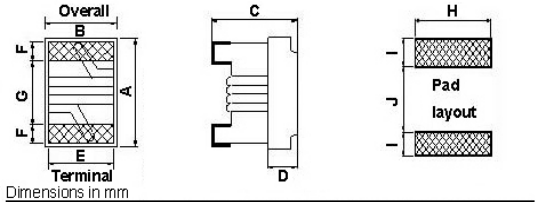
5 Standard Testing Condition

	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

AWHP00161008 Series Specification

AEC-Q200

6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I	J
161008	$1.6^{+0.2}_{-0.1}$	1.0 ± 0.1	$0.82^{+0.2}_{-0.1}$	0.3ref	0.70	0.30	0.95	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 Typ.	SRF (MHz)Typ.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance (±%)
AWHP001610081N8□00	1.8	250/250	23	16000	0.033	2100	J
AWHP001610082N2□00	2.2	250/250	13	15000	0.182	900	J
AWHP001610083N9□00	3.9	250/250	26	7500	0.062	1600	G,H,J
AWHP001610084N3□00	4.3	250/250	26	7500	0.088	1300	G,H,J
AWHP001610084N7□00	4.7	250/250	25	7900	0.13	1100	G,H,J
AWHP001610086N8□00	6.8	250/250	40	5800	0.065	1400	G,H,J
AWHP001610087N2□00	7.2	250/250	32	5400	0.1	1400	G,H,J
AWHP001610087N5□00	7.5	250/250	32	5300	0.1	1300	G,H,J
AWHP0016100811N□00	11	250/250	41	4100	0.086	1400	G,H,J
AWHP0016100815N□00	15	250/250	42	3600	0.11	1200	G,H,J
AWHP0016100816N□00	16	250/250	40	3500	0.125	1100	G,H,J
AWHP0016100822N□00	22	250/250	40	3150	0.195	850	G,H,J
AWHP0016100823N□00	23	250/250	40	3000	0.15	850	G,H,J
AWHP0016100824N□00	24	250/250	42	2950	0.125	1100	G,H,J
AWHP0016100827N□00	27	250/250	42	2800	0.2	780	G,H,J
AWHP0016100830N□00	30	250/250	49	2800	0.13	920	G,H,J
AWHP0016100833N□00	33	250/250	45	2700	0.17	680	G,H,J
AWHP0016100836N□00	36	250/250	44	2500	0.225	720	G,H,J
AWHP0016100839N□00	39	250/250	48	2450	0.19	680	G,H,J
AWHP0016100843N□00	43	250/250	45	2450	0.225	810	G,H,J
AWHP0016100847N□00	47	200/250	43	2300	0.24	680	G,H,J
AWHP0016100851N□00	51	200/250	42	2300	0.28	660	G,H,J
AWHP0016100856N□00	56	200/250	43	2200	0.3	610	G,H,J
AWHP0016100868N□00	68	200/250	43	2000	0.33	600	G,H,J
AWHP0016100872N□00	72	150/250	37	1900	0.42	550	G,H,J

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

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

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

3.L/Q Test OSC @200mV.

4.Inductance would be correct Chilisin standard piece.

5.weight: 3.350(mg) typ.

AWHP00161008 Series Specification

AEC-Q200

Part No.	Inductance (nH)	L/Q Test Freq. (MHz)	Q Typ.	SRF (MHz)Typ.	RDC (Ω)Max.	Irms (mA)Max.	Tolerance (±%)
AWHP0016100875N□00	75	150/250	37	1900	0.52	500	G,H,J
AWHP0016100882N□00	82	150/250	38	1800	0.46	510	G,H,J
AWHP0016100891N□00	91	150/250	45	1650	0.58	440	G,H,J
AWHP00161008R10□00	100	150/250	49	1700	0.54	470	G,H,J
AWHP00161008R11□00	110	150/250	47	1600	0.62	440	G,H,J
AWHP00161008R12□00	120	150/250	47	1550	0.72	420	G,H,J
AWHP00161008R15□00	150	150/250	47	1350	1.15	390	G,H,J
AWHP00161008R18□00	180	100/250	48	1300	1.5	310	G,H,J
AWHP00161008R20□00	200	100/250	47	1250	2	280	G,H,J
AWHP00161008R21□00	210	100/250	48	1200	2	280	G,H,J
AWHP00161008R22□00	220	100/250	47	1100	2	280	G,H,J
AWHP00161008R25□00	250	100/250	45	1050	3	240	G,H,J
AWHP00161008R27□00	270	100/250	46	1050	2.25	260	G,H,J
AWHP00161008R30□00	300	100/250	47	990	2.8	220	G,H,J
AWHP00161008R33□00	330	100/250	46	930	3.6	180	G,H,J
AWHP00161008R36□00	360	100/250	47	930	4	170	G,H,J
AWHP00161008R39□00	390	100/250	47	880	4	170	G,H,J

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

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

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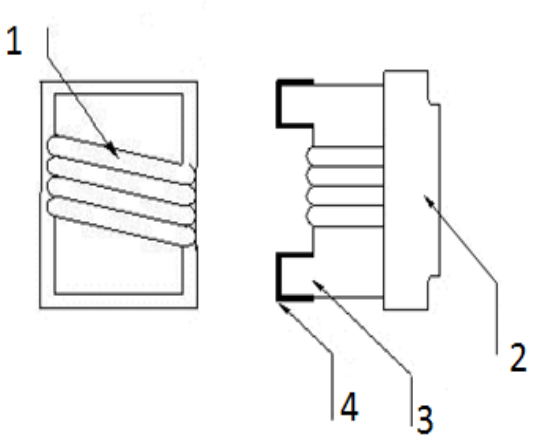
8 BWHP00161008 Series

