chanhvinh.com

RF Inductor
Automotive Grade
ASCH Series

Overview

RF inductors are designed to operate at high frequencies, typically in the MHz to GHz range. Unlike power inductors, RF inductors are optimized for signal processing in radio frequency (RF) circuits. They play a vital role in tuning, filtering and impedance matching in communication and signal transmission systems.

Benefits

1. Automotive grade available
2. High frequency performance, for efficient operation at radio frequencies with minimal loss.
3. It can reduce noise and distortion and maintain the integrity of radio frequency signals.
4. Space-saving, suitable for constrained designs in portable devices and IoT applications.
5. Can be customized with specific requirements such as frequency range, impedance and size.

Applications

1. Automotive for infotainment systems, GPS, and radar for ADAS
2. Communication Systems: Mobile phones, Wi-Fi routers, and 5G equipment.
3. Antenna Matching Networks
4. IoT and Smart Devices
5. Medical Devices
6. Consumer Electronics

Product Information

Series	Size Code (JIS/EIA)	Inductance (nH)
ASCH	1005/0402 1608/0603	1 ~ 390



chanhvinh.com

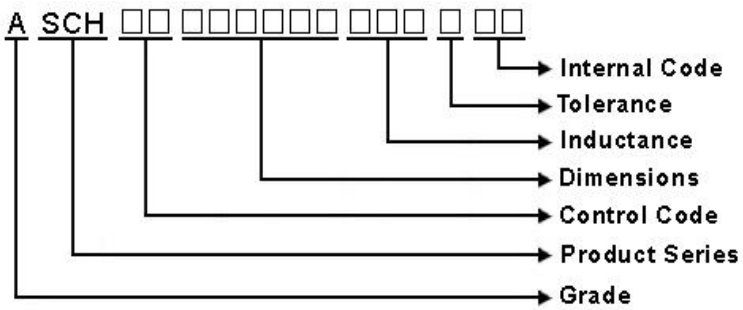
ASCH00100505 Series Specification

AEC-Q200

1 Scope:

This specification applies to Multilayer Chip Inductors for Automotive Electronics based on AEC-Q200 except for Power train and Safety.

2 Part Numbering:

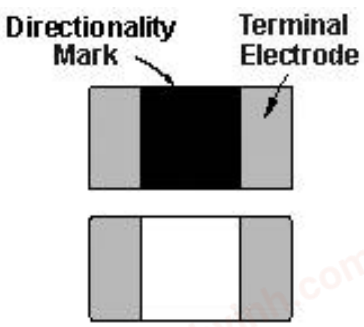


3 Rating:

Operating Temperature: - 55℃ ~ 125℃

Storage Temperature: - 55℃ ~ 125℃(after PCB)
- 5℃~40℃,Humidity 40%~70%(before PCB)

4 Marking:



5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35℃)	20±2℃
Humidity	Ordinary Humidity(25 to 85% RH)	60 to 70 % RH

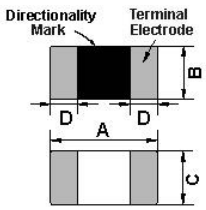
chanhvinh.com

YAGEO GROUP PULSE

ASCH00100505 Series Specification

AEC-Q200

6 Configuration and Dimensions:



Dimensions in mm

TYPE	100505
A	1.00±0.10
B	0.50±0.10
C	0.50±0.10
D	0.25±0.10

Net Weight (grms)

Size Code	Net Weight (grms)
100505	0.00081

7 Electrical Characteristics:

Part No.	Inductance (nH)	L,Q Test Freq.	Q Min.	SRF (MHz)Typ.	RDC (Ω)Max.	Rated Current (mA)Max.	Tolerance
ASCH001005051N0□CP	1	100 MHz,200 mV	8	10000	0.07	400	S
ASCH001005051N1□CP	1.1	100 MHz,200 mV	8	10000	0.1	300	S
ASCH001005051N2□CP	1.2	100 MHz,200 mV	8	10000	0.09	400	S
ASCH001005051N3□CP	1.3	100 MHz,200 mV	8	9000	0.1	300	S
ASCH001005051N5□CP	1.5	100 MHz,200 mV	8	9000	0.1	400	S
ASCH001005051N6□CP	1.6	100 MHz,200 mV	8	8700	0.1	400	S
ASCH001005051N8□CP	1.8	100 MHz,200 mV	8	8700	0.1	400	S
ASCH001005052N0□CP	2	100 MHz,200 mV	8	8100	0.1	400	S
ASCH001005052N2□CP	2.2	100 MHz,200 mV	8	8100	0.12	400	S
ASCH001005052N4□CP	2.4	100 MHz,200 mV	8	7700	0.15	400	S
ASCH001005052N7□CP	2.7	100 MHz,200 mV	8	7700	0.15	400	S
ASCH001005053N0□CP	3	100 MHz,200 mV	8	6300	0.15	400	S
ASCH001005053N3□CP	3.3	100 MHz,200 mV	8	6300	0.15	400	S
ASCH001005053N6□CP	3.6	100 MHz,200 mV	8	6100	0.15	400	S
ASCH001005053N9□CP	3.9	100 MHz,200 mV	8	6100	0.18	400	S
ASCH001005054N3□CP	4.3	100 MHz,200 mV	8	6000	0.18	400	S
ASCH001005054N7□CP	4.7	100 MHz,200 mV	8	6000	0.18	400	S
ASCH001005055N1□CP	5.1	100 MHz,200 mV	8	5300	0.2	400	S
ASCH001005055N6□CP	5.6	100 MHz,200 mV	8	5100	0.2	400	S
ASCH001005056N2□CP	6.2	100 MHz,200 mV	8	4500	0.22	400	S
ASCH001005056N8□CP	6.8	100 MHz,200 mV	8	4550	0.24	400	J
ASCH001005057N5□CP	7.5	100 MHz,200 mV	8	4200	0.24	300	J
ASCH001005058N2□CP	8.2	100 MHz,200 mV	8	4100	0.24	300	J
ASCH001005059N1□CP	9.1	100 MHz,200 mV	8	3900	0.26	300	J
ASCH0010050510N□CP	10	100 MHz,200 mV	8	3900	0.26	300	J

NOTE: □-tolerance J=±5% / K=±10% / C=±0.2nH / S=±0.3nH

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

2.Rate Current : Applied the current to coils, the temperature rise shall not be more than 30℃

3.Residual impedance of short chip : 0nH

chanhvinh.com

YAGEO GROUP PULSE

ASCH00100505 Series Specification

AEC-Q200

Part No.	Inductance (nH)	L,Q Test Freq.	Q Min.	SRF (MHz)Typ.	RDC (Ω)Max.	Rated Current (mA)Max.	Tolerance
ASCH0010050512N□CP	12	100 MHz,200 mV	8	3000	0.28	300	J
ASCH0010050515N□CP	15	100 MHz,200 mV	8	2500	0.32	300	J
ASCH0010050518N□CP	18	100 MHz,200 mV	8	2200	0.36	300	J
ASCH0010050522N□CP	22	100 MHz,200 mV	8	1900	0.42	300	J
ASCH0010050527N□CP	27	100 MHz,200 mV	8	1700	0.46	300	J
ASCH0010050533N□CP	33	100 MHz,200 mV	8	1600	0.58	200	J
ASCH0010050539N□CP	39	100 MHz,200 mV	8	1200	0.65	200	J
ASCH0010050547N□CP	47	100 MHz,200 mV	8	1000	0.72	200	J
ASCH0010050556N□CP	56	100 MHz,200 mV	8	800	0.82	200	J
ASCH0010050568N□CP	68	100 MHz,200 mV	8	800	0.92	180	J
ASCH0010050582N□CP	82	100 MHz,200 mV	8	700	1.2	150	J
ASCH00100505R10□CP	100	100 MHz,200 mV	8	900	2	100	J
ASCH00100505R12□CP	120	100 MHz,200 mV	8	800	2.2	100	J
ASCH00100505R15□CP	150	100 MHz,200 mV	8	700	3.5	100	J
ASCH00100505R18□CP	180	100 MHz,200 mV	8	600	3.8	100	J
ASCH00100505R22□CP	220	100 MHz,200 mV	8	500	4.2	100	J
ASCH00100505R27□CP	270	100 MHz,200 mV	8	500	4.8	100	J

chanhvinh.com

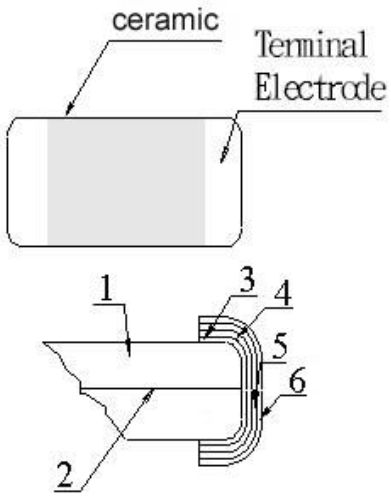
YAGEO PULSE GROUP

ASCH00100505 Series Specification

AEC-Q200

8 ASCH00100505 Series

8.1 Construction:



8.2 Material List:

No	Part	Material
1	**Main Substance**	Al2O3-B2O3-SiO2
2	**Silver electrode**	**Ag**
3	**Silver electrode**	**Ag**
4	**Cu plating**	**Cu**
5	**Ni plating**	**Ni**
6	**Sn plating**	**Sn**

