

EMI Ferrite Bead

Automotive Grade

ABUP 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
6. For Power Line

Applications

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

Product Information

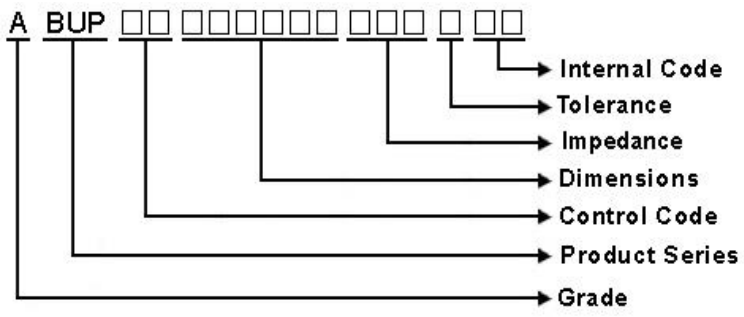
Series	Size Code (JIS/EIA)	Impedance (Ω)
ABUP	1005/0402	22 ~ 330
	1608/0603	
	2012/0805	
	3216/1206	



ABUP00160808 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: - 5 5 °C ~ 1 2 5 °C
 Storage Temperature: - 5 5 °C ~ 1 2 5 °C(after PCB)
 - 5 °C~ 4 0 °C, Humidity 4 0 %~ 7 0 %(before PCB)

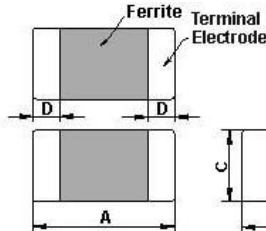
4 Marking:

No Marking

5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20 to 30°C
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

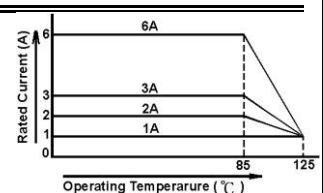
Net Weight (grms)	
Size Code	Net Weight (grms)
160808	0.00576

7 Electrical Characteristics:

Part No.	Impedance (Ω)	Test Freq.	RDC (Ω)Max.	Rated Current (mA)Max.
ABUP00160808300□00	30	100 MHz,200 mV	0.015	4500
ABUP00160808101□00	100	100 MHz,200 mV	0.03	3000
ABUP00160808121□00	120	100 MHz,200 mV	0.03	3000
ABUP00160808181□00	180	100 MHz,200 mV	0.05	2000
ABUP00160808221□00	220	100 MHz,200 mV	0.04	2500

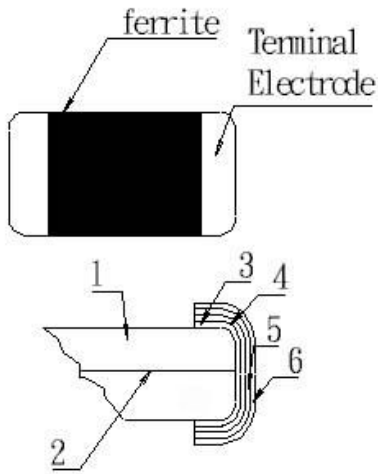
NOTE: □-tolerance Y=±25% / T=±30%

1. Operating temperature range - 5 5 °C ~ 1 2 5 °C
2. Rate Current : Applied the current to coils, the temperature rise shall not be more than 30°C
3. As for ABUP type. Rated Current is derated as right figure depending on the operating temperature.



8 ABUP00160808 Series

8.1 Construction:

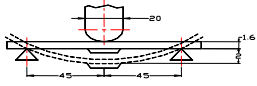
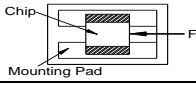


8.2 Material List:

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

9 Reliability Of Ferrite Multilayer Chip Bead

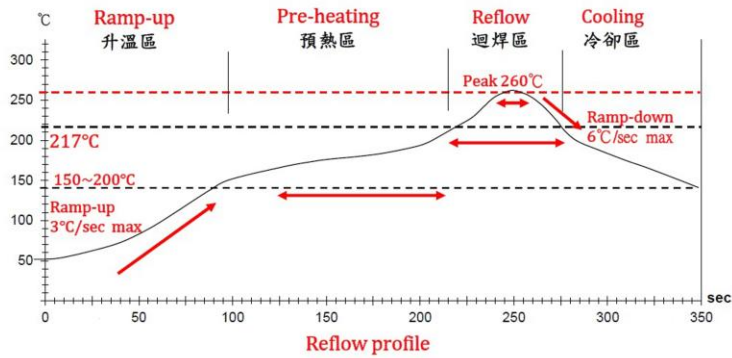
1-1.Mechanical Performance

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°C, 60-100 sec Above 217°C, 60-150 secs Peak Temperature: 260±5°C, 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°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245±5°C (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 Vibration 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 acceleration : 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 minutes 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

