EMI Ferrite Bead
Automotive Grade
ABHV Series

Overview

EMI ferrite beads are made of ferrite material, which can block high-frequency noise while allowing required signals to pass through, providing high impedance and noise attenuation to improve signal integrity/efficiency and reduce power loss.

Benefits

1. Automotive grade available
2. Compliance with EMI regulations.
3. Reduced power loss and improved system efficiency
4. Operating temperature range: -55 ~ +125°C
5. Improved signal integrity

Applications

1. Automotive
2. Industrial
3. Communications
4. Consumer Electronics
5. Medical Devices

Product Information

Series	Size Code (JIS/EIA)	Impedance (Ω)
ABHV	1608/0603	120, 600

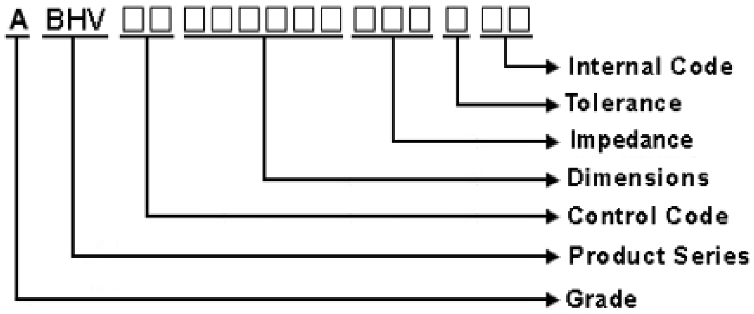
ABHV00160808 Series Specification

AEC-Q200

1 Scope:

This specification applies to Multilayer Chip ferrite Bead 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)

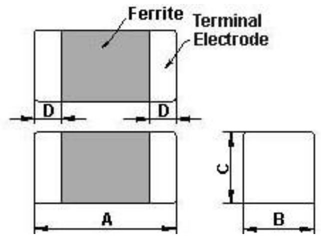
4 Marking:

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

6 Configuration and Dimensions:



Dimensions in mm

TYPE	160808
A	1.6±0.15
B	0.8±0.15
C	0.8±0.15
D	0.3±0.20

Net Weight (grms)

Size Code	Net Weight (grms)
160808	0.00576

7 Electrical Characteristics:

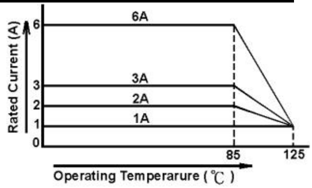
Part No.	Impedance (Ω)	Test Freq.	RDC (Ω)Max.	Rated Current (mA)Max.
ABHV00160808121Y00	120	100 MHz,200 mV	0.04	3000
ABHV00160808601Y00	600	100 MHz,200 mV	0.1	2000

NOTE: □-tolerance Y=±25%

1.Operating temperature range －５５℃～１２５℃

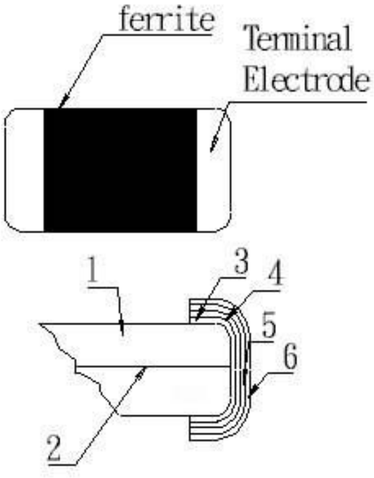
2.Rate Current : Applied the current to coils, the temperature rise shall not be more than 30℃