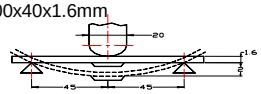
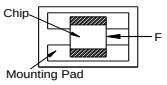
chanhvinh.com

YAGEO PULSE

ASCH00100505 Series Specification

AEC-Q200

9 Reliability Of Ceramic Multilayer Chip Inductor For High Freq.

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 Ceramic.	Refer to AEC-Q200-005 Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60 sec 
1-1-2	Resistance to Soldering Heat	Appearance: No damage Inductance change shall be within ±10%. Q change shall be within±30%	Refer to MIL-STD-202 Method 210 Pre-heating: 150-200℃, 60-100 sec Above 217℃ , 60-150 secs Peak Temperature: 260±5℃ , 20-40 sec Cycles : 2 times
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	The chip must not damage the terminal electrode and the Ceramic.	Refer to AEC-Q200-006 Test device shall be soldered on the substrate Force 2N for 60±1 seconds for 0603 series Force 5N for 60±1 seconds for 1005 series Force 10N for 60±1 seconds for 1608 series Force 1.8Kg for 60±1 seconds for the other series. 
1-1-5	Vibration Test	Appearance: No damage Inductance change shall be within ±10%. Q change shall be within±30%	Refer to MIL-STD-202 Method 204 Vbration waveform: Sine waveform Vibration frequency: 10Hz~2000Hz Vibration acceleration: 5g 10Hz~20KHz and back to 10Hz should be down in 20 minutes Duration of test: 12 cycles each of 3 orientations, 20 minutes for each cycle, 12 hr total Vibration axes: X, Y & Z
1-1-6	Mechanical Shock Test	Appearance: No damage Inductance change shall be within ±10%. Q change shall be within±30%	Refer to MIL-STD-202 Method 213 Units are non-operating. Pulse shape : Half-sine waveform Impact acceletation : 100 g Pulse duration : 6 ms Number of shocks : 18 shocks (3 shocks for each face)
1-1-7	Physical Dimension	The chip must not damage the terminal electrode and the Ceramic.	Refer to JESD22 Method JB-100 Verify physical dimensions to the applicable device specification. Note : User(s) and Suppliers spec. Electrical Test not Required.
1-1-8	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.
1-1-9	ESD	Appearance: No damage Inductance change shall be within±10%	Refer to AEC-Q200-002 ESD Rank 1C < 2kV

chanhvinh.com

YAGEO PULSE

ASCH00100505 Series Specification

AEC-Q200

9 Reliability Of Ceramic Multilayer Chip Inductor For High Freq.

1-2.Environmental Performance

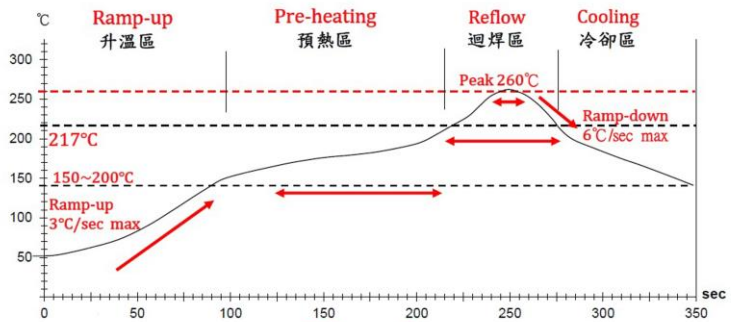
No	Item	Specification	Test Method
1-2-1	Temperature Cycle	Appearance: No damage Inductance change shall be within ±10%. Q change shall be within±30%	Refer to JESD Method JA-104 Total cycles: 1000 cycles 30 minutes exposure to -40℃ 30 minutes exposure to 125℃ 1 min. maximum transition between temperatures 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℃ / Relative Humidity: 0% Time: 1000hrs 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±3℃ Applied Current: Rated Current/ Time: 1000hrs Measured after exposure in the room condition for 24hrs

chanhvinh.com

YAGEO GROUP PULSE

ASCH00100505 Series Specification

AEC-Q200



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 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

chanhvinh.com

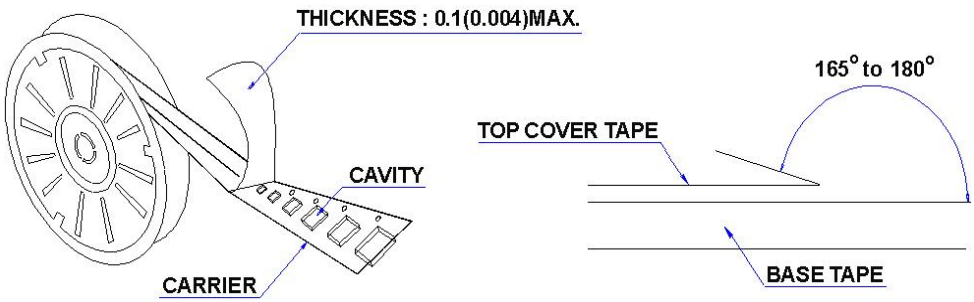
ASCH00100505 Series Specification

AEC-Q200

11 Packaging:

11.1 Packaging -Cover Tape

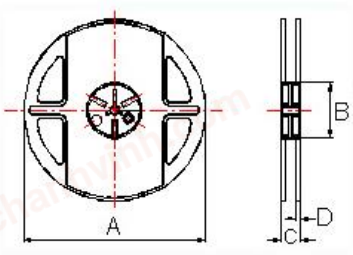
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



11.2 Packaging Quantity

TYPE	PCS/REEL
100505	10000

11.3 Reel Dimensions



Dimensions in mm

TYPE	A	B	C	D
100505	178	60	12	1.5

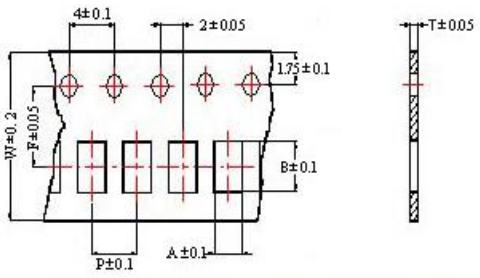
chanhvinh.com

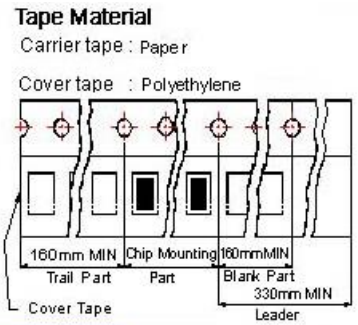
ASCH00100505 Series Specification

AEC-Q200

11 Packaging:

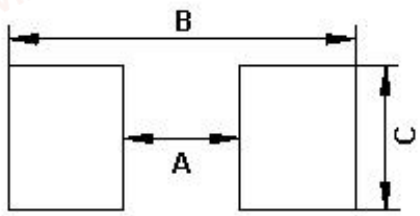
11.4 Tape Dimensions in mm





TYPE	A	B	T	W	P	F
100505	0.62	1.12	0.60	8	2	3.5

12 Recommended Land Pattern:



Dimensions in mm

TYPE	A	B	C
100505	0.4	1.2 ~ 1.4	0.5

13 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.