8.1 Construction:

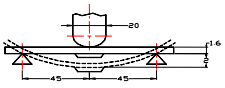


8.2 Material List:

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

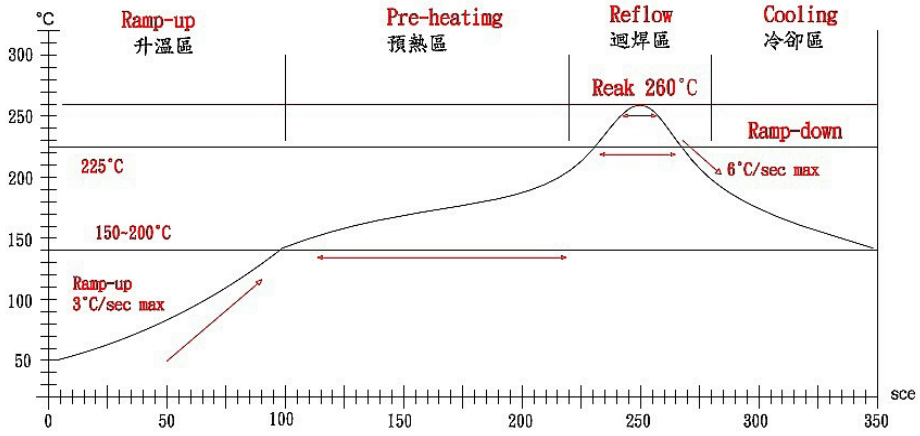
9 Reliability Of Ceramic Wire Wound Chip Inductor/CERAMIC SERIES

1-1.Environmental Performance

	Item	Specification	Test Method
1-1-1	Board Flex	The forces applied on the righ 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 righ 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.Mechanical Performance

No	Item	Specification	Test Method
1-2-1	High Temperature Exposure (Storage)	Appearance:No damage (for microscope of CASTOR MZ-4 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: -40±3℃ 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 : -40 to +125 ℃ 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	-

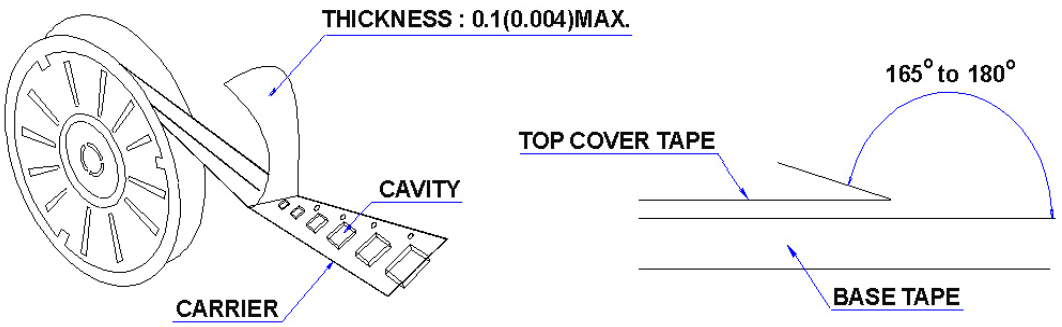
NOTE:

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

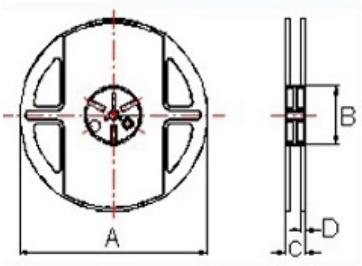
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
161008	4000

10.3 Reel Dimensions



Dimensions in mm

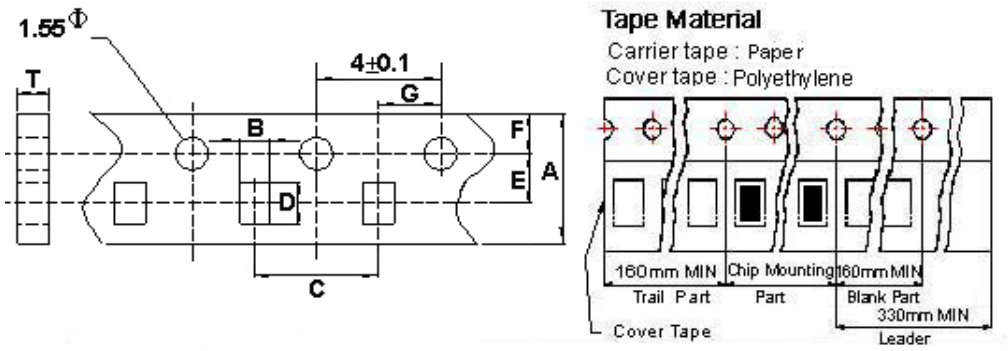
TYPE	A	B	C	D
161008	178±1	60±0.5	12±0.5	1.5±0.5

AWHP00161008 Series Specification

AEC-Q200

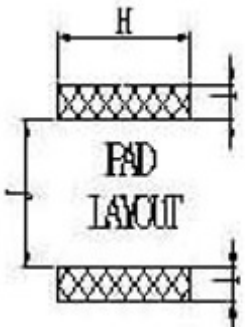
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	C	D	E	F	G	T
161008	8.0	1.23	4	1.90	3.5	1.75	2	1.05

