Power Inductor
Automotive Grade
APSC Series

Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems.
They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency.

Benefits

1. Automotive grade available
2. Ferrite SMD Shielded Type
3. No thermal aging

Applications

1. Automotive Systems for Infotainment, Dashboard, ADAS
2. IPC Equipment
3. Net working

Product Information

Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
APSC	3.2	3.2	1.6	0.47 ~ 1000
	4.0	4.0	1.8	
	4.0	4.0	3.0	
	4.7	4.7	2.0	
	4.7	4.7	3.0	
	4.7	4.7	4.0	
	5.7	5.7	2.0	
	5.7	5.7	3.0	
	6.7	6.7	3.0	
	7.0	7.0	4.0	
	7.5	7.5	4.6	
	10.3	10.5	3.1	
	10.3	10.5	4.0	
	10.3	10.5	5.1	
	12.5	12.5	4.5	
	12.5	12.5	6.0	
	12.5	12.5	8.0	

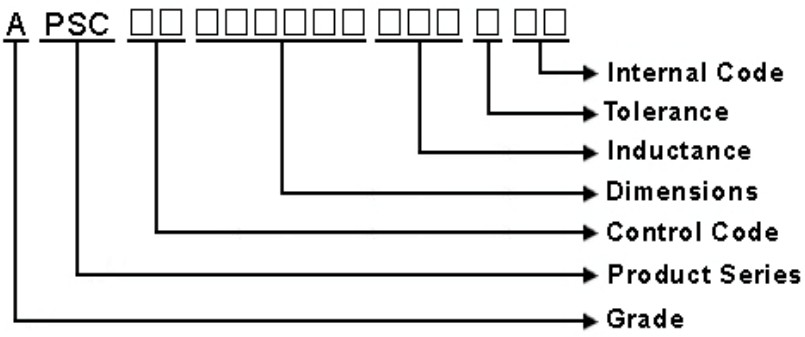
APSC00131380 Series Specification

AEC-Q200

1 Scope:

This specification applies to SMD Shielded Power Inductors

2 Part Numbering:



3 Rating:

Operating Temperature: - 40°C ~ + 125°C (Including self temp. rise)

Storage Temperature: - 40°C ~ + 125°C(For after the circuit board is mounted)

Storage Temperature: (on tape & reel): -20℃ to +40℃; 75% RH max.

4 Marking:

Ex Marking: 100

Marking color : Black

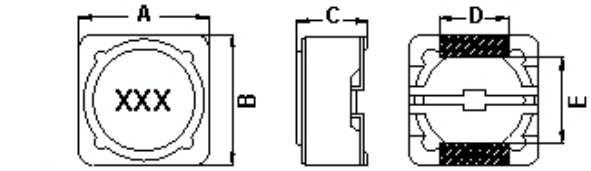
5 Standard Testing Condition

	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

APSC00131380 Series Specification

AEC-Q200

6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E
131380	12.5 Max.	12.5 Max.	8.0 Max.	5	7.6

Net Weight (grms)

SIZE CODE	Net Weight (grms)
131380	4.44(Typ.)

7 Electrical Characteristics:

Part No.	Inductance (uH)	Test Freq.	RDC (Ω)Max.	Isat(A) Max(Typ)	Irms (A)Typ.	Tolerance	Marking
APSC001313803R5□00	3.5	100 kHz,1 V	0.0123	13.8(17.4)	7.7	T,N	3R5
APSC001313804R7□00	4.7	100 kHz,1 V	0.0158	12.3(15.4)	6.8	T	4R7
APSC001313806R1□00	6.1	100 kHz,1 V	0.0176	10.9(13.8)	6.6	T,N	6R1
APSC001313806R8□00	6.8	100 kHz,1 V	0.018	10.8(13.7)	6.5	M,T	6R8
APSC001313807R6□00	7.6	100 kHz,1 V	0.02	10.0(12.6)	5.9	T	7R6
APSC00131380100□00	10	1 kHz,1 V	0.022	8.9(11.2)	5.4	M,T	100
APSC00131380120□00	12	1 kHz,1 V	0.03	7.4(9.4)	4.3	M,T	120
APSC00131380150□00	15	1 kHz,1 V	0.034	7.1(9.0)	4.1	M,T	150
APSC00131380180□00	18	1 kHz,1 V	0.0392	6.5(8.2)	3.9	M,T	180
APSC00131380220□00	22	1 kHz,1 V	0.048	5.8(7.5)	3.2	M,T	220
APSC00131380270□00	27	1 kHz,1 V	0.052	5.3(6.7)	3.1	M,T	270
APSC00131380330□00	33	1 kHz,1 V	0.0648	4.8(6.1)	3	M,T	330
APSC00131380390□00	39	1 kHz,1 V	0.065	3.9(5.6)	3	M,T	390
APSC00131380470□00	47	1 kHz,1 V	0.1	3.6(5.2)	2.5	M,T	470
APSC00131380560□00	56	1 kHz,1 V	0.11	3.4(4.8)	2.35	M,T	560
APSC00131380680□00	68	1 kHz,1 V	0.12	2.8(4.1)	2.3	M,T	680
APSC00131380820□00	82	1 kHz,1 V	0.16	2.7(4.0)	1.95	M,T	820
APSC00131380101□00	100	1 kHz,1 V	0.17	2.5(3.5)	1.9	M,T	101
APSC00131380121□00	120	1 kHz,1 V	0.19	2.2(3.2)	1.8	M,T	121
APSC00131380151□00	150	1 kHz,1 V	0.25	2.0(2.9)	1.6	M,T	151
APSC00131380181□00	180	1 kHz,1 V	0.31	1.8(2.6)	1.37	M,T	181
APSC00131380221□00	220	1 kHz,1 V	0.35	1.7(2.4)	1.3	M,T	221
APSC00131380271□00	270	1 kHz,1 V	0.43	1.5(2.2)	1.1	M,T	271
APSC00131380331□00	330	1 kHz,1 V	0.51	1.2(2.0)	1.08	M,T	331
APSC00131380391□00	390	1 kHz,1 V	0.6	1.1(1.6)	0.95	M,T	391

NOTE: □-tolerance M=±20% / T =±30% / N=+40% -20%

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

2.Isat for Inductance drop 35% from its value without current.

3.The actual use current is suggested not to be out of Isat*80%

4.Irms for a 40℃ temperature rise from 25℃ ambient.

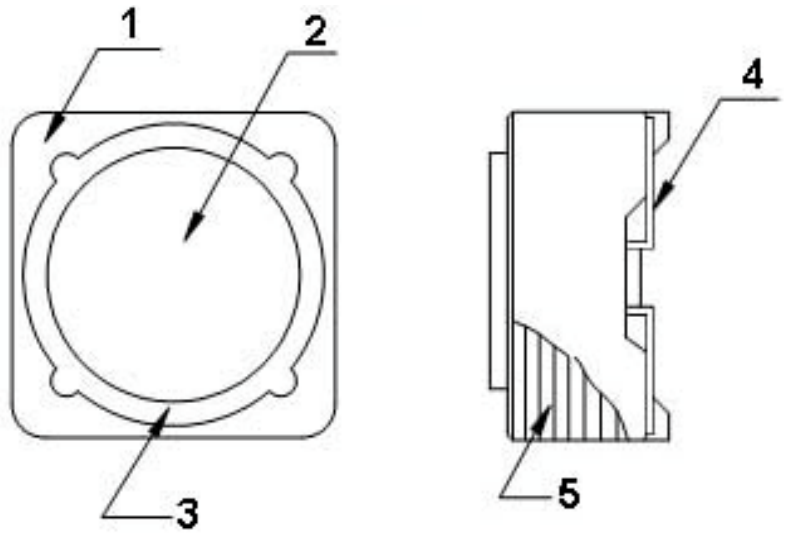
APSC00131380 Series Specification

AEC-Q200

Part No.	Inductance (uH)	Test Freq.	RDC (Ω)Max.	Isat(A) Max(Typ)	Irms (A)Typ.	Tolerance	Marking
APSC00131380471□00	470	1 kHz,1 V	0.71	0.99(1.6)	0.88	M,T	471
APSC00131380561□00	560	1 kHz,1 V	0.88	0.95(1.4)	0.85	M,T	561
APSC00131380681□00	680	1 kHz,1 V	1.04	0.84(1.2)	0.75	M,T	681
APSC00131380821□00	820	1 kHz,1 V	1.36	0.77(1.1)	0.7	M,T	821
APSC00131380102□00	1000	1 kHz,1 V	1.66	0.73(1.0)	0.59	M,T	102