chanhvinh.com

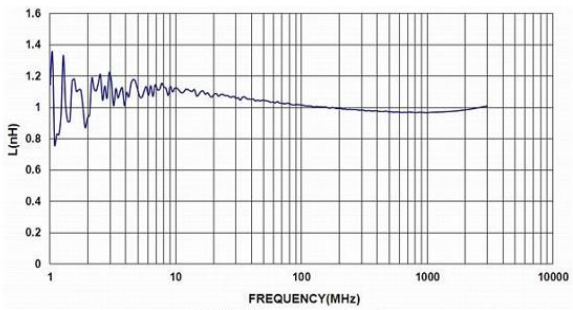
YAGEO PULSE GROUP

ASCH00100505 Series Specification

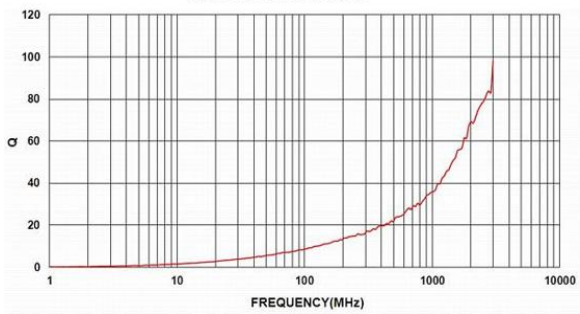
AEC-Q200

14 Graph:

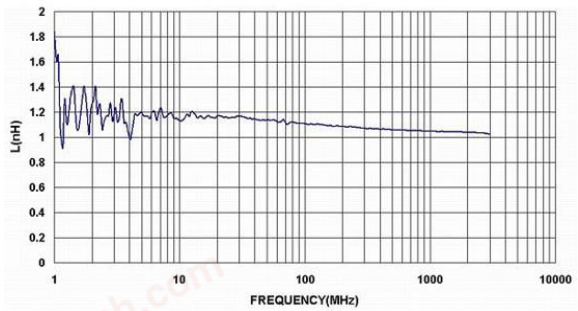
ASCH001005051N0SCP



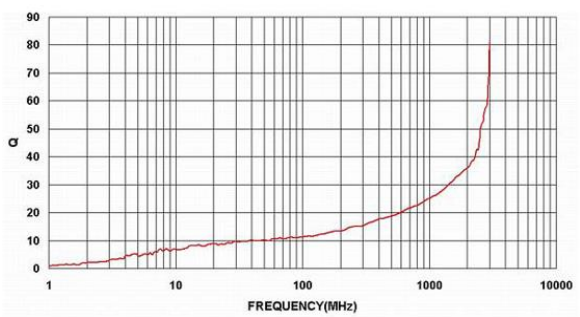
ASCH001005051N0SCP



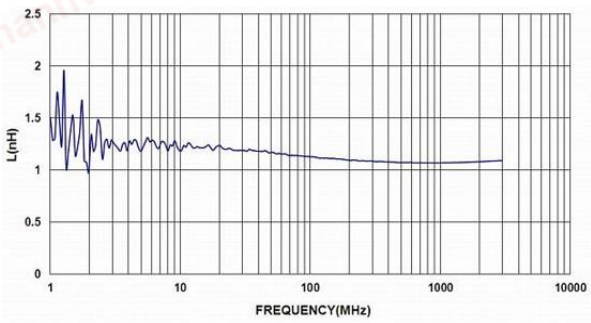
ASCH001005051N1SCP



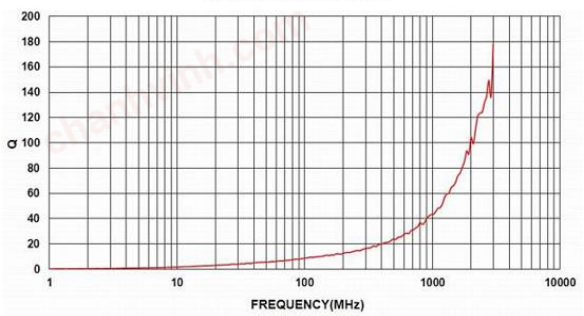
ASCH001005051N1SCP



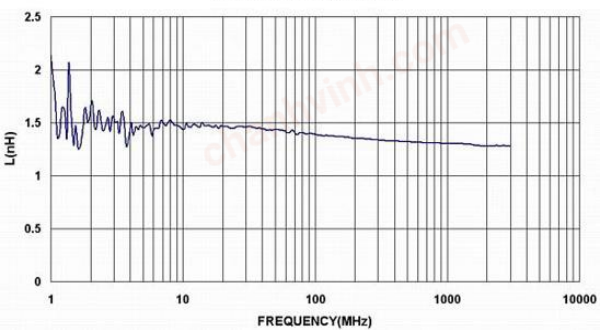
ASCH001005051N2SCP



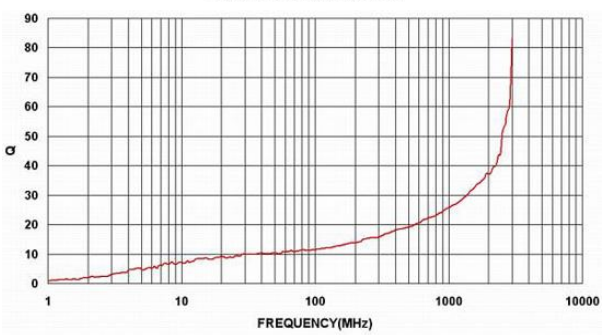
ASCH001005051N2SCP



ASCH001005051N3SCP



ASCH001005051N3SCP



chanhvinh.com

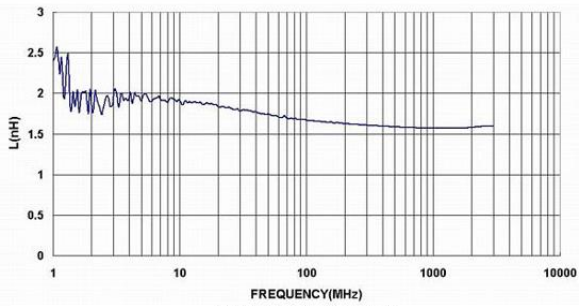
YAGEO PULSE GROUP

ASCH00100505 Series Specification

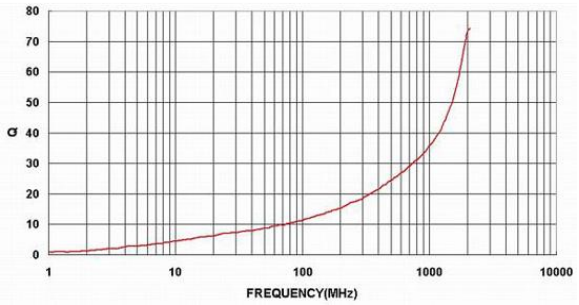
AEC-Q200

14 Graph:

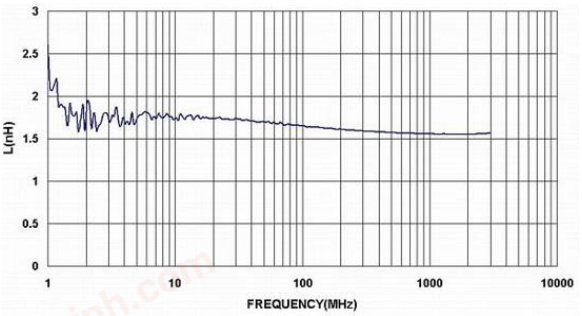
ASCH001005051N5SCP



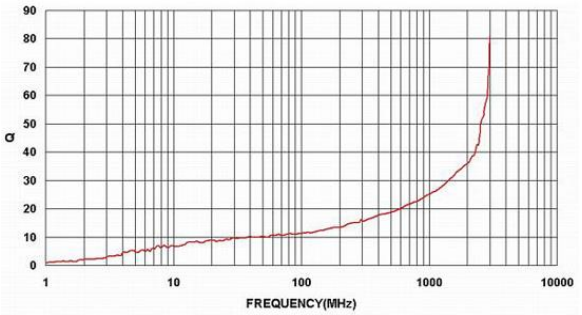
ASCH001005051N5SCP



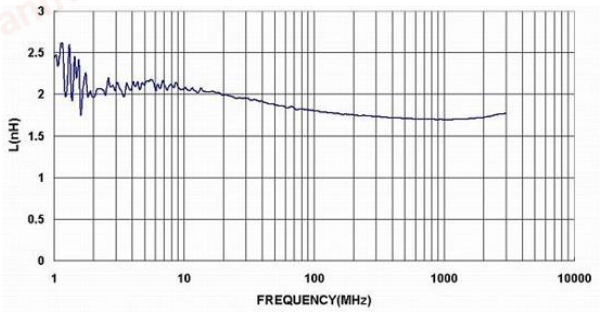
ASCH001005051N6SCP



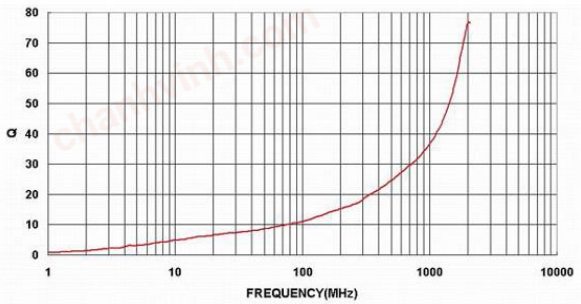
ASCH001005051N6SCP