11 Recommended Land Pattern:



Dimensions in mm

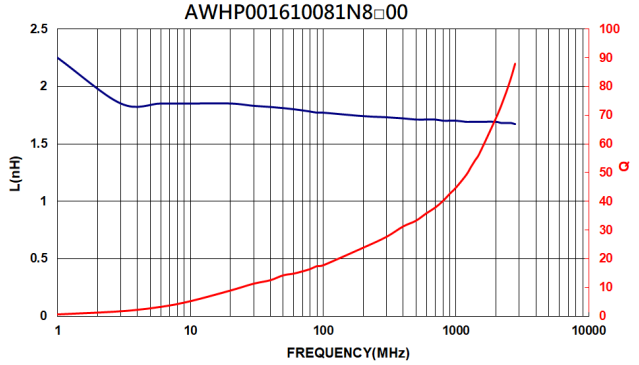
TYPE	H(In/mm)	I(In/mm)	J(In/mm)
161008	0.04/1.02	0.025/0.64	0.025/0.64

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:

AWHP001610081N8□00



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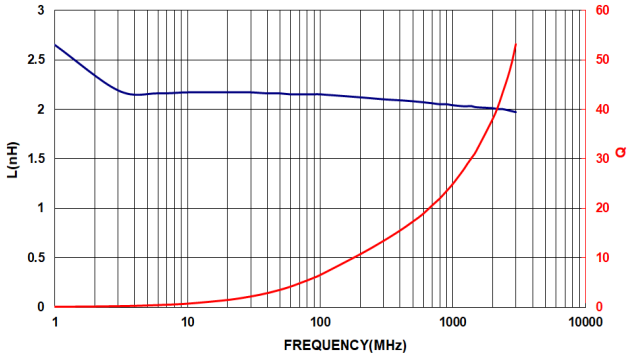

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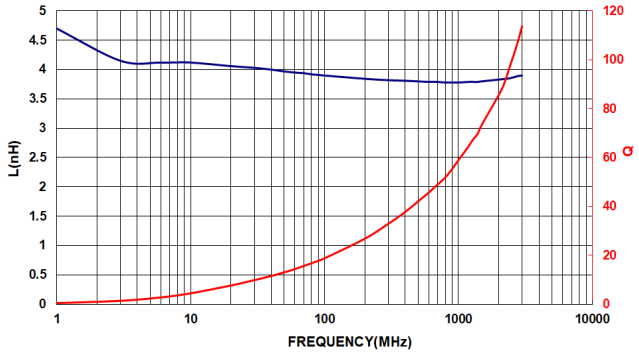

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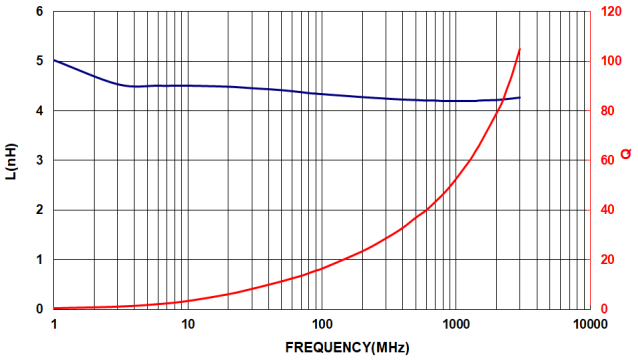

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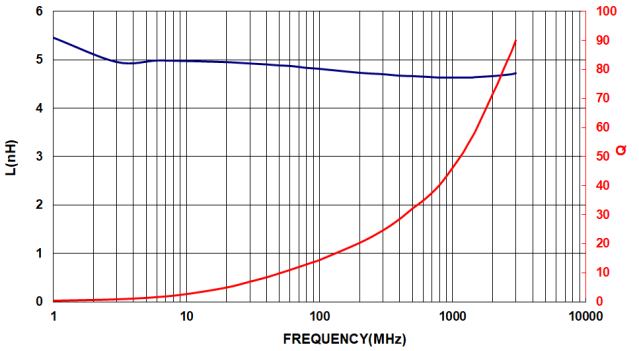

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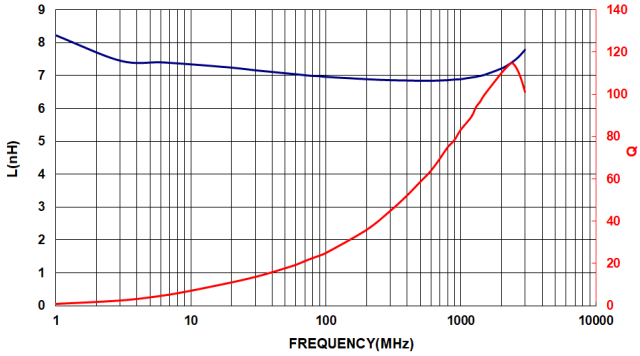