3.Impedance Test OSC @200mV

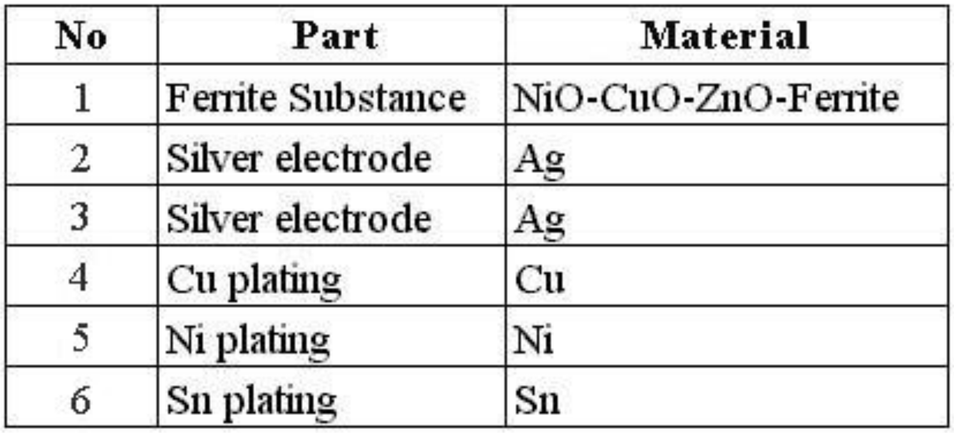


8 ABHV00160808 Series

8.1 Construction:



8.2 Material List:



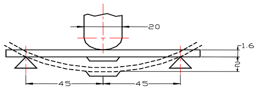
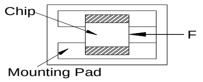
No	Part	Material
1	Ferrite Substance	NiO-CuO-ZnO-Ferrite
2	Silver electrode	Ag
3	Silver electrode	Ag
4	Cu plating	Cu
5	Ni plating	Ni
6	Sn plating	Sn

ABHV00160808 Series Specification

AEC-Q200

9 Reliability Of Ferrite Multilayer Chip Bead

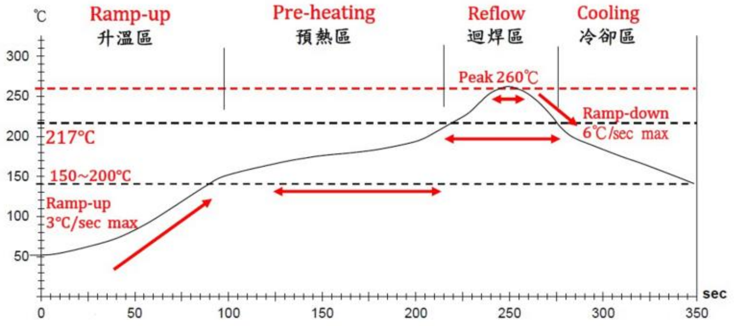
1-1.Mechanical Performance

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: 60 sec 
1-1-2	Resistance to Soldering Heat	Appearance: No damage Impedance 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 ferrite	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 Impedance 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 Impedance 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 ferrite	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 Impedance change shall be within±30%	Refer to AEC-Q200-002 ESD Rank 2 :2kV

9 Reliability Of Ferrite Multilayer Chip Bead

1-2.Environmental Performance

No	Item	Specification	Test Method
1-2-1	Temperature Cycle	Appearance: No damage Impedance change shall be within±30% or meet spec	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 Impedance change shall be within±30% If the rated current of parts exceed 1A,the operating temperature should be 85 deg C.	Temperature: 125±3℃ Applied Current: Rated Current/ Time: 1000hrs Measured after exposure in the room condition for 24hrs



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	–

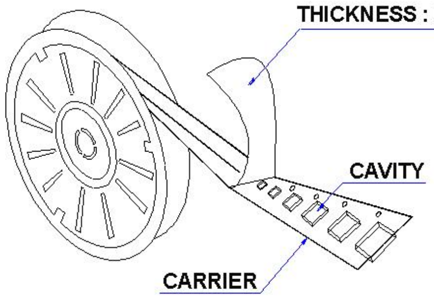
NOTE :

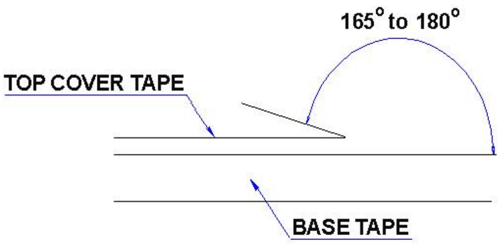
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