8 APSC00131380 Series

8.1 Construction:

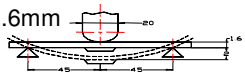


8.2 Material List:

No	Part	Material
1	Core	Ferrite
2	Core	Ferrite
3	Epoxy	
4	Terminal	Terminal Copper
5	Wire	Magnet Wire

9 Reliability Of Ferrite Wire Wound Power Inductor

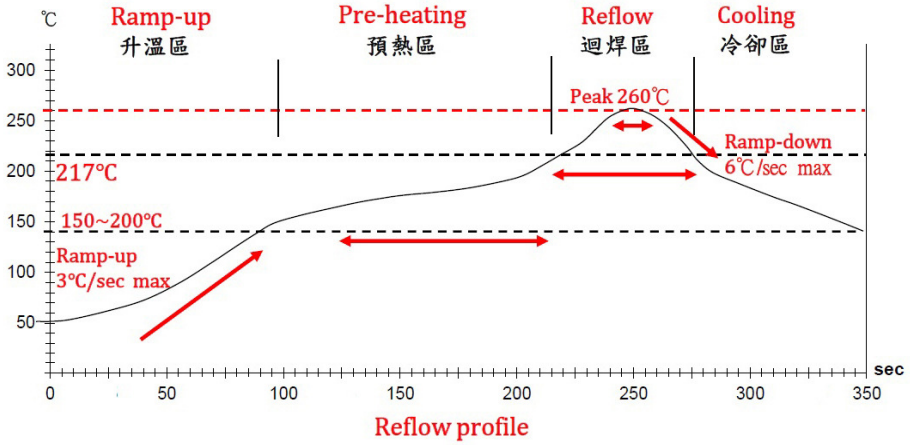
1-1.Mechanical Performance

No	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	Refer to AEC-Q200-005 Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60sec 
1-1-2	Resistance to Soldering Heat	Appearance: No damage Inductance change shall be within ±10%.	Refer to MIL-STD-202 Method 210 Pre-heating: 150℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 250±5℃ Immersion Time: 10±1sec
1-1-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	Refer to J-STD-002 Pre-heating: 150℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245±5℃(Pb-Free) Immersion Time: 4±1sec
1-1-4	Terminal Strength Test	Appearance: No damage	Refer AEC-Q200-006 Soldered on PCB for testing as fig. Force : 1.8kg Keeping Time: 60 seconds.
1-1-5	Resistance to Solvent	There must be no change in appearance or obliteration of marking	Refer to MIL-STD-202 Method 215 Inductors must withstand 6 mimutes of alcohol or water Sample Size : 15 pcs
1-1-6	Vibration	Appearance: No damage Inductance change shall be within ±10%.	Refer MIL-STD-202 Method 204 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	Temperature Cycle	Appearance: No damage Inductance change shall be within±30%	Refer to JESD Method JA-104 Total cycles: 1000 cycles Temperature Cycling Test Conditions : -40 to +125 ℃ -40 ℃ Soak Mode Condition : 30 minutes 125 ℃ Soak Mode Condition : 30 minutes Measured after exposure in the room condition for 24hrs
1-2-2	Biased Humidity Resistance		Refer to MIL-STD-202 Method 103 Temperature: 85±2℃ Relative Humidity:85% / Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-3	High Temperature Exposure (Storage)		Refer to MIL-STD-202 Method 108 Temperature: 125±3℃ Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-4	Operational Life		Refer to MIL-STD-202 Method 108 Temperature: 125±3℃ Applied Current : Rated Current Time: 1000hrs Measured after exposure in the room condition for 24hrs

Reflow Soldering Profile



Reflow profile

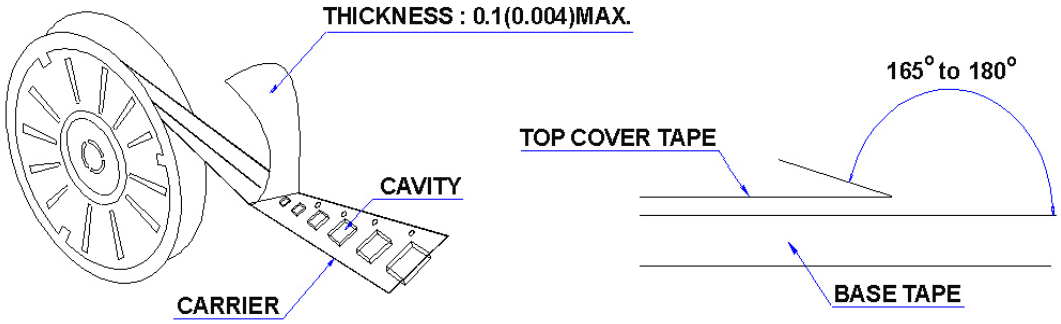
Lead-Free(LF)標準溫度分析範圍 **Refer to J-STD-020C**

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℃	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	–

10 Packaging:

10.1 Packaging -Cover Tape

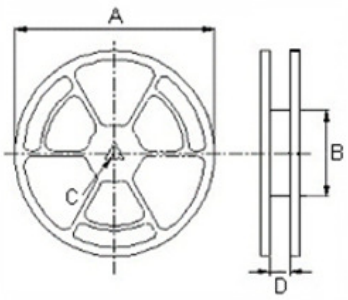
The force for tearing off cover tape is 10 to 130 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
131380	500

10.3 Reel Dimensions

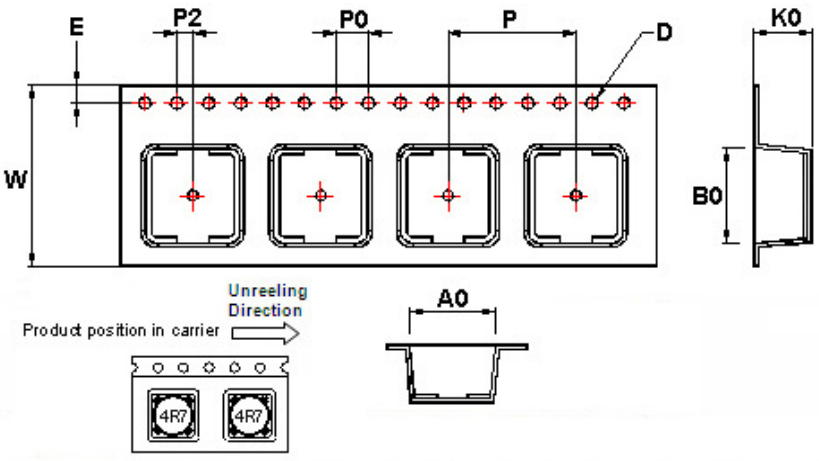


Dimensions in mm

TYPE	A	B	C	D
131380	330	100	13	24.4

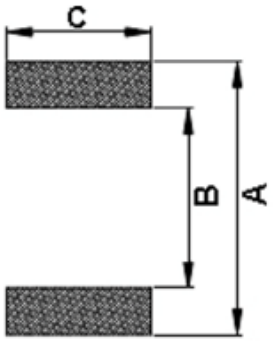
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A0	B0	K0	D	E	W	P	P0	P2
131380	12.6	12.6	8.7	1.55	1.75	24	16	4	2