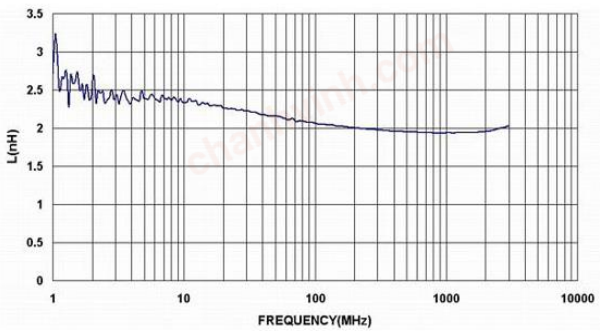
ASCH001005051N8SCP



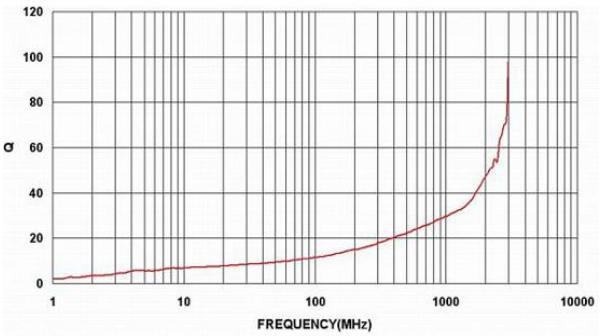
ASCH001005051N8SCP



ASCH001005052N0SCP



ASCH001005052N0SCP



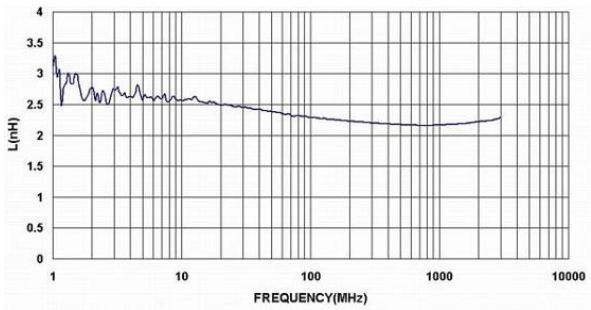
chanhvinh.com

ASCH00100505 Series Specification

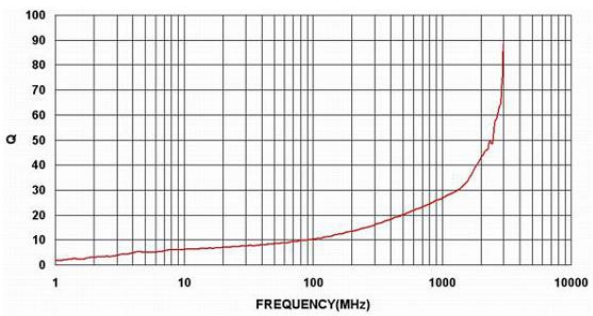
AEC-Q200

14 Graph:

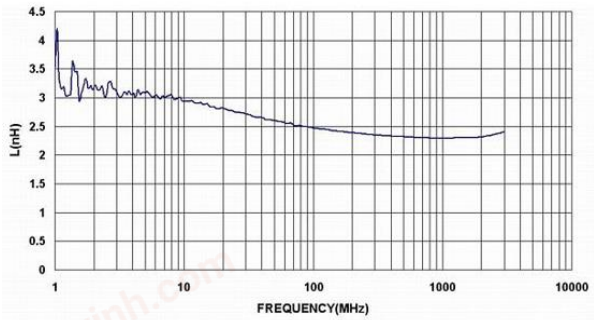
ASCH001005052N2SCP



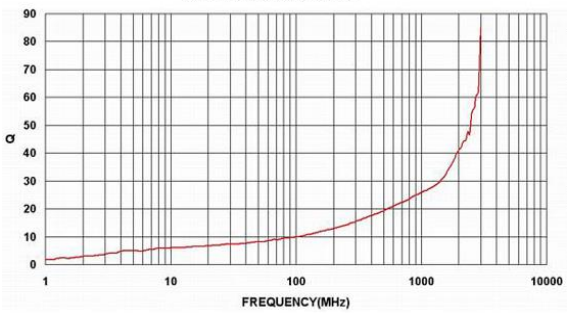
ASCH001005052N2SCP



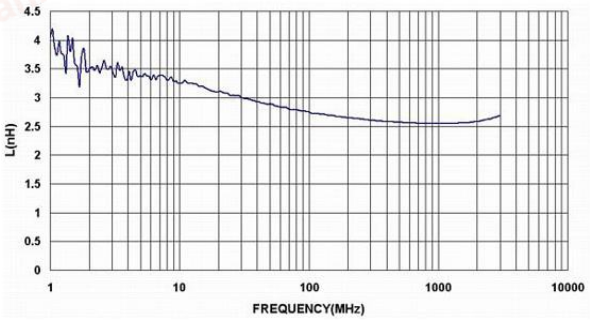
ASCH001005052N4SCP



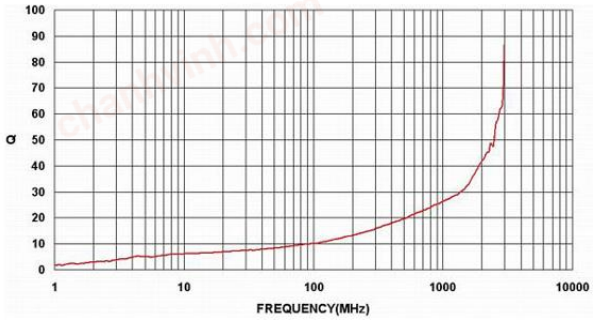
ASCH001005052N4SCP



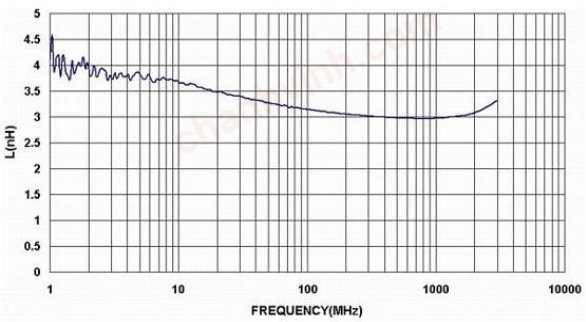
ASCH001005052N7SCP



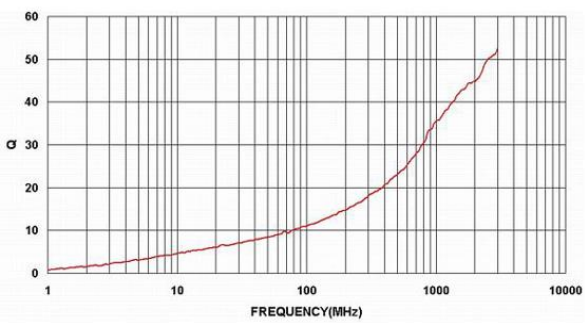
ASCH001005052N7SCP



ASCH001005053N0SCP



ASCH001005053N0SCP



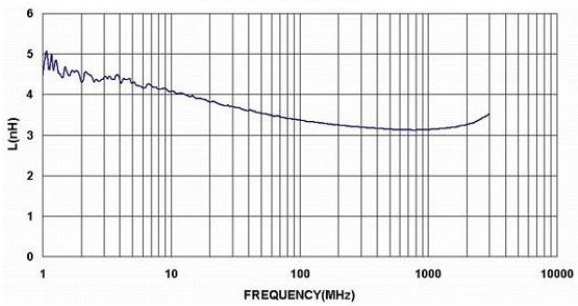
chanhvinh.com

ASCH00100505 Series Specification

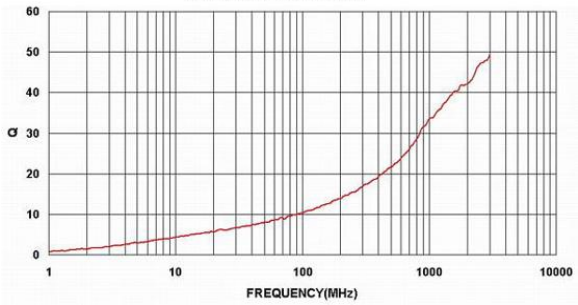
AEC-Q200

14 Graph:

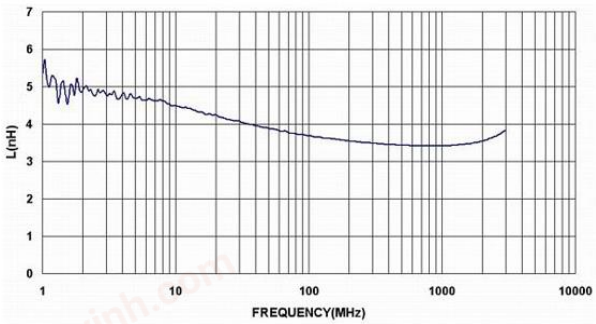
ASCH001005053N3SCP



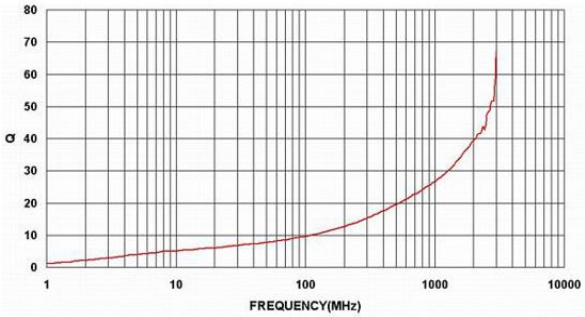
