

# Reference Only

**Ferrite Bead Inductor BLL18AG□□□□□□□□H□□□**  
**Reference Specification**

**1. Scope**

This Reference Specification applies to Ferrite Bead Inductor for Automotive Electronics BLL18AG\_H Series.

**2. Part Numbering**

(Ex.) BL L 18 AG 102 DB E1 H 00 A  
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)  
 (1)Product ID (2)Type (3)Dimension of chip ferrite bead(LxW) (4)Characteristics  
 (5)Typical Impedance at 100MHz  
 (6)Lead Type  
 DB: Straight Lead Type (Taping) A2: Straight Lead Type (Bulk)  
 (7)Marking (8)Category (9)Individual Specification Code  
 (10)Packaging Code A : Ammo Pack / B : Bulk

**3. Rating**

Customer Part Number	MURATA Part Number	Impedance (Ω) (at 100MHz, Under Standard Testing Condition)	Rated Current (mA)	DC Resistance (Ω max.)	
				Initial Values	Values After Teasting
	BLL18AG121DBE1H01A	120±40%	200	0.50	0.60
	BLL18AG121A2E1H01B				
	BLL18AG151DBE1H01A	150±40%	200	0.55	0.65
	BLL18AG151A2E1H01B				
	BLL18AG221DBE1H01A	220±40%	200	0.55	0.65
	BLL18AG221A2E1H01B				
	BLL18AG331DBE1H01A	330±40%	200	0.60	0.70
	BLL18AG331A2E1H01B				
	BLL18AG471DBE1H01A	470±40%	200	0.65	0.75
	BLL18AG471A2E1H01B				
	BLL18AG601DBE1H01A	600±40%	200	0.70	0.80
	BLL18AG601A2E1H01B				
	BLL18AG102DBE1H01A	1000±40%	200	0.80	0.90
	BLL18AG102A2E1H01B				

• Operating Temperature : - 40 °C to + 150 °C      • Storage Temperature : - 40 °C to + 150 °C

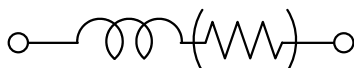
**4. Style and Dimension**

Taping : See item 9.1.

■ Equivalent Circuit

■ Unit Mass(Typical value)

0.13g



( Resistance element becomes dominant at high frequencies. )

**5. Marking**



BL : Product ID  
102: Typical Impedance at 100MHz

**6. Testing Conditions**

<Unless otherwise specified>

Temperature : Ordinary Temp. 15°C to 35°C  
Humidity : Ordinary Humidity 25 %(RH) to 85 %(RH)

<In case of doubt>

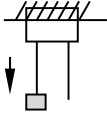
Temperature: 20°C ± 2°C  
Humidity : 60 %(RH) to 70 %(RH)  
Atmospheric pressure : 86kPa to 106kPa

**7.Specifications**

7-1.Electrical Performance

No.	Item	Specification	Test Method
7-1-1	Impedance	Meet item 3.	Measuring Frequency : 100MHz±1MHz Measuring Equipment : KEYSIGHT 4291A or the equivalent Test Fixture : KEYSIGHT 16092A or the equivalent
7-1-2	DC Resistance	Meet item 3.	Measuring Equipment : Digital multi meter

7-2.Mechanical Performance

No.	Item	Specification	Test Method						
7-2-1	Appearance and Dimensions	See item 9.	Visual Inspection. Measured with Slide Calipers or with Measuring Microscope.						
7-2-2	Terminal Pull Strength	Appearance : No damaged.	As in the figure, one of the two leads shall be fixed and the load shall be pull to another side lead gradually in the vertical direction. Applying Force : 5N Keeping Time : 10 ± 1s 						
7-2-3	Solderability	Along the circumference of terminal shall be covered with new solder at least 90%.	Flux : Ethanol solution of rosin,25(wt)% (dipped for 5 to 10 s) Pre-heat : 150±10°C, 60~90 s Solder : Sn-3.0Ag-0.5Cu Solder Temperature 245±5°C Immersion Time : 2 ± 0.5 s Immersion Depth : 1.5 to 2.5 mm from the bottom of the body.						
7-2-4	Resistance to Soldering Heat	Meet Table 1 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Appearance</td> <td>No damage</td> </tr> <tr> <td>Impedance Change (at 100MHz)</td> <td>Within ±30%</td> </tr> <tr> <td>DC Resistance</td> <td>Meet item 3.</td> </tr> </table>	Appearance	No damage	Impedance Change (at 100MHz)	Within ±30%	DC Resistance	Meet item 3.	Flux : Ethanol solution of rosin,25(wt)% (dipped for 5 to 10 seconds) Pre-heat : 150±10°C, 60~90 s Solder : Sn-3.0Ag-0.5Cu Solder Temperature : 270 ± 5 °C Immersion Time : 3± 0.5 seconds Immersion Depth : 1.5 to 2.5 mm from the bottom of the body. Then measured after exposure in the room condition for 4 to 24hours.
Appearance	No damage								
Impedance Change (at 100MHz)	Within ±30%								
DC Resistance	Meet item 3.								