11 Recommended Land Pattern:



Dimensions in mm

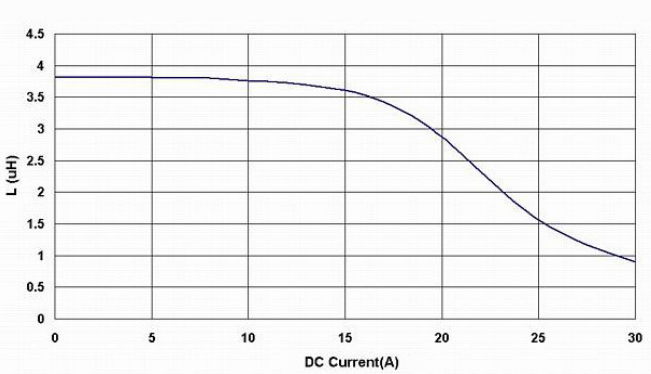
TYPE	A	B	C
131380	13	7	5.4

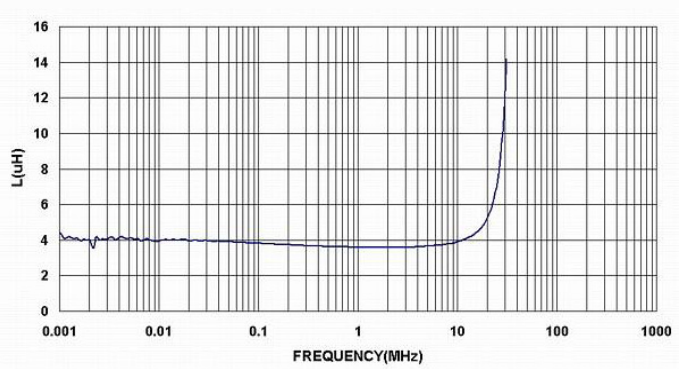
12 Note:

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. Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)
5. The moisture sensitivity level (MSL) of products is classified as level 1.

13 Graph:

APSC001313803R5□00





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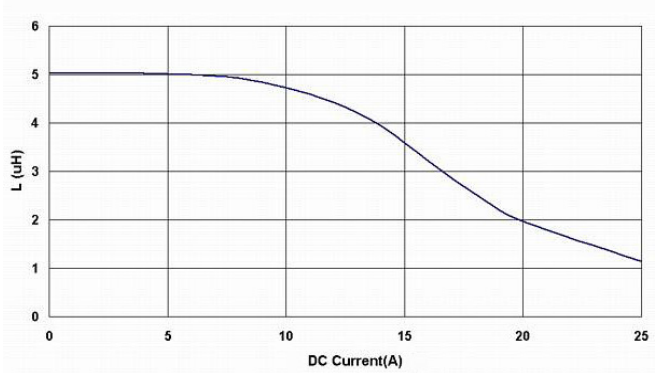

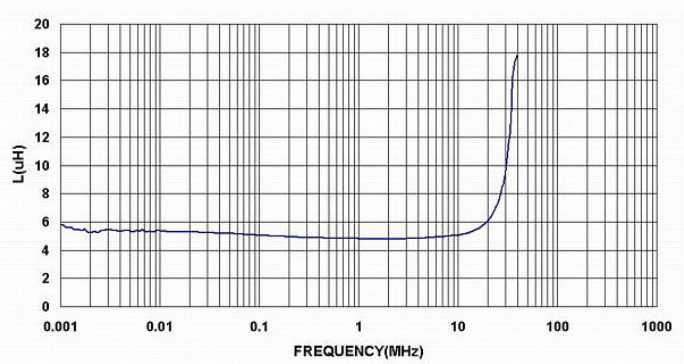

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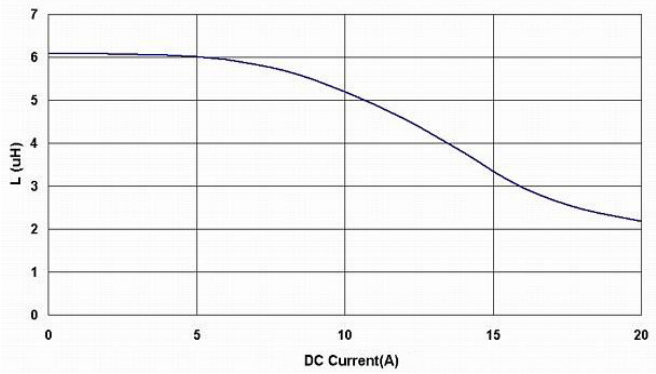

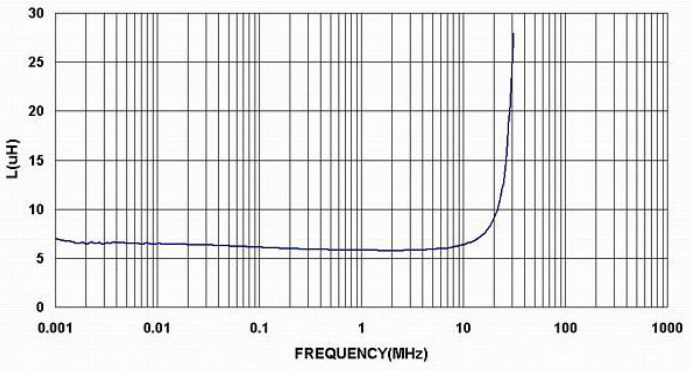

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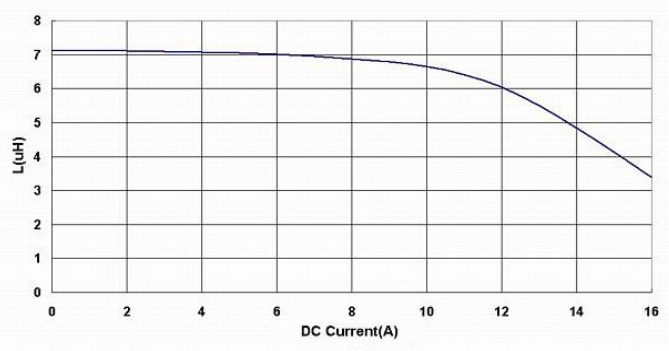
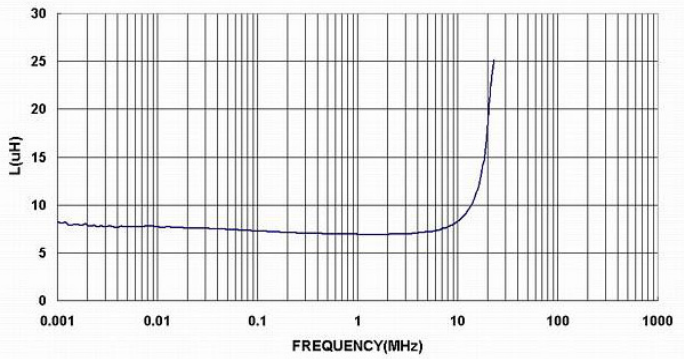
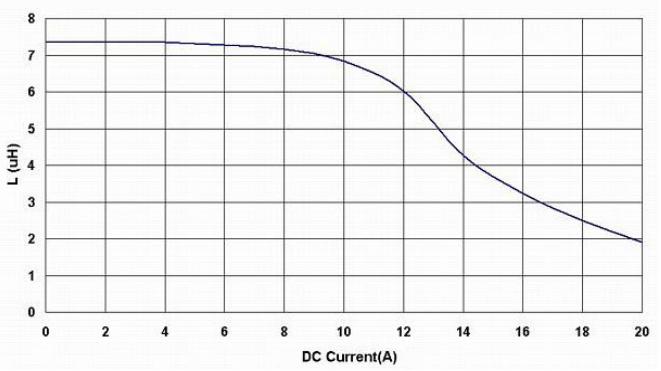
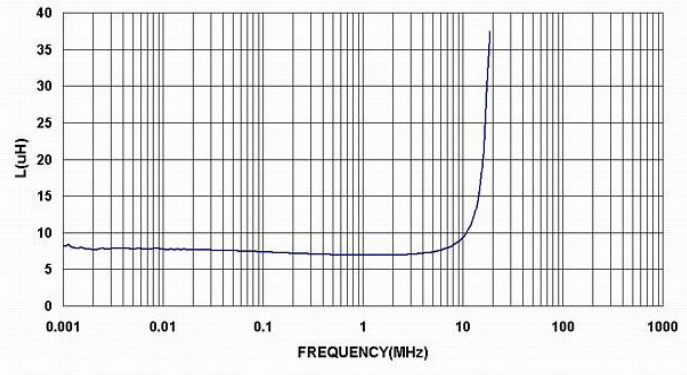