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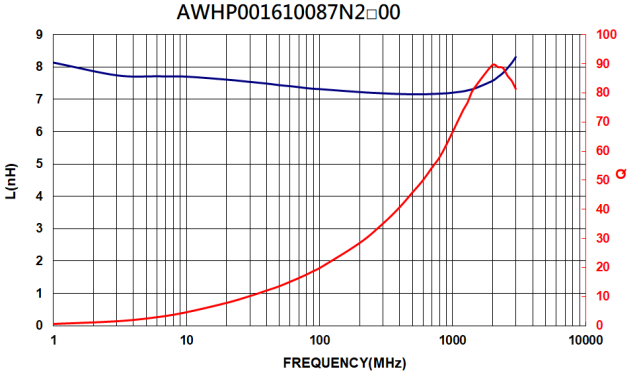

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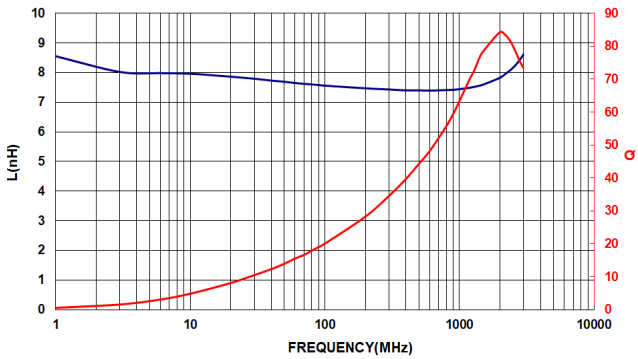

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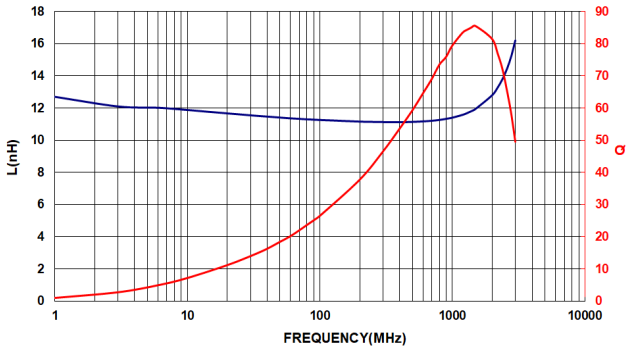

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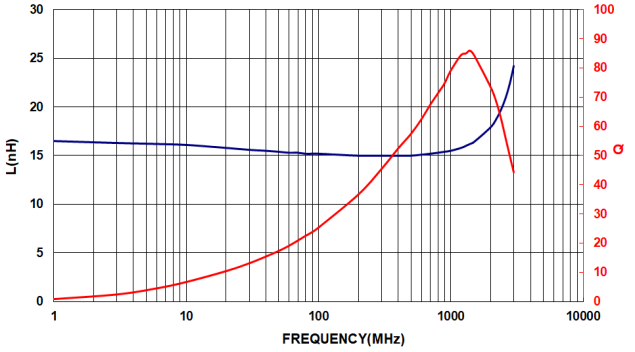

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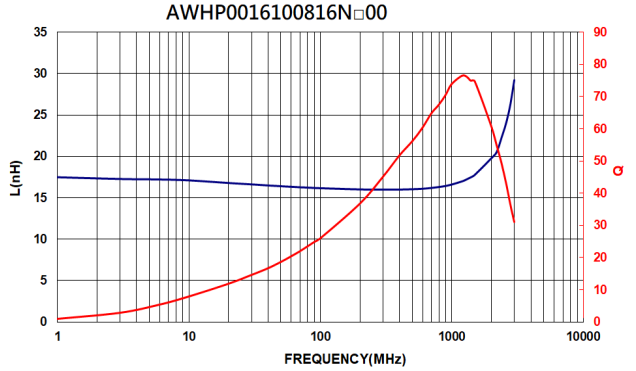

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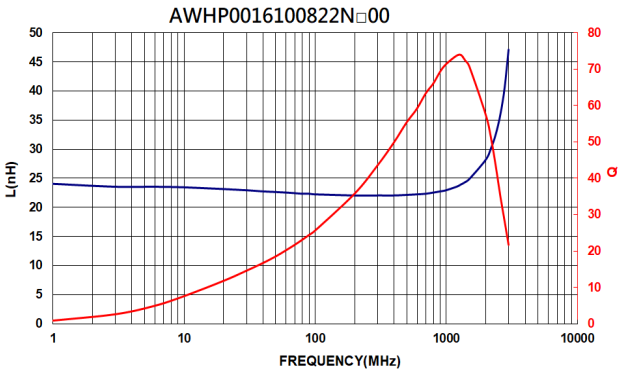

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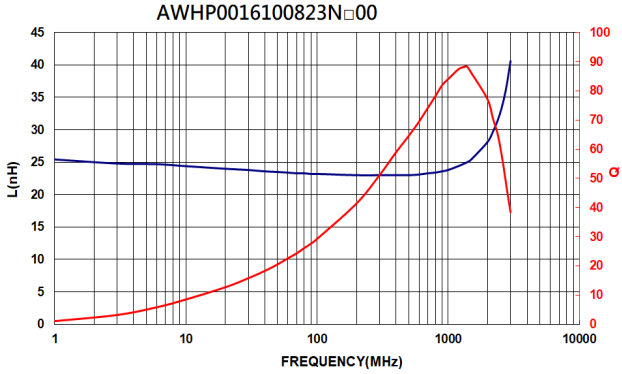