ASCH001005053N3SCP



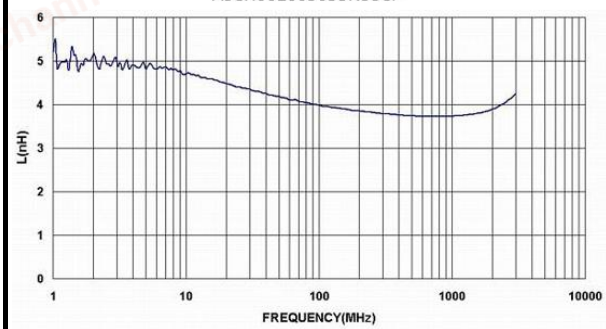
ASCH001005053N6SCP



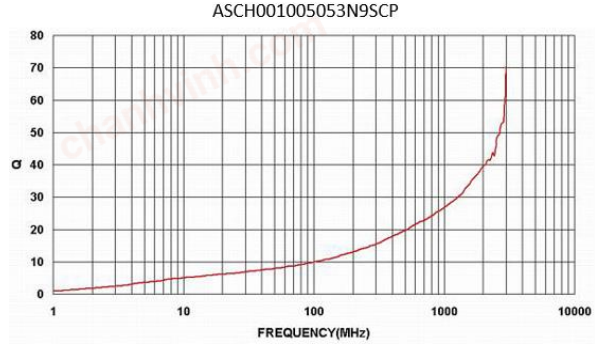
ASCH001005053N6SCP



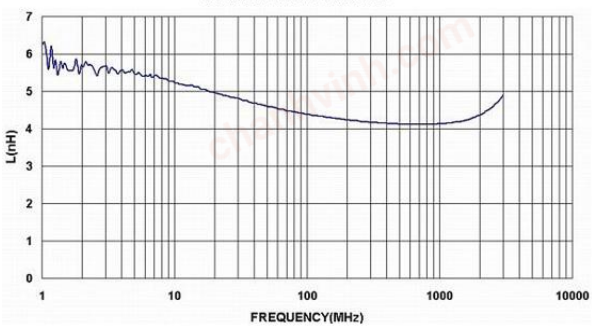
ASCH001005053N9SCP



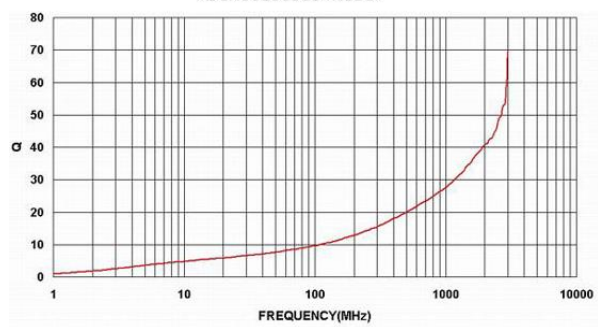
ASCH001005053N9SCP



ASCH001005054N3SCP



ASCH001005054N3SCP



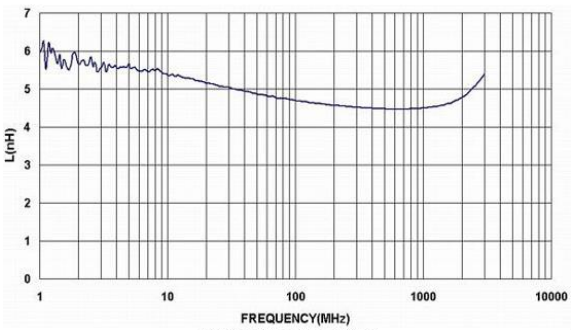
chanhvinh.com

ASCH00100505 Series Specification

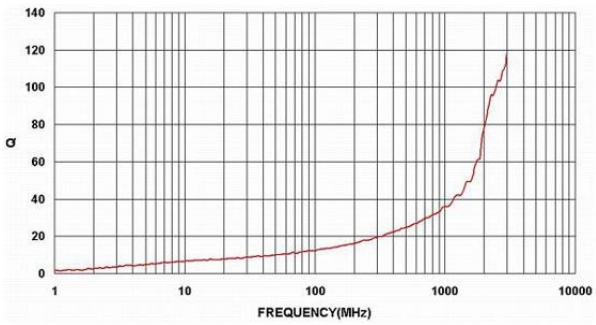
AEC-Q200

14 Graph:

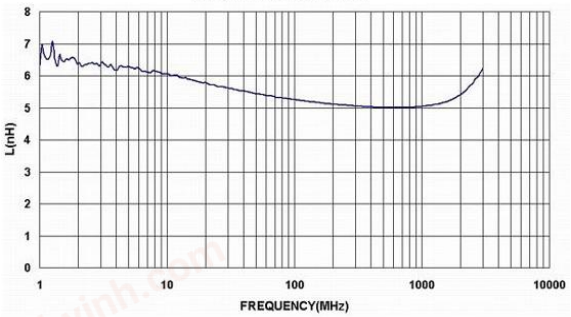
ASCH001005054N7SCP



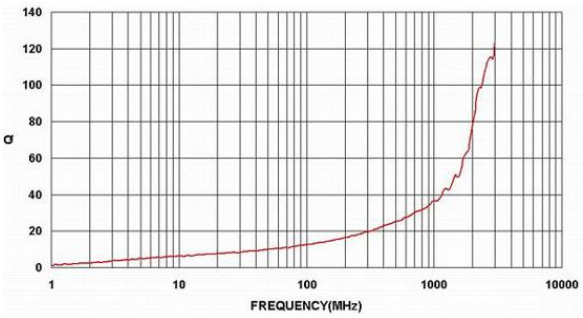
ASCH001005054N7SCP



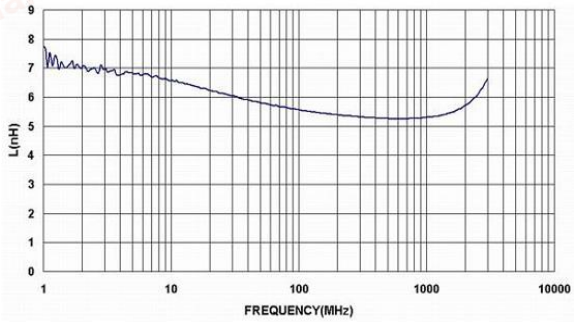
ASCH001005055N1SCP



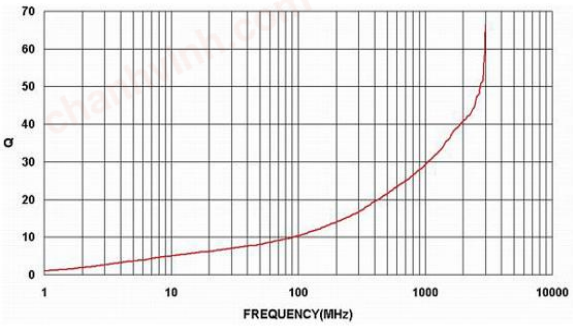
ASCH001005055N1SCP



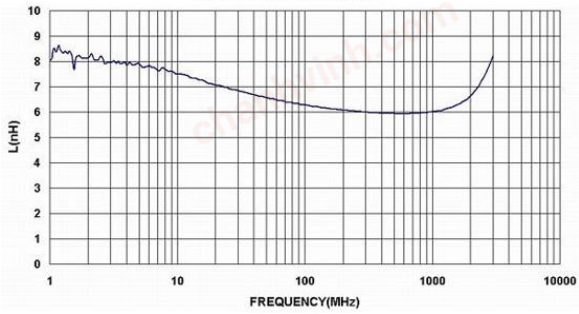
ASCH001005055N6SCP



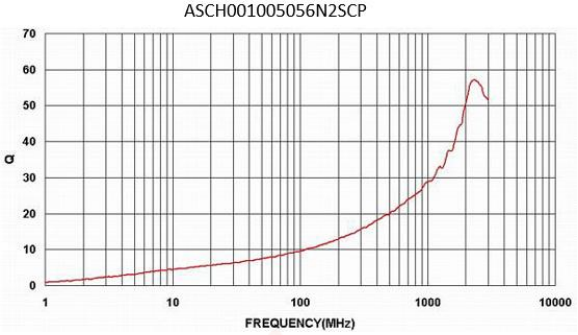
ASCH001005055N6SCP



ASCH001005056N2SCP



ASCH001005056N2SCP



chanhvinh.com

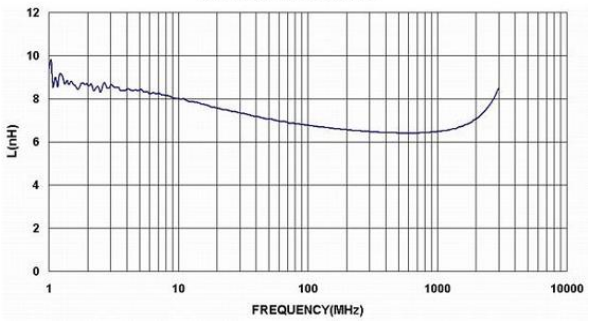
YAGEO PULSE GROUP

ASCH00100505 Series Specification