13 Graph:

APSC001313807R6□00





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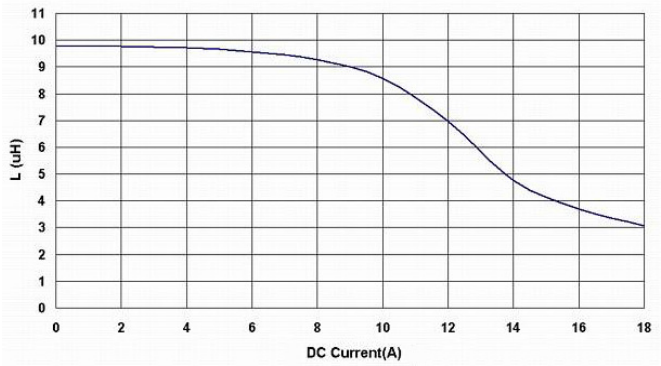

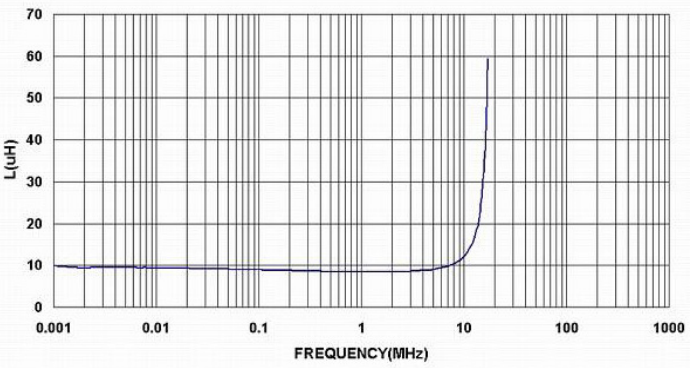

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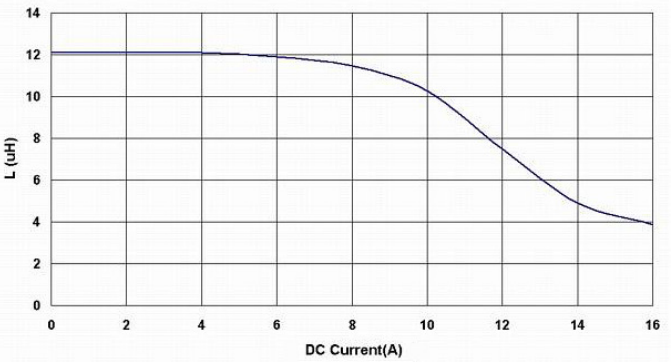

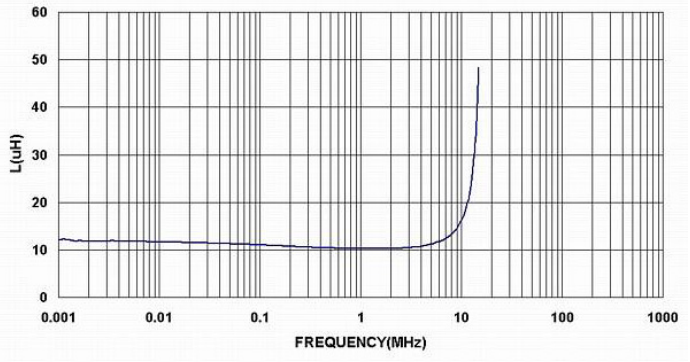

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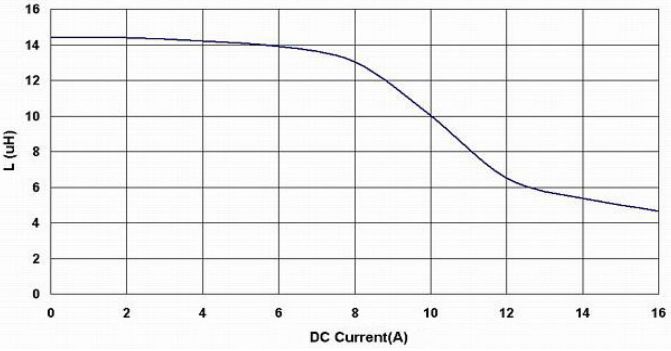
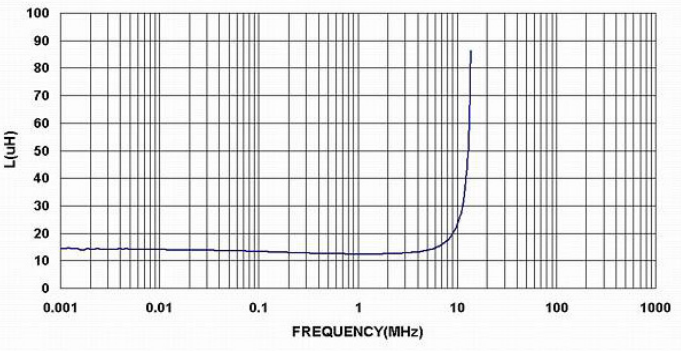


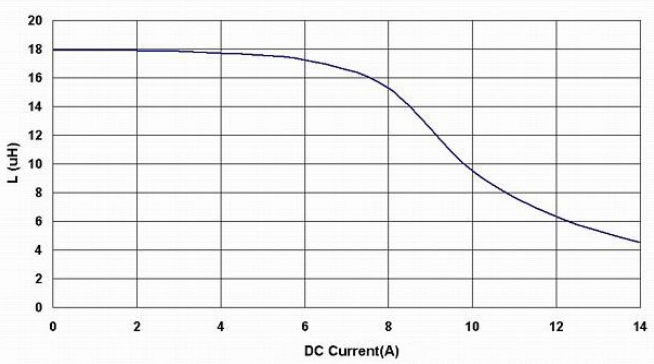


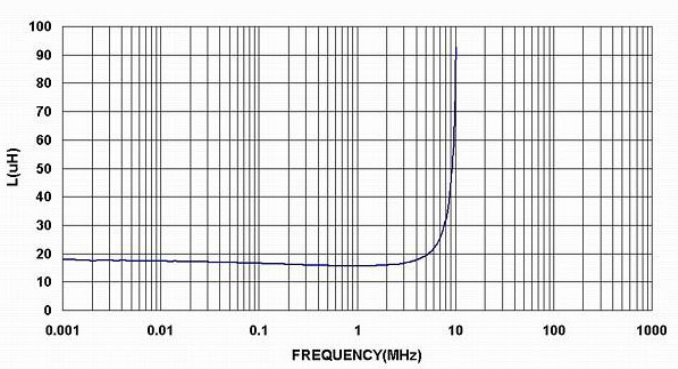
APSC00131380 Series Specification

AEC-Q200

13 Graph:

APSC00131380180□00





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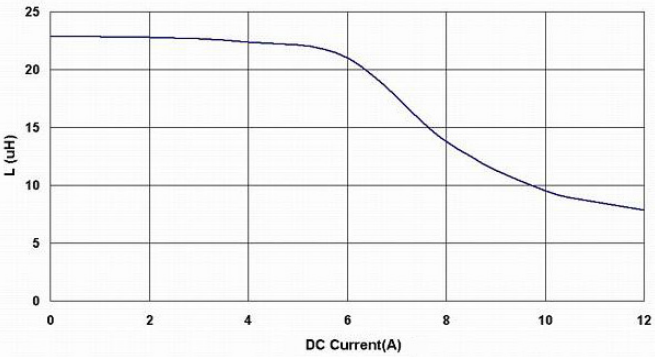