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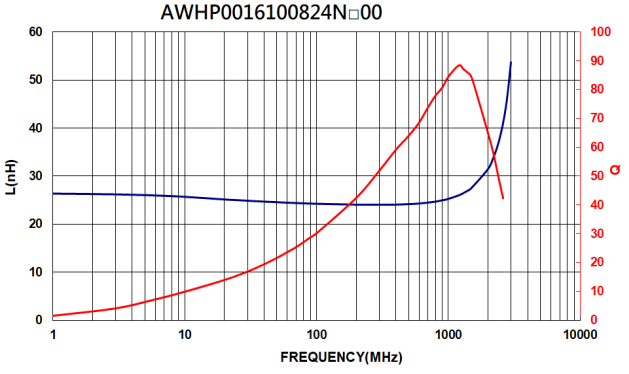

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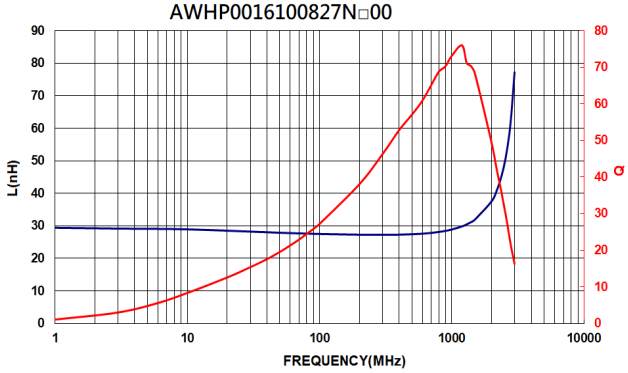

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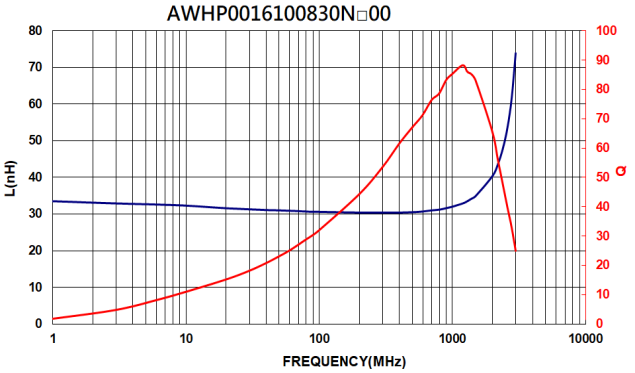

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AEC-Q200

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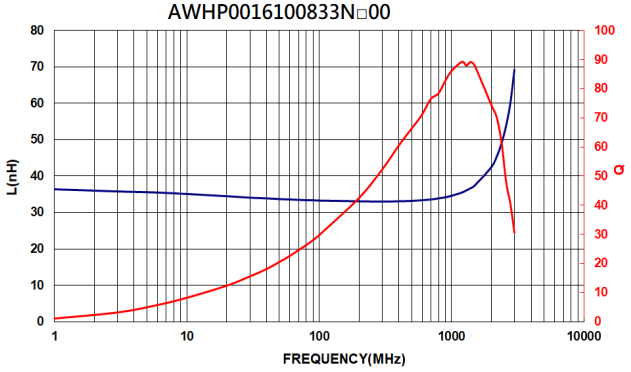

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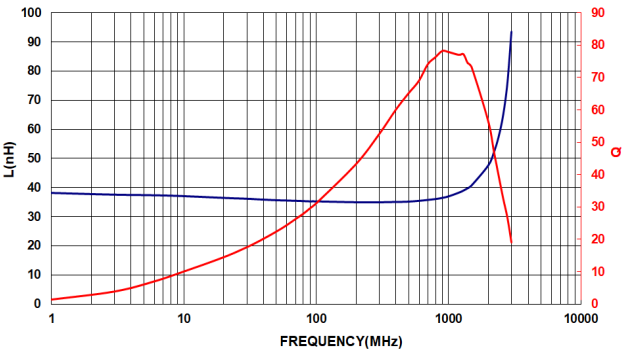

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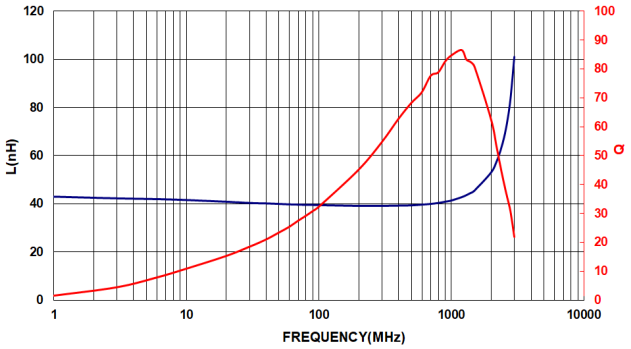

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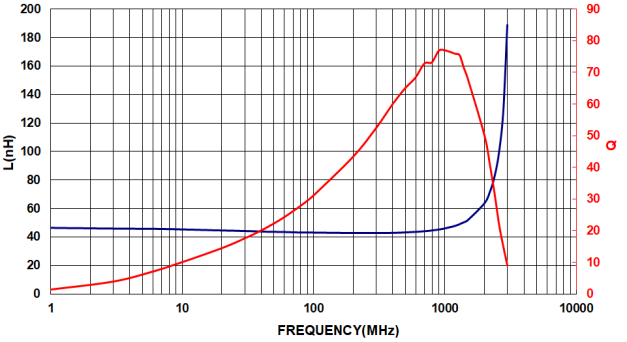