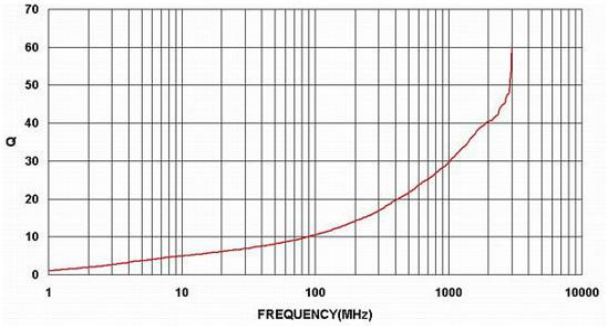
AEC-Q200

14 Graph:

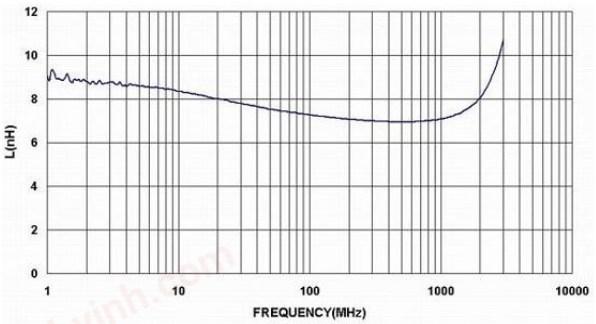
ASCH001005056N8JCP



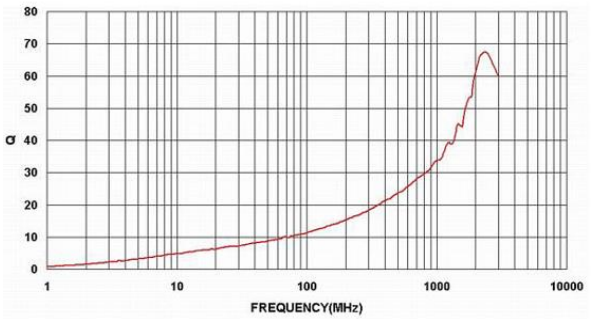
ASCH001005056N8JCP



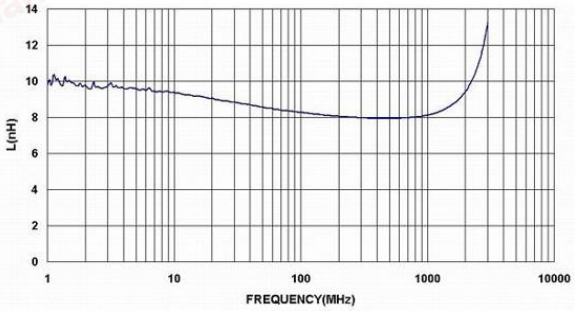
ASCH001005057N5JCP



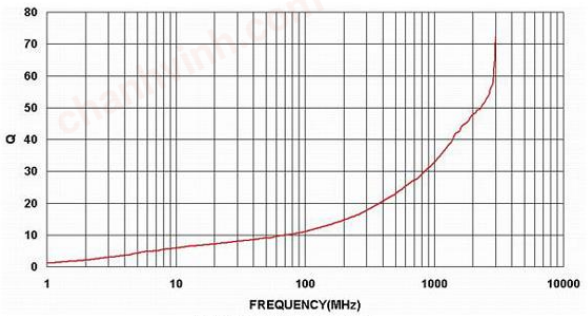
ASCH001005057N5JCP



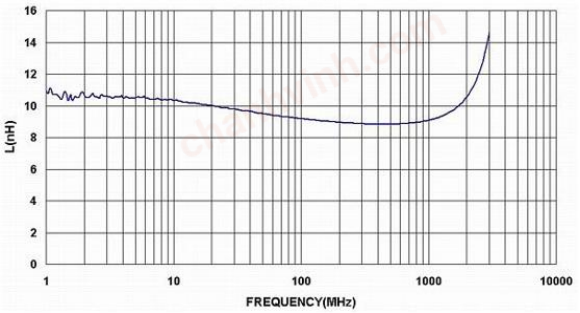
ASCH001005058N2JCP



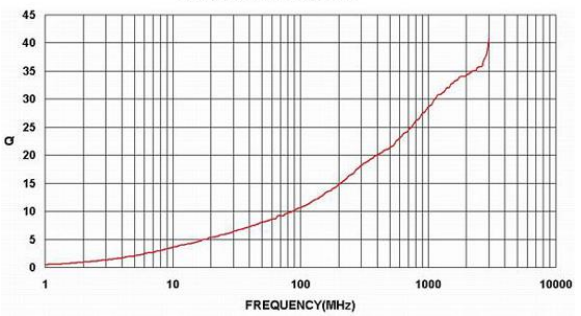
ASCH001005058N2JCP



ASCH001005059N1JCP



ASCH001005059N1JCP



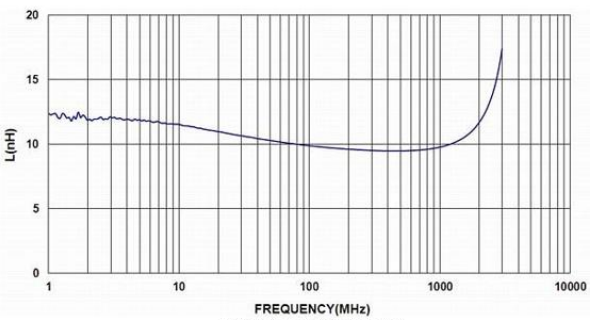
chanhvinh.com

ASCH00100505 Series Specification

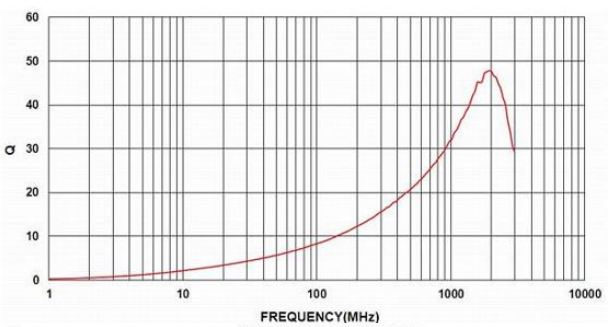
AEC-Q200

14 Graph:

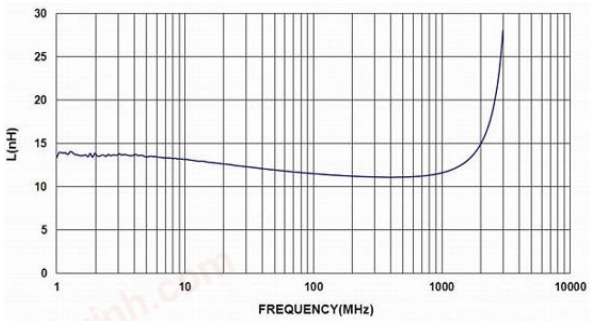
ASCH0010050510NJCP



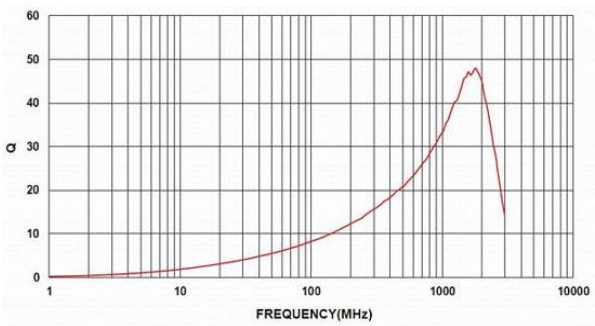
ASCH0010050510NJCP



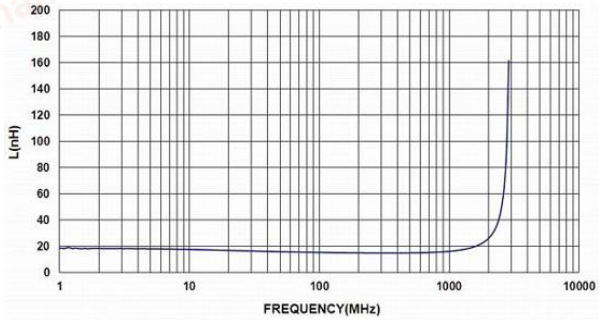
ASCH0010050512NJCP



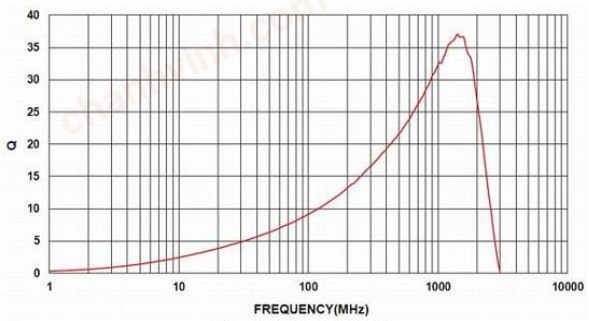
ASCH0010050512NJCP



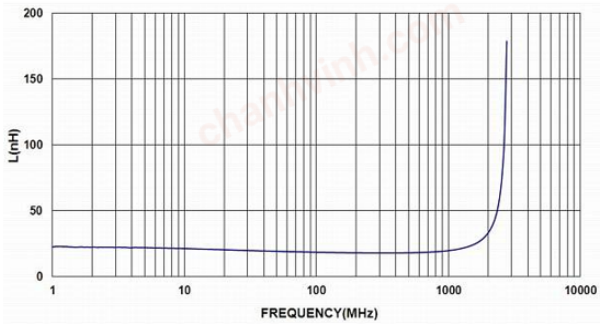
ASCH0010050515NJCP



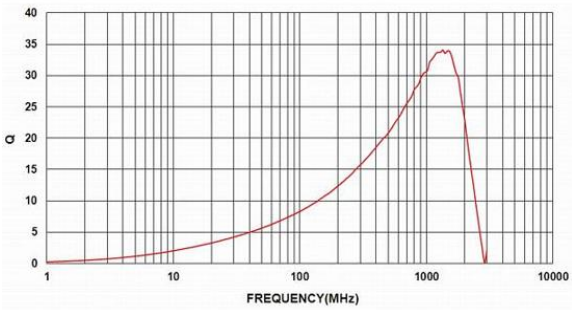
ASCH0010050515NJCP