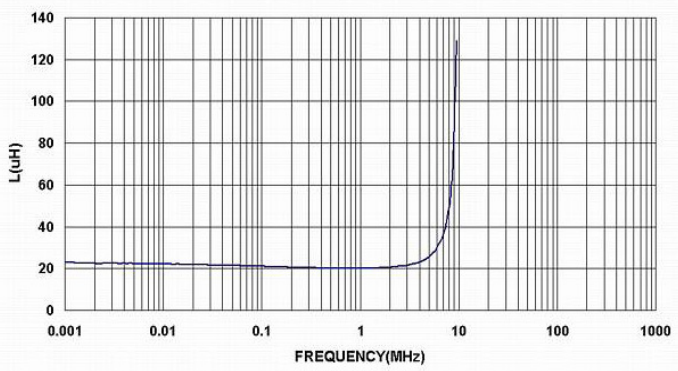

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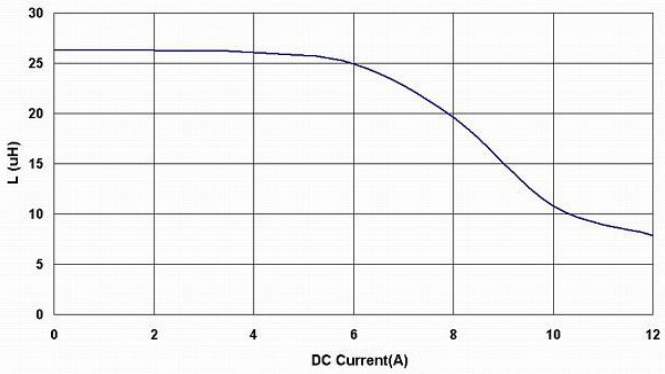

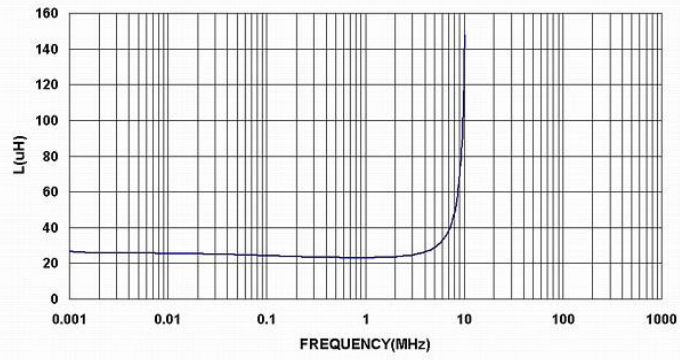

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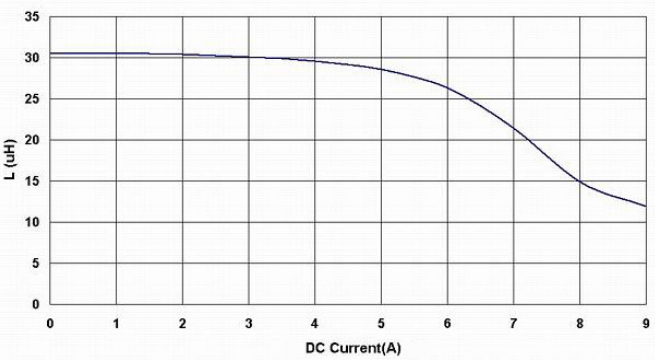
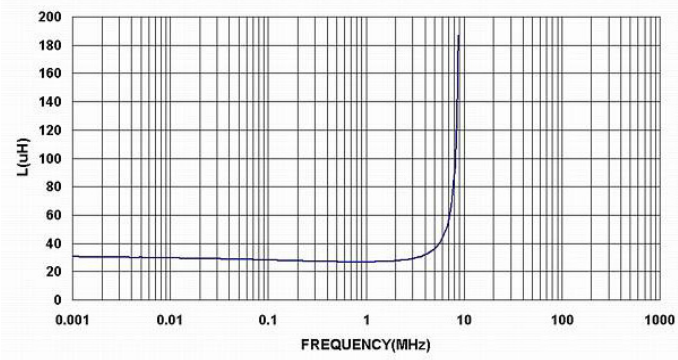


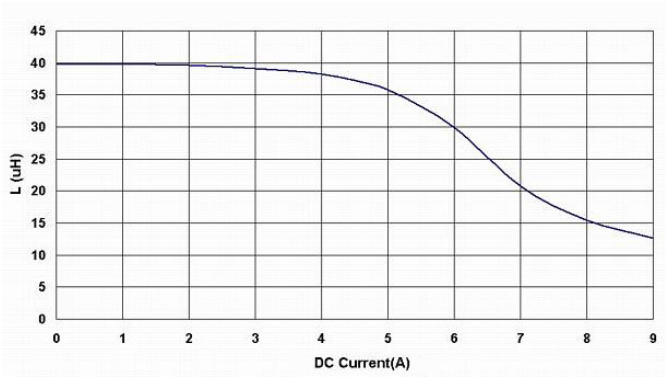


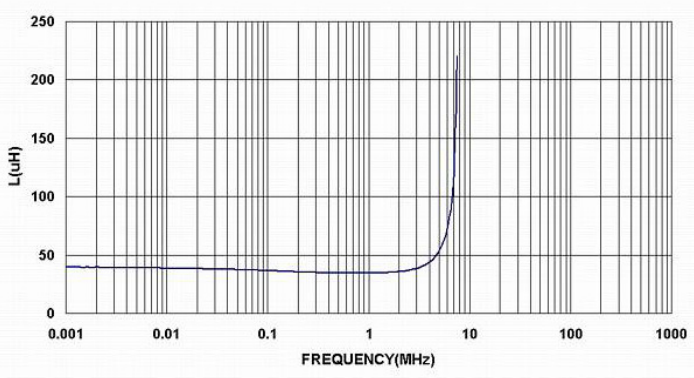
APSC00131380 Series Specification

AEC-Q200

13 Graph:

APSC00131380390□00





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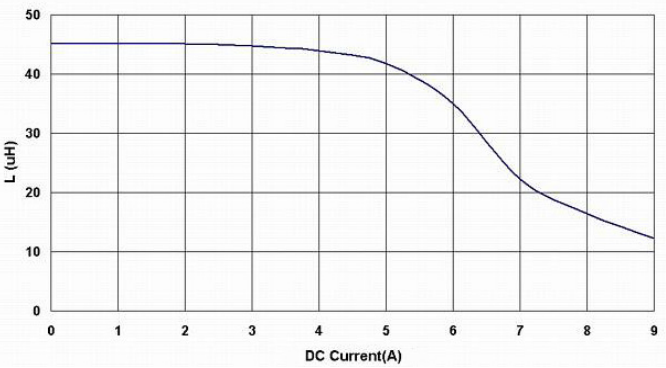

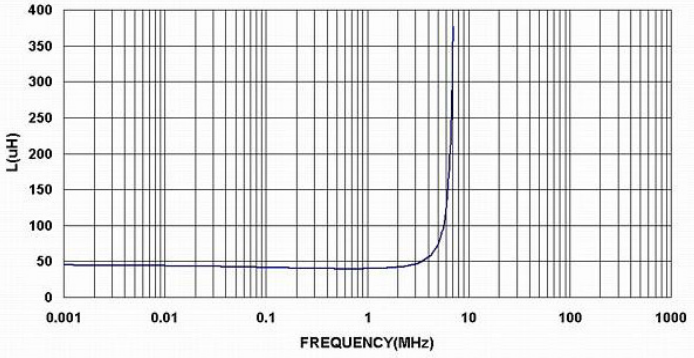

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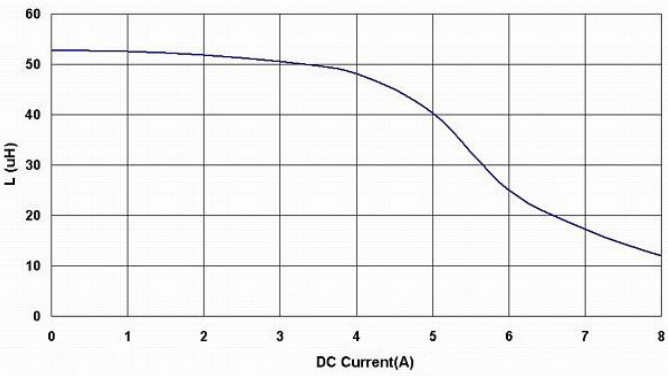