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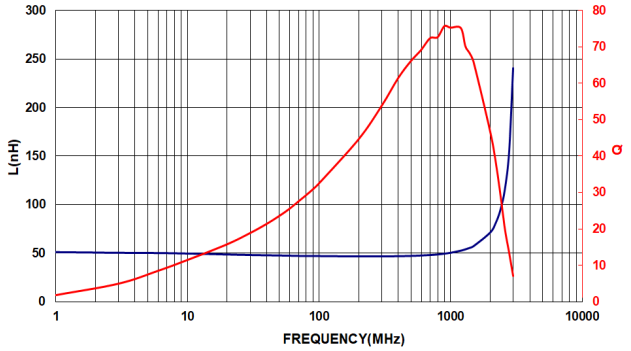

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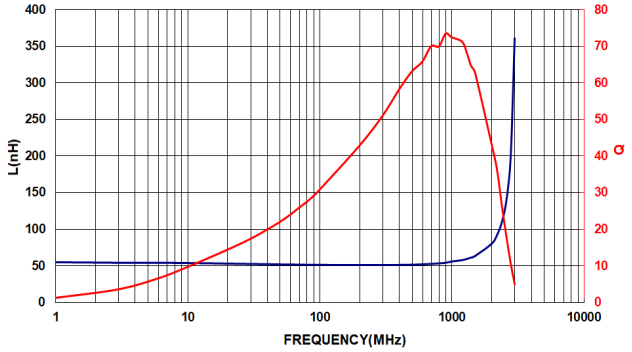

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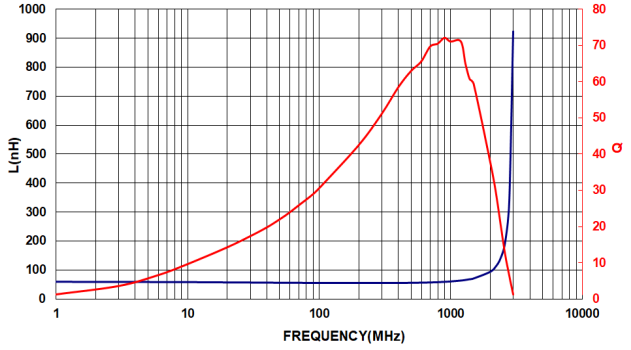

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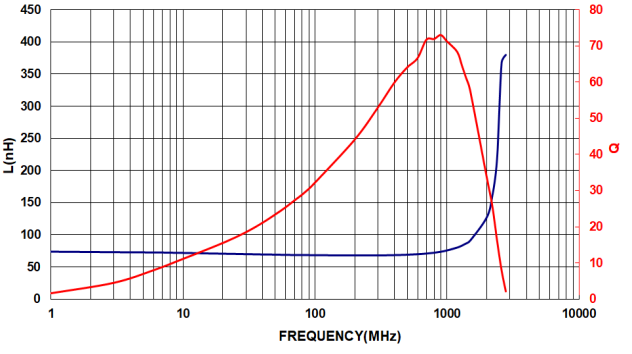

AWHP00161008 Series Specification

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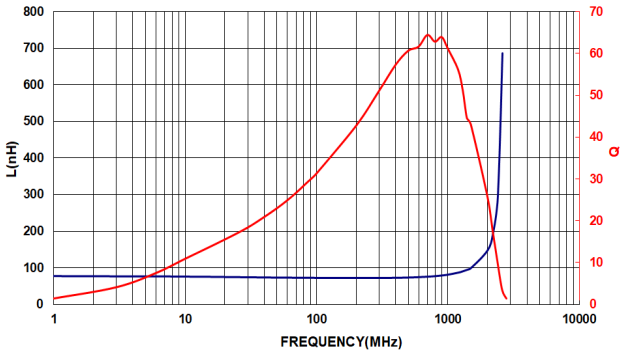

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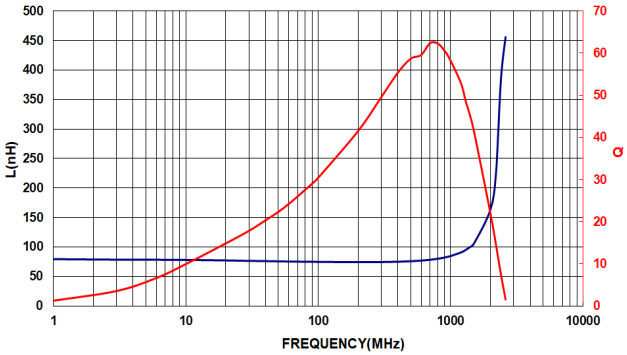

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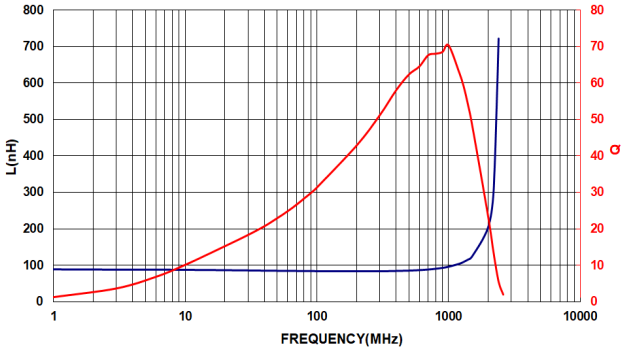