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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°C 30 minutes exposure to 125°C 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°C 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°C / 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°C Applied Current: Rated Current/ Time: 1000hrs Measured after exposure in the room condition for 24hrs



Lead-Free(LF)標準溫度分析範圍

Refer to J-STD-020C

管制項目 Item.	升温區 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°C	150°C ~ 200°C	Above 217°C	260±5°C	Peak Temp.~150°C
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	-

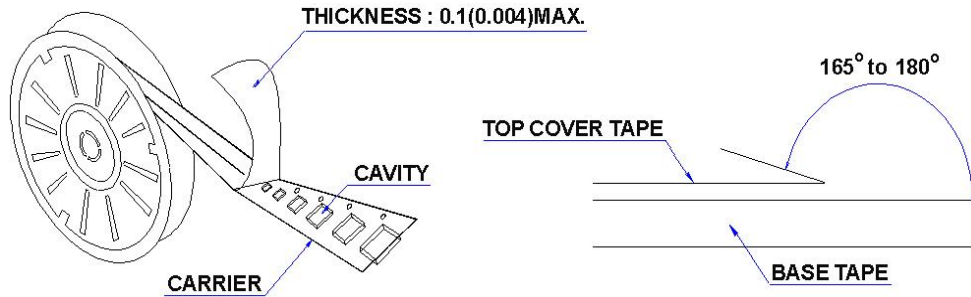
NOTE :

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

10 Packaging:

10.1 Packaging -Cover Tape

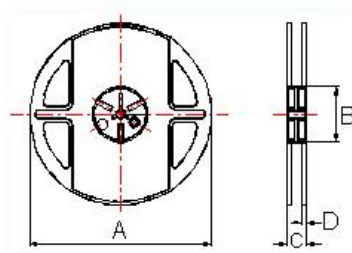
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
100505	10000
160805	10000
160808	4000
201209	4000

10.3 Reel Dimensions

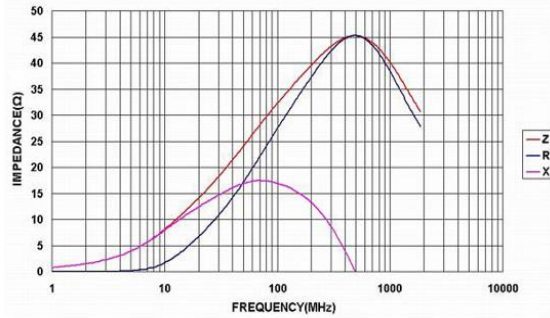


Dimensions in mm

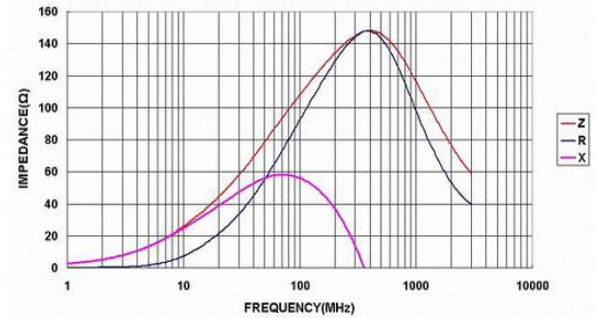
TYPE	A	B	C	D
100505	178	60	12	1.5
160805	178	60	12	1.5
160808	178	60	12	1.5
201209	178	60	12	1.5

13 Graph:

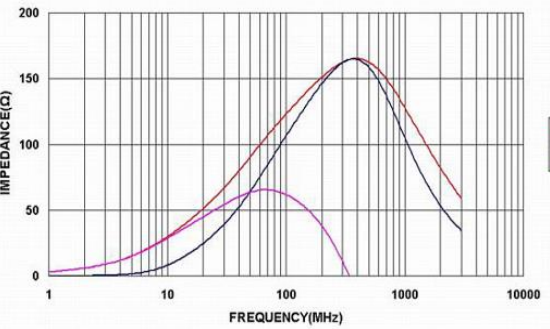
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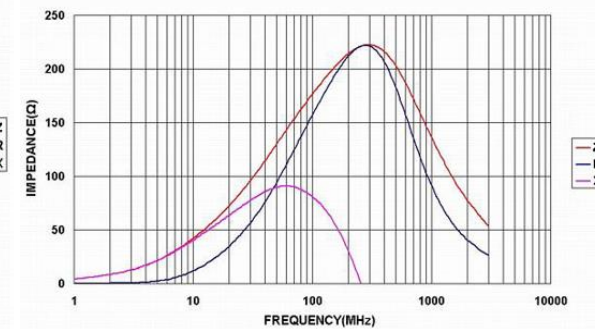
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ABUP00160808121Y00



ABUP00160808181Y00



ABUP00160808221Y00