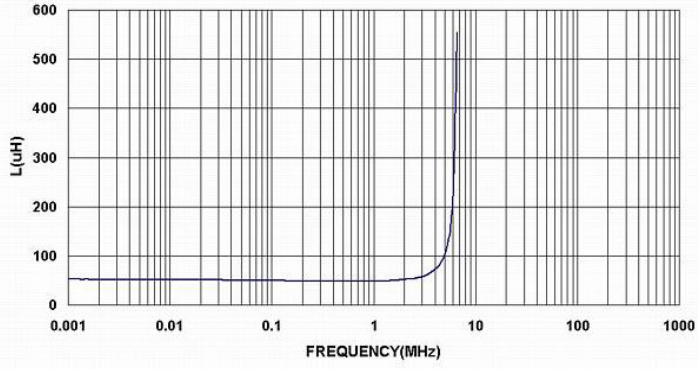

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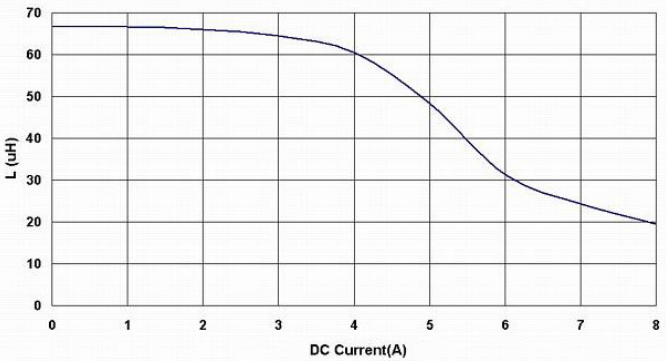

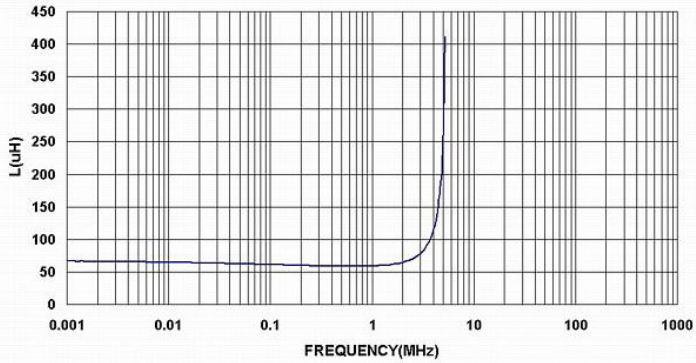

13 Graph:

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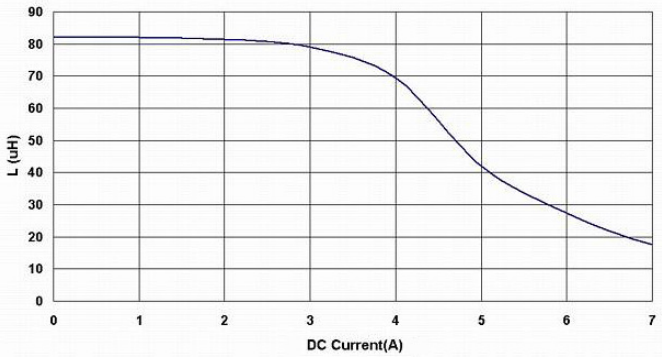

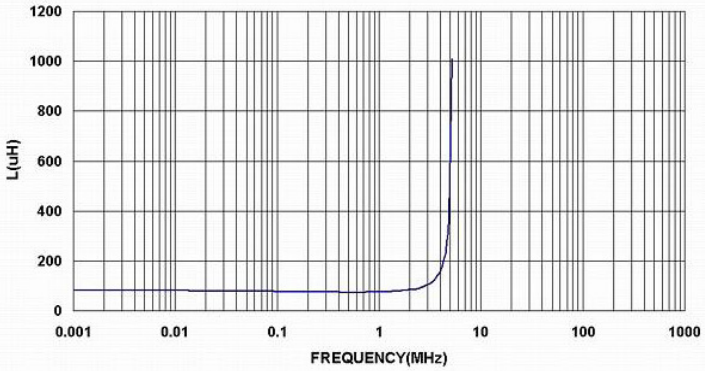

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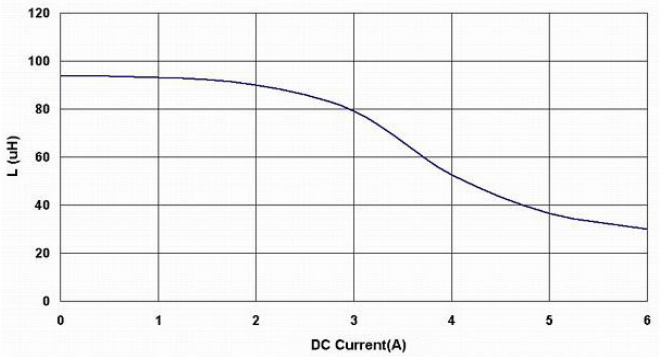

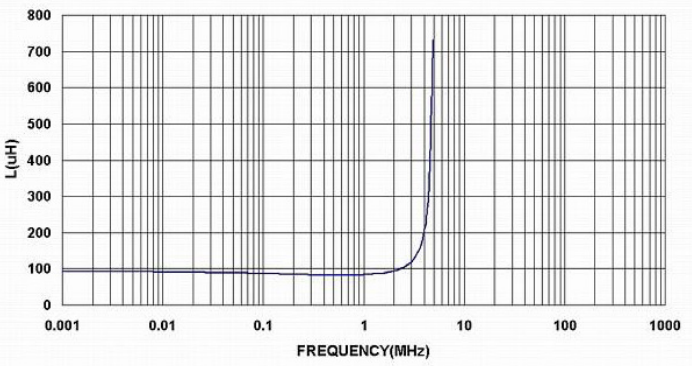

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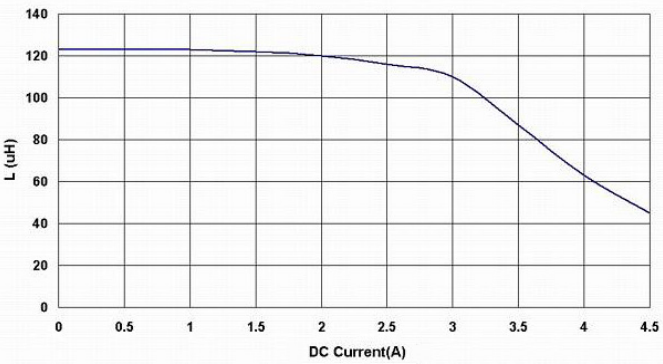

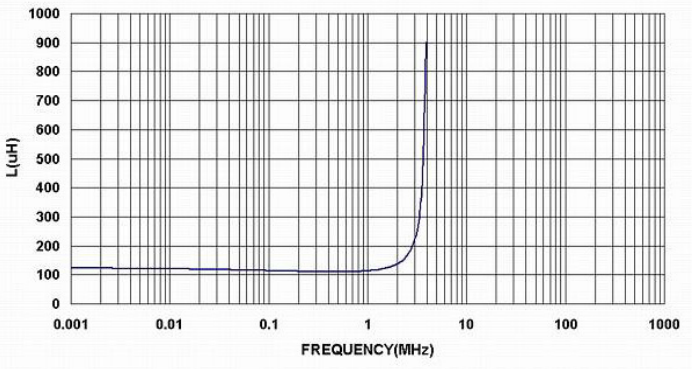

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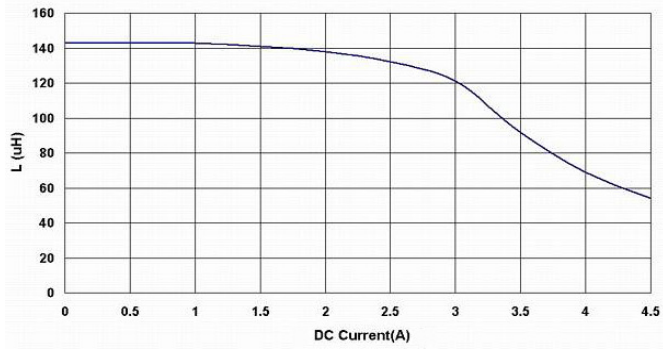