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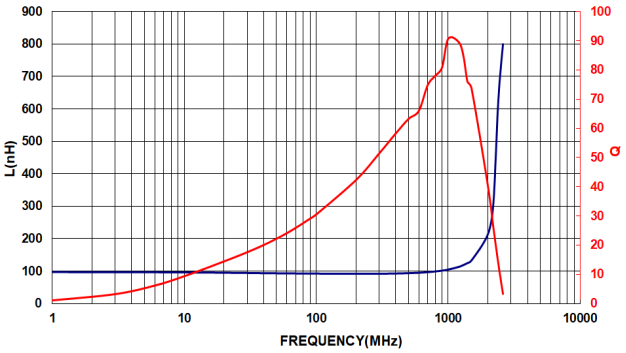

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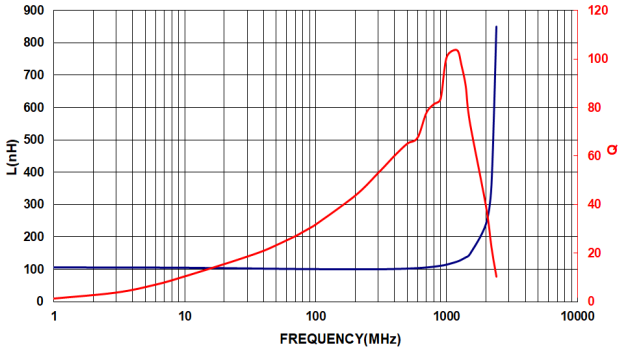

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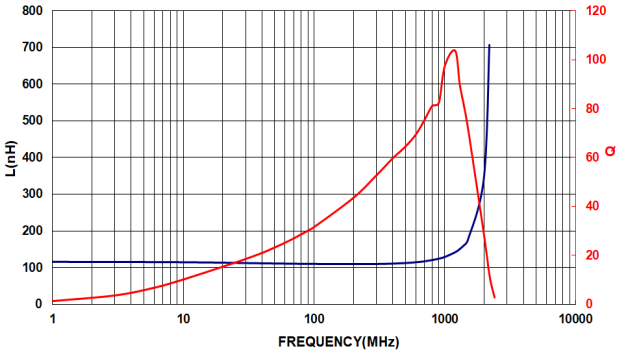

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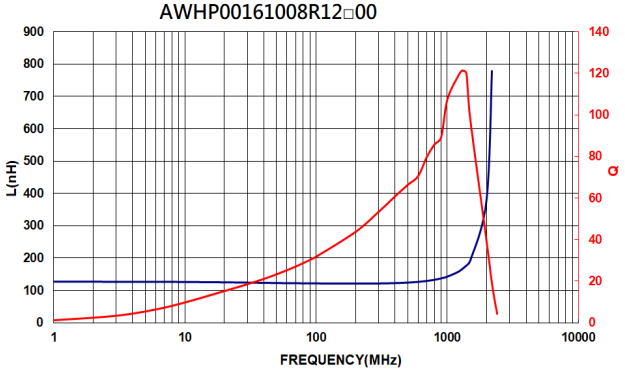

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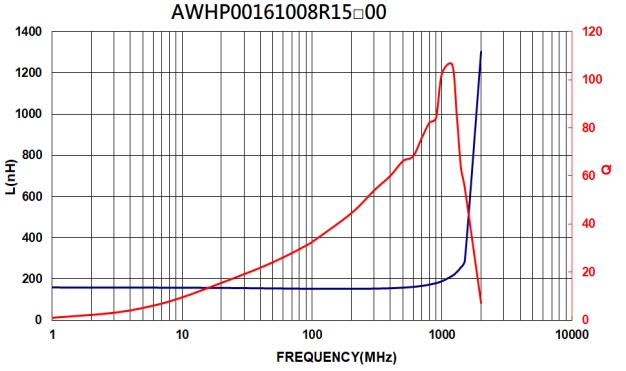

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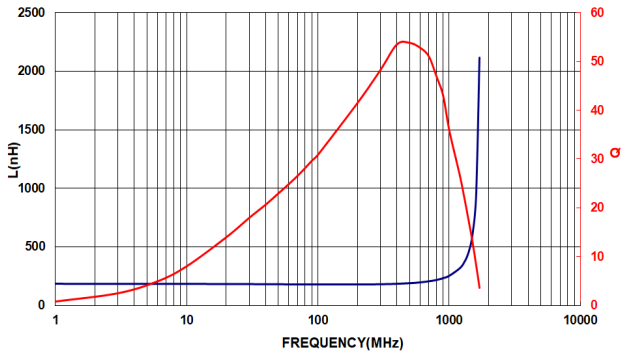

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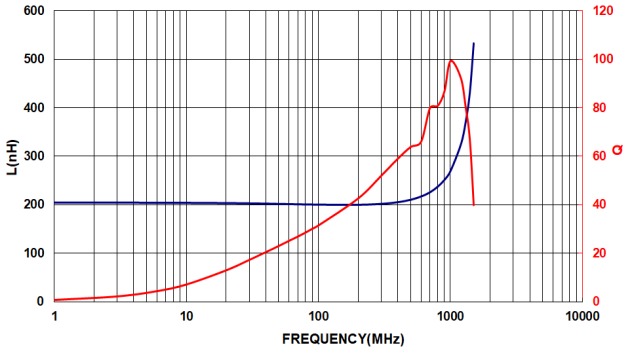