11 Packaging:

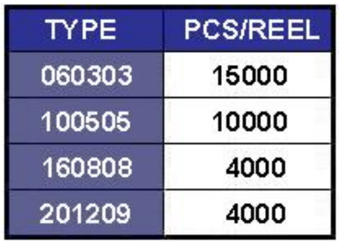
11.1 Packaging -Cover Tape

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



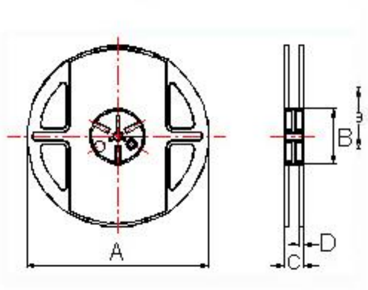


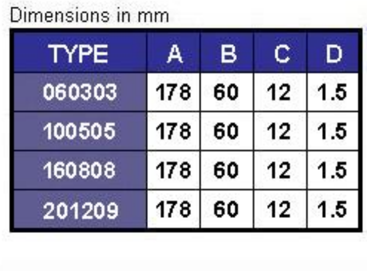
11.2 Packaging Quantity



TYPE	PCS/REEL
060303	15000
100505	10000
160808	4000
201209	4000

11.3 Reel Dimensions



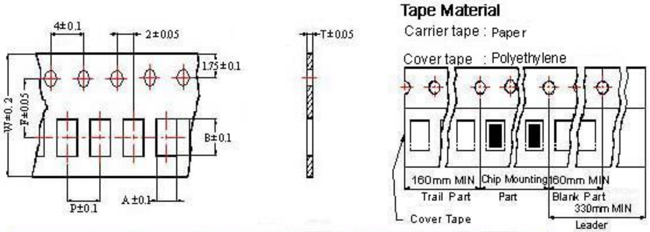


Dimensions in mm

TYPE	A	B	C	D
060303	178	60	12	1.5
100505	178	60	12	1.5
160808	178	60	12	1.5
201209	178	60	12	1.5

11 Packaging:

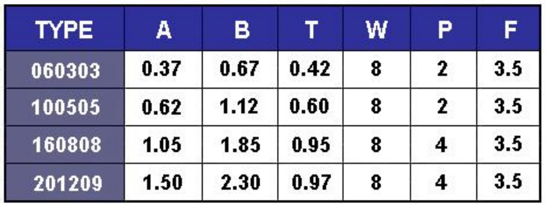
11.4 Tape Dimensions in mm



Tape Material

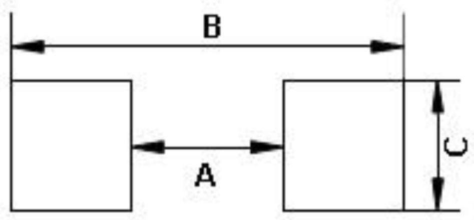
Carrier tape : Paper

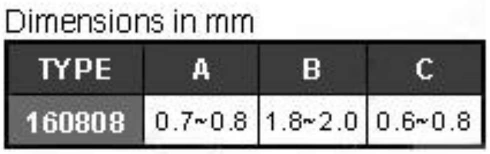
Cover tape : Polyethylene



TYPE	A	B	T	W	P	F
060303	0.37	0.67	0.42	8	2	3.5
100505	0.62	1.12	0.60	8	2	3.5
160808	1.05	1.85	0.95	8	4	3.5
201209	1.50	2.30	0.97	8	4	3.5

12 Recommended Land Pattern:





Dimensions in mm

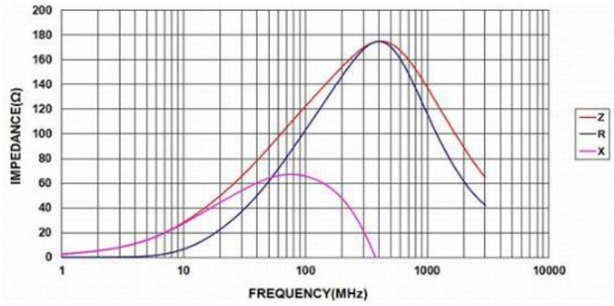
TYPE	A	B	C
160808	0.7~0.8	1.8~2.0	0.6~0.8

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.

14 Graph:

ABHV00160808121Y00



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