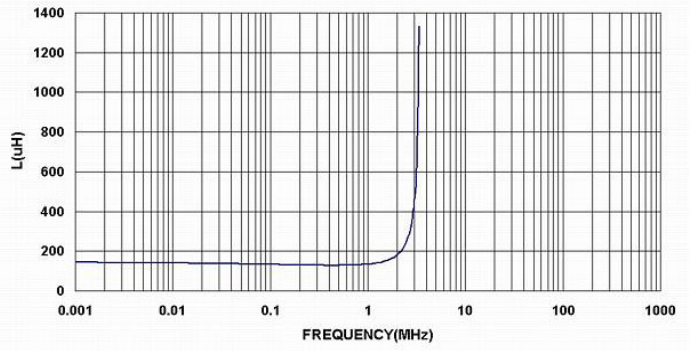

13 Graph:

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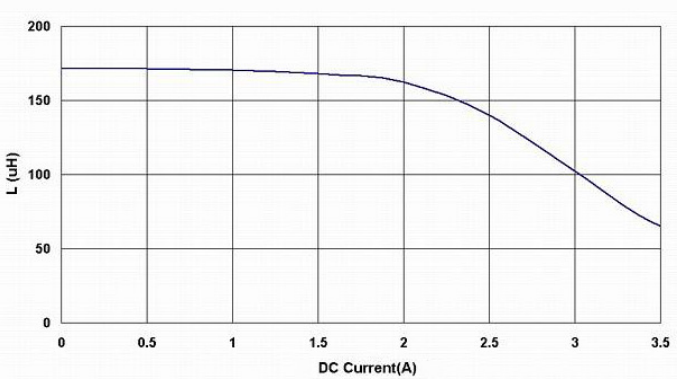

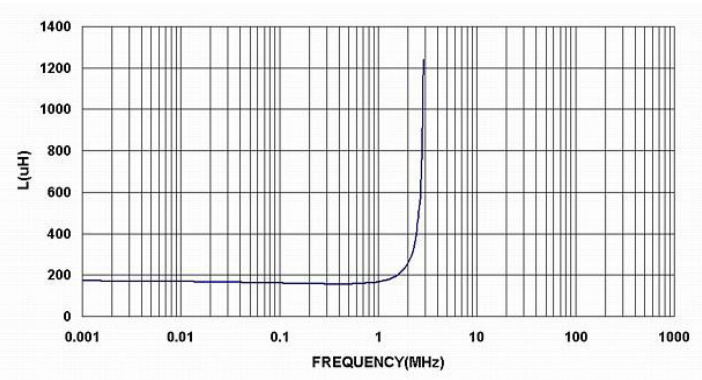

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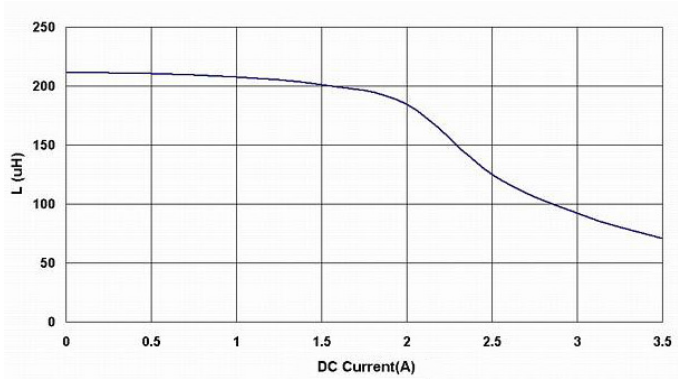

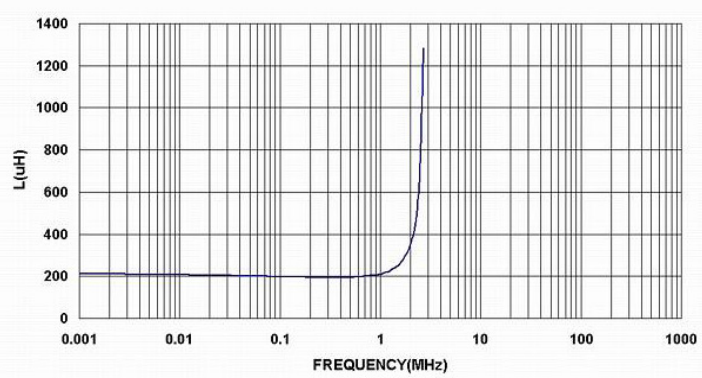

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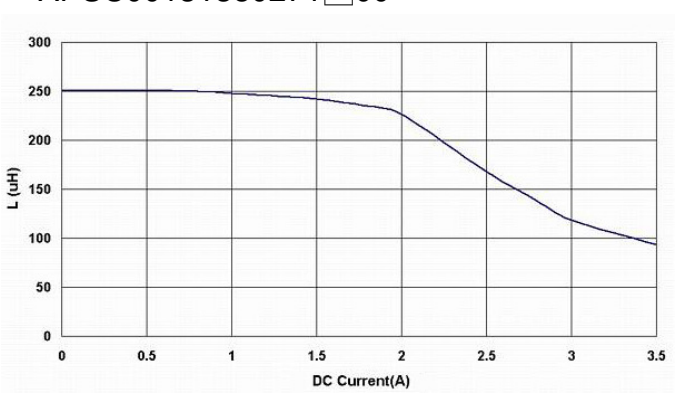

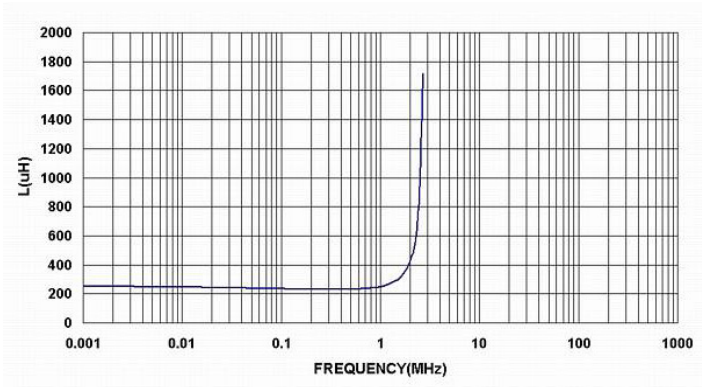

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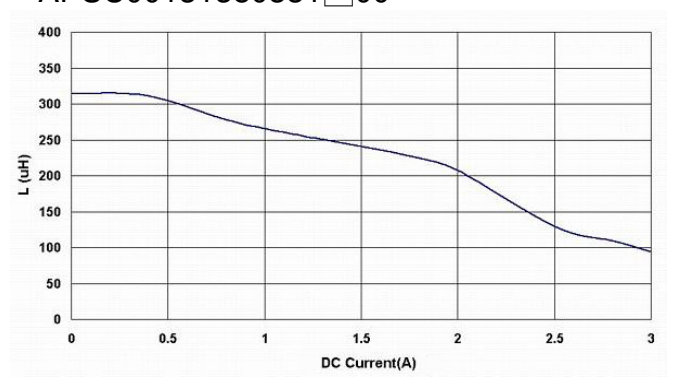

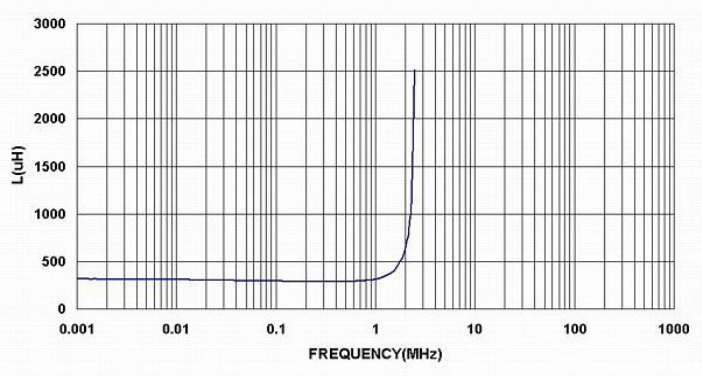

APSC00131380 Series Specification

AEC-Q200

13 Graph:

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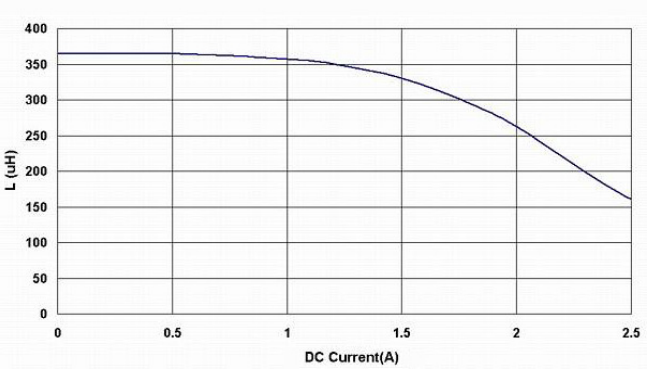