7-3.Environmental Performance

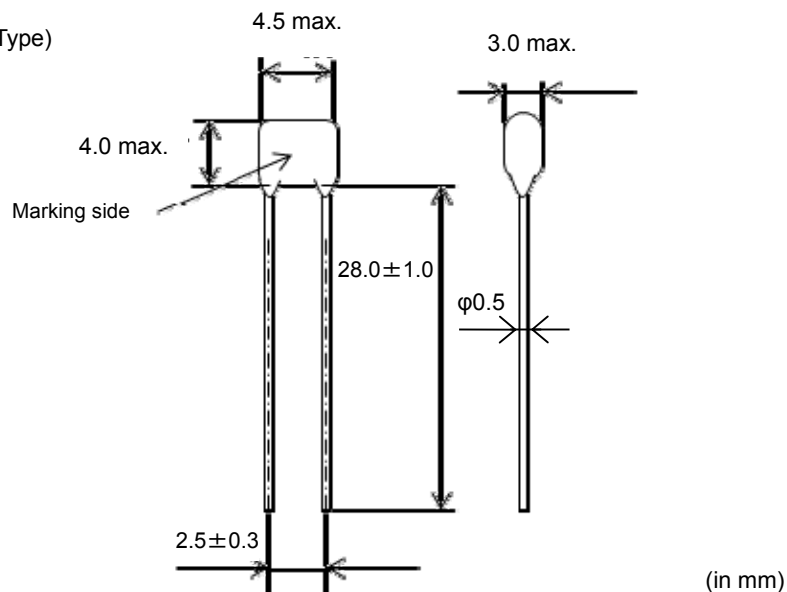
No.	Item	Specification	Test Method
7-3-1	Heart Shock	Meet Table 1	1 cycle : 1 step : - 40°C (+0,-3) °C / 30 min(+3,-3)min 2 step : + 150°C (+3,-0) °C / 30 min(+3,-3)min Total of 1000 cycles Then measured after exposure in the room condition for 4 to 48 hours
7-3-2	Humidity		Temperature : 85 °C ± 2 °C Humidity : 80 %(RH) to 85 %(RH) Time : 1000 h (+ 48h , - 0h) Then measured after exposure in the room condition for 4 to 48 hours.
7-3-3	Humidity Life		Temperature : 85 °C ± 2 °C Humidity : 80 %(RH) to 85 %(RH) Applying Current : Rated Current Time : 1000h(+48h,-0h) Then measured after exposure in the room condition for 4 to 48 hours.
7-3-4	Heat Resistance		Temperature : 150 °C ± 3 °C Time : 1000 h (+ 48h , - 0h) Then measured after exposure in the room condition for 4 to 48 hours.
7-3-5	Heat Life		Temperature : 150°C±3°C Applying Current : Rated Current Time : 1000h(+48h,-0h) Then measured after exposure in the room condition for 48h±4h.

8. Mounting Hole



9. Style and Dimension

9-1. Bulk (Straight Lead Type)



9-2.Taping(Straight Lead Type)

(All symbols in the illustrations below are described in Table 2)

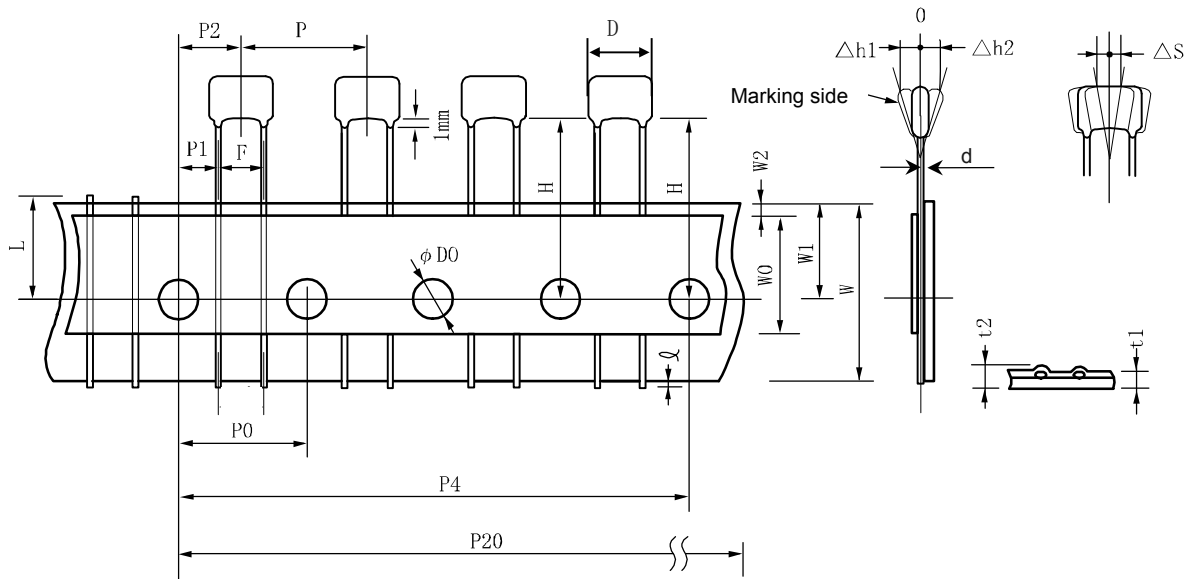


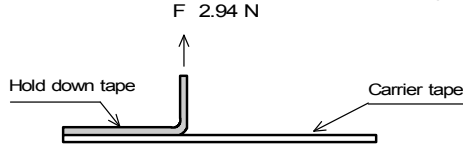
Table 2

Symbol	Description	Dimension (mm)	Remarks
P	Pitch of component	12.7± 1.0	
P <sub>0</sub>	Pitch of sprocket hole	12.7 ± 0.2	
P <sub>4</sub>	Pitch of sprocket hole	50.8 ± 0.