ASCH0010050518NJCP



ASCH0010050518NJCP



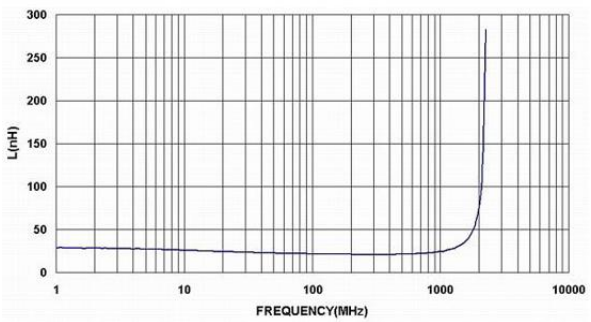
chanhvinh.com

ASCH00100505 Series Specification

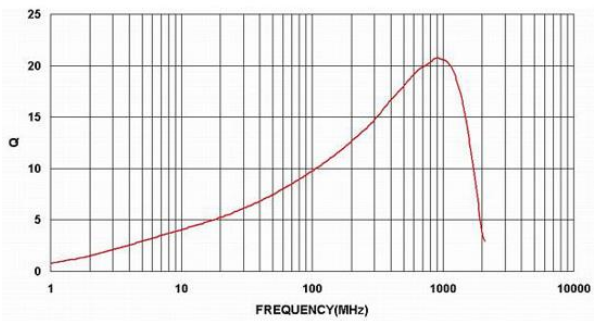
AEC-Q200

14 Graph:

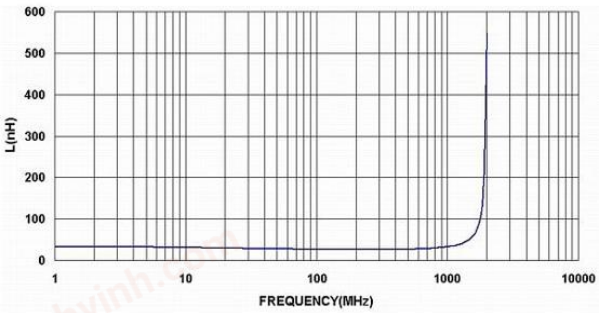
ASCH0010050522NJCP



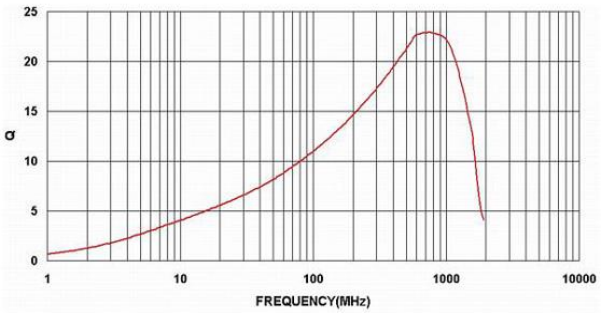
ASCH0010050522NJCP



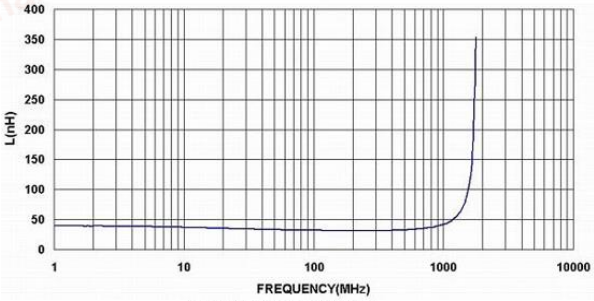
ASCH0010050527NJCP



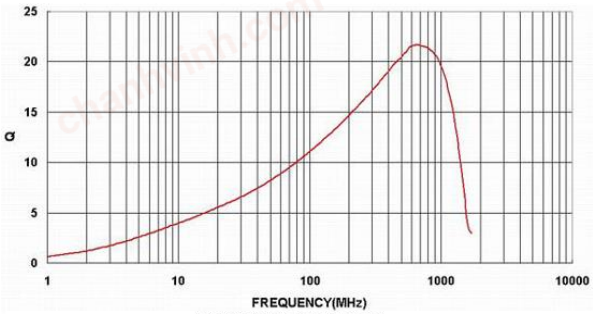
ASCH0010050527NJCP



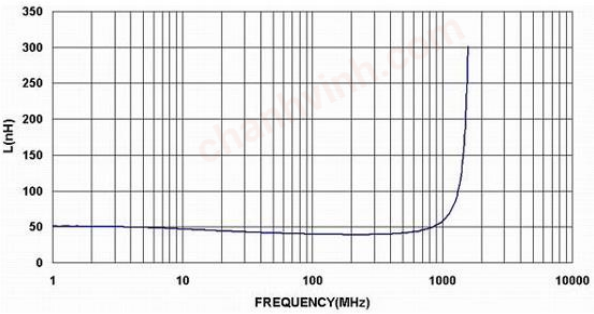
ASCH0010050533NJCP



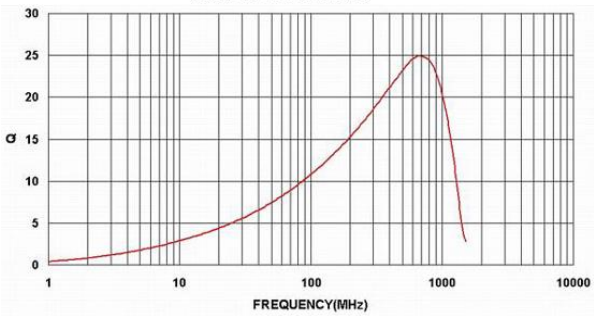
ASCH0010050533NJCP



ASCH0010050539NJCP



ASCH0010050539NJCP



chanhvinh.com

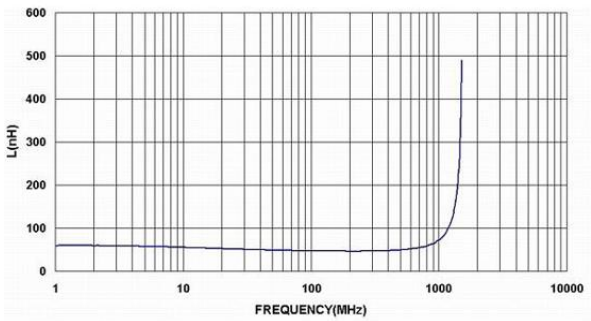
YAGEO PULSE GROUP

ASCH00100505 Series Specification

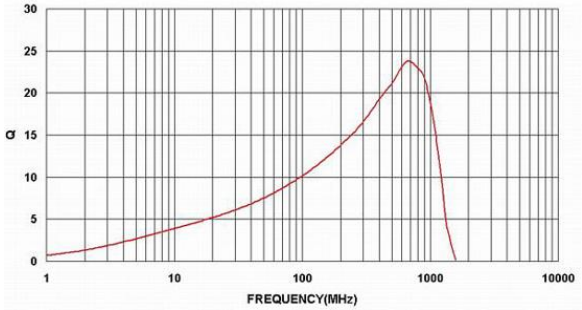
AEC-Q200

14 Graph:

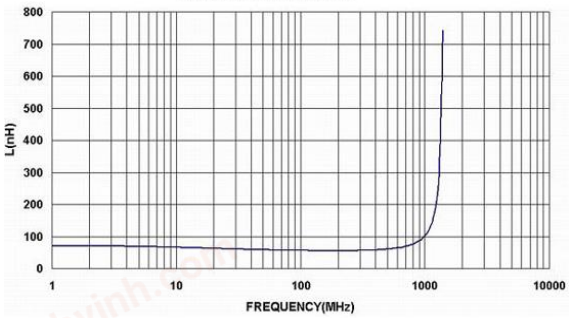
ASCH0010050547NJCP



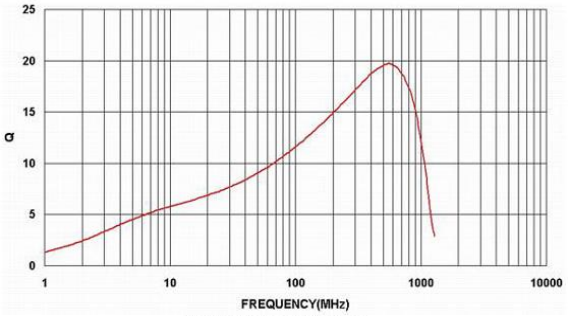
ASCH0010050547NJCP



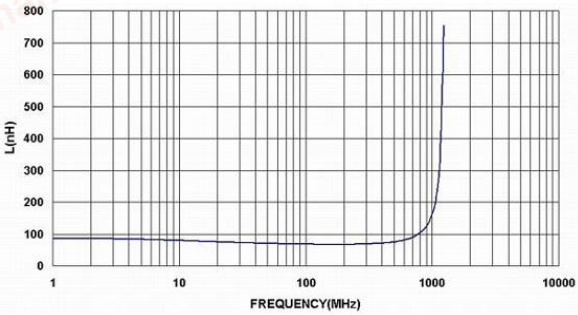
ASCH0010050556NJCP



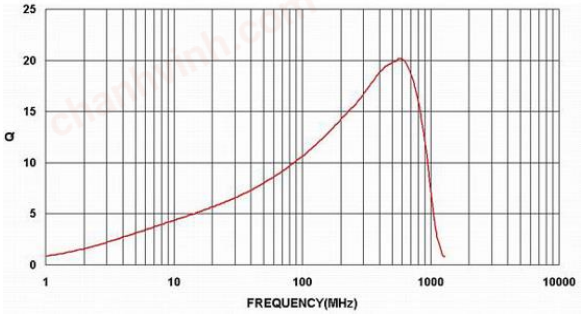