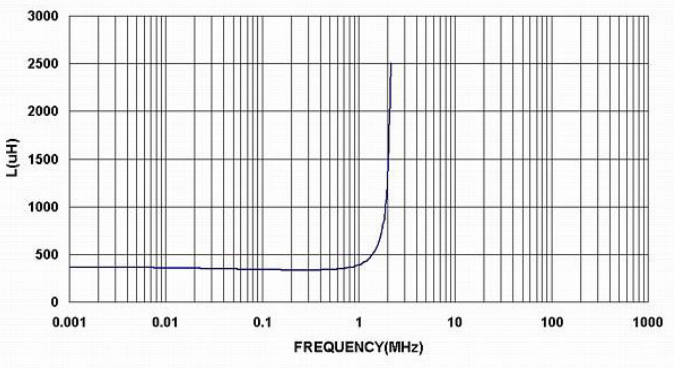

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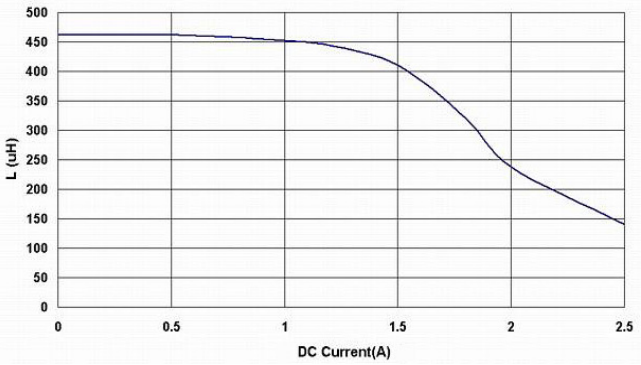

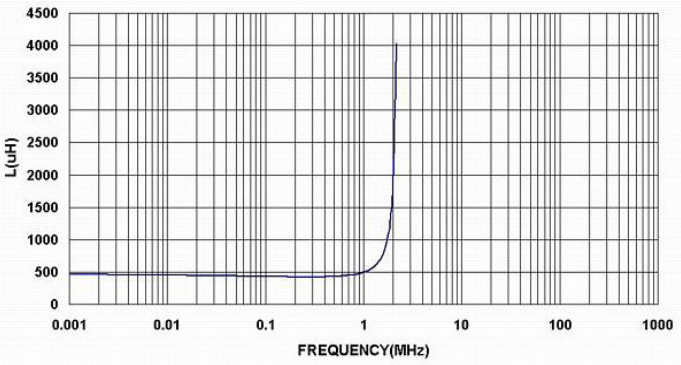

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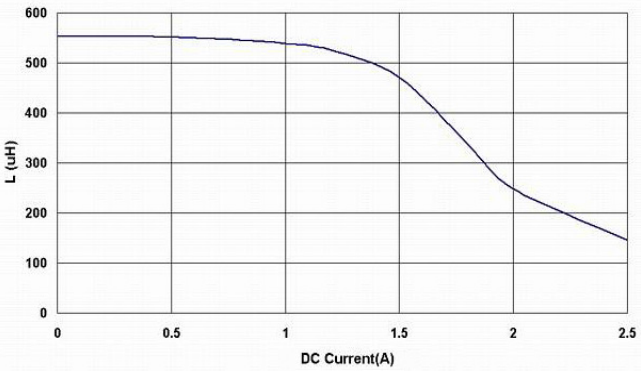

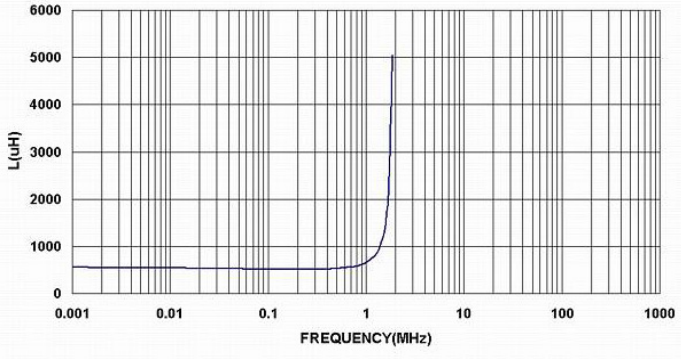

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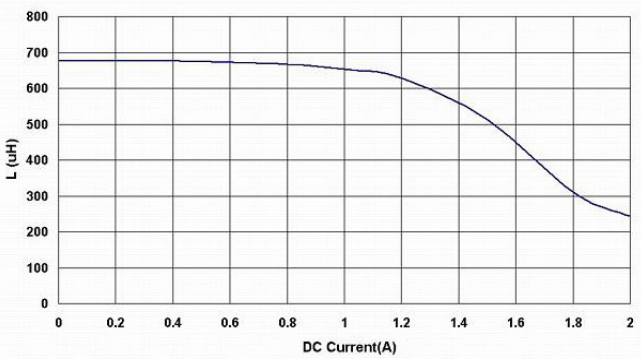

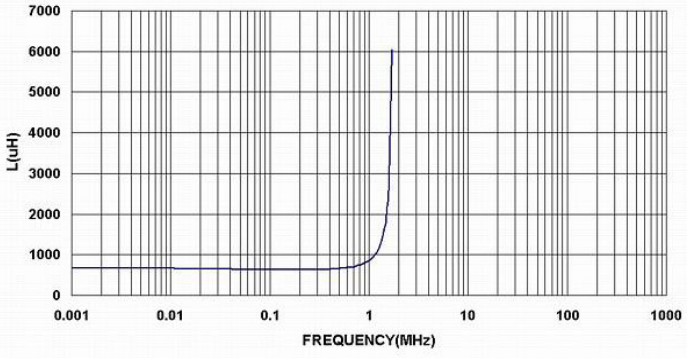

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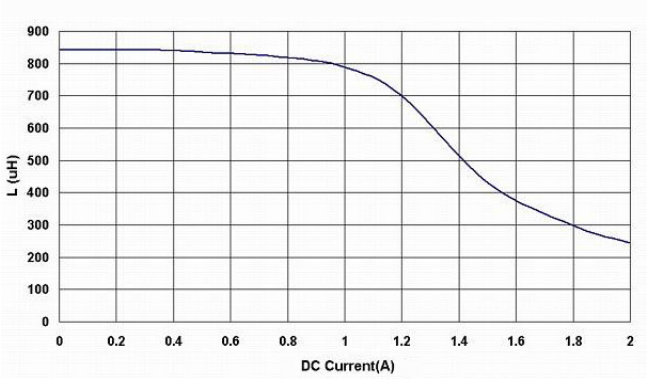

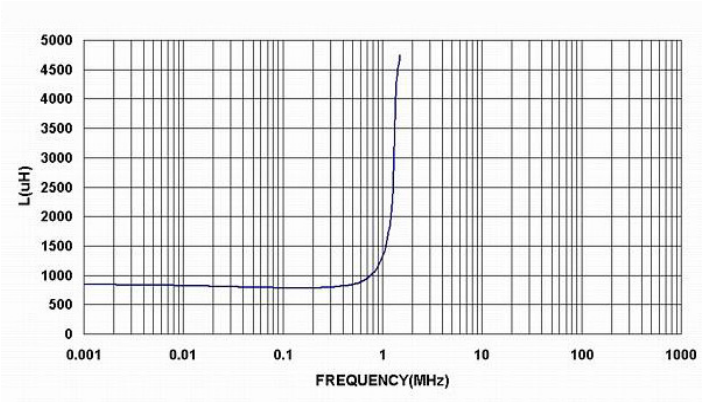

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