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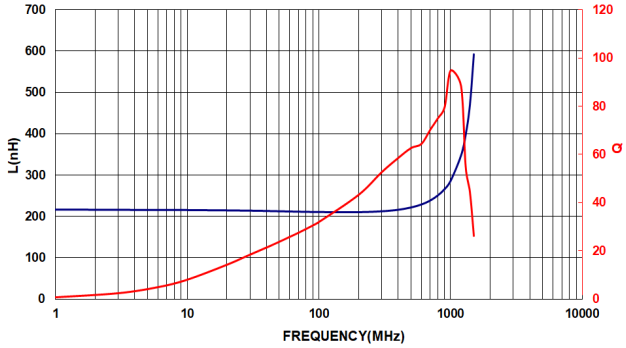

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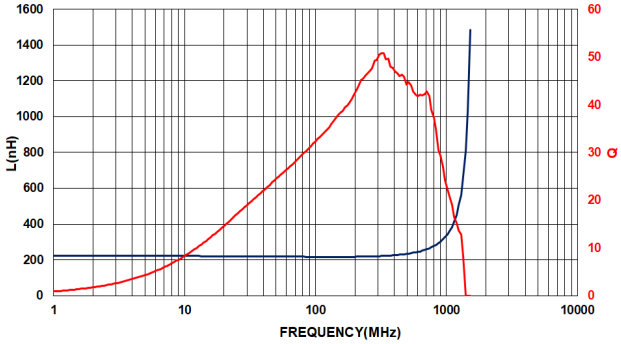

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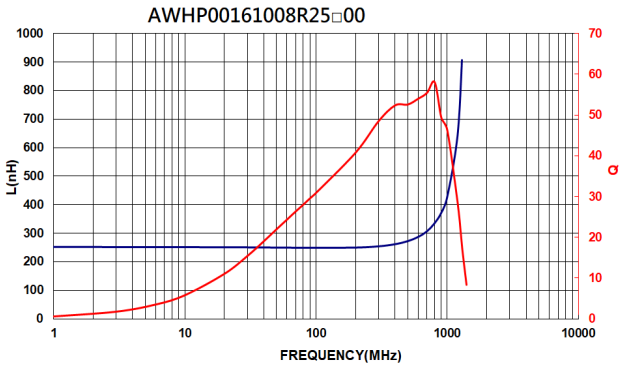

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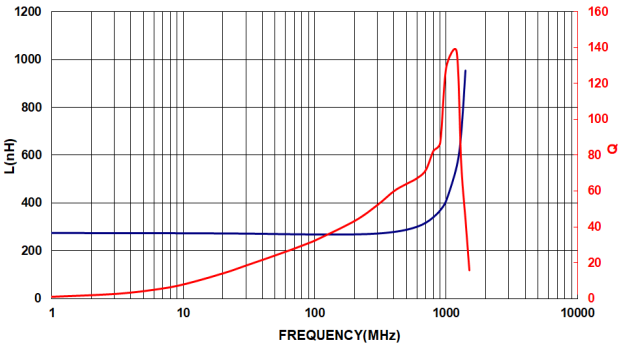

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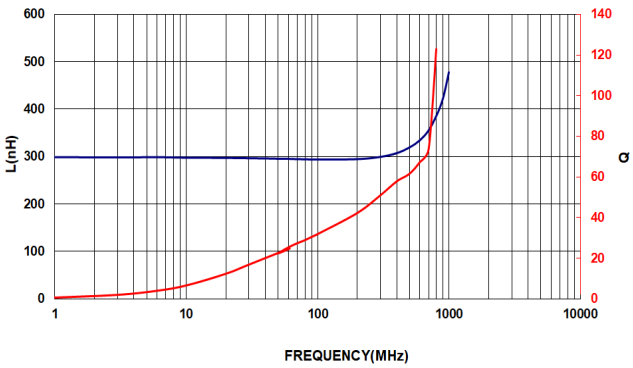

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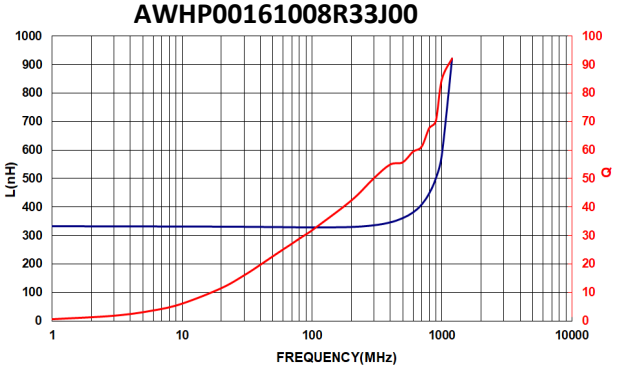

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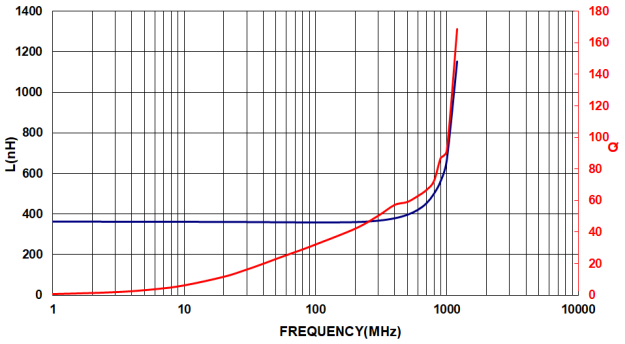

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