ASCH0010050556NJCP



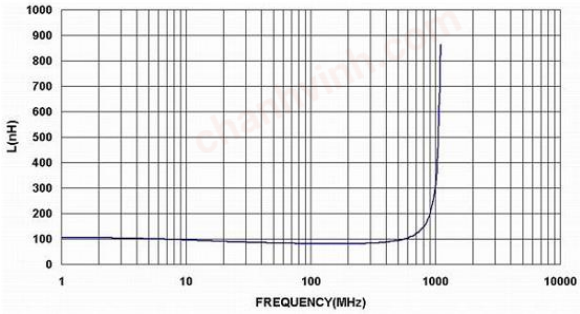
ASCH0010050568NJCP



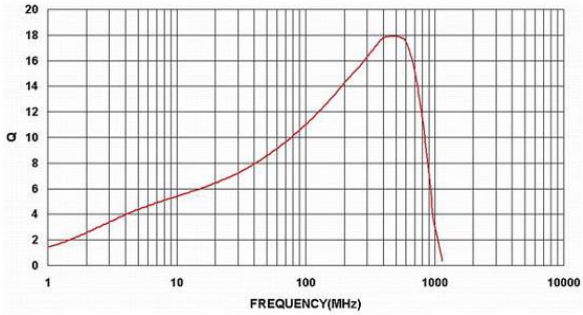
ASCH0010050568NJCP



ASCH0010050582NJCP



ASCH0010050582NJCP



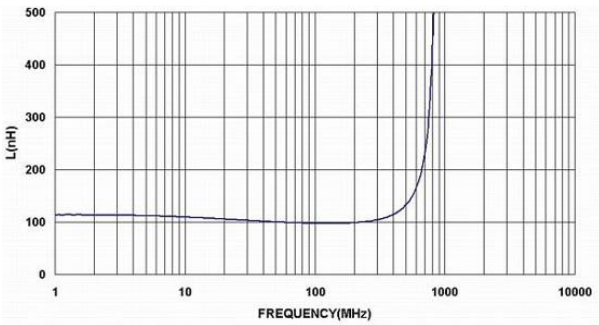
chanhvinh.com

ASCH00100505 Series Specification

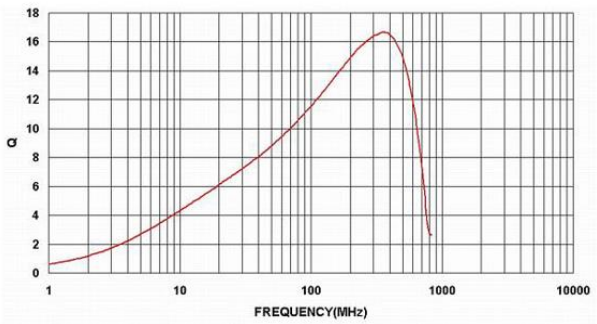
AEC-Q200

14 Graph:

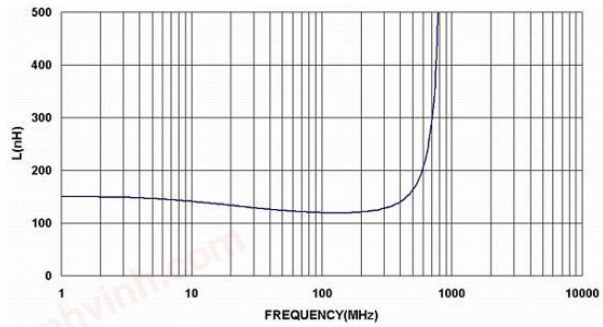
ASCH00100505R10JCP



ASCH00100505R10JCP



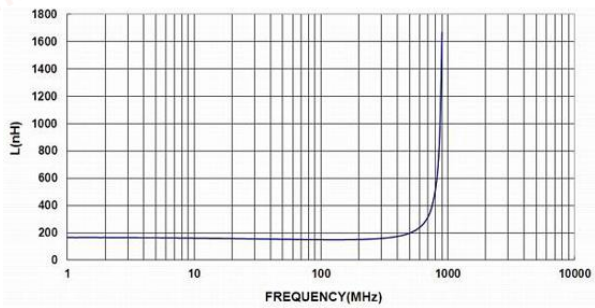
ASCH00100505R12JCP



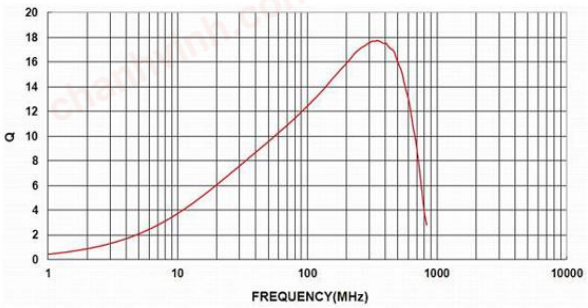
ASCH00100505R12JCP



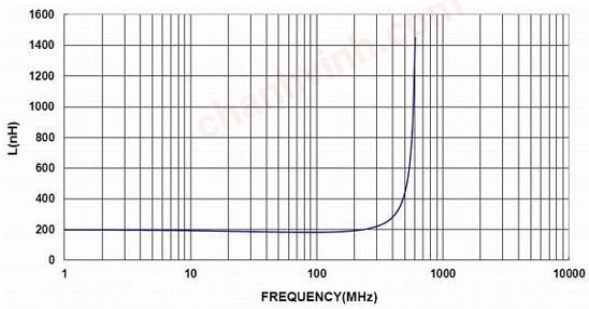
ASCH00100505R15JCP



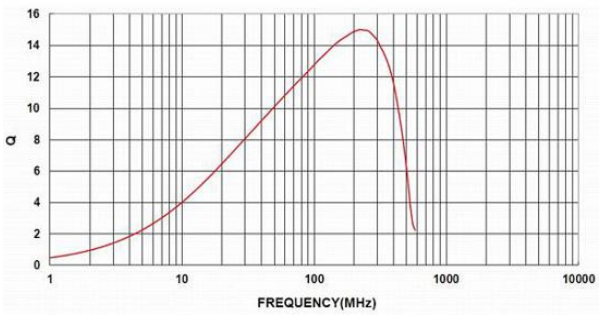
ASCH00100505R15JCP



ASCH00100505R18JCP



ASCH00100505R18JCP



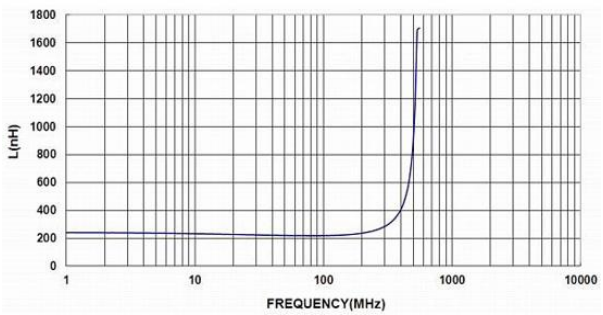
chanhvinh.com

ASCH00100505 Series Specification

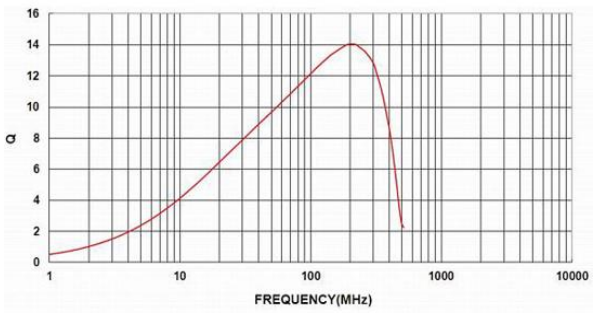
AEC-Q200

14 Graph:

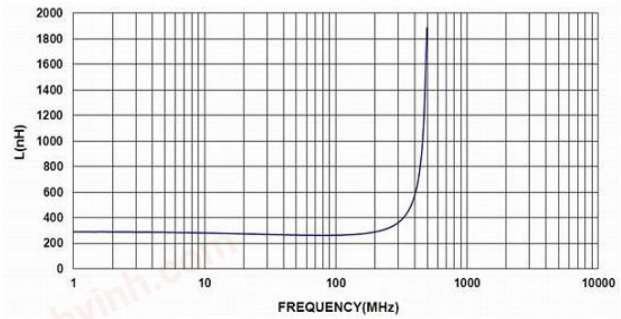
ASCH00100505R22JCP



ASCH00100505R22JCP



ASCH00100505R27JCP



ASCH00100505R27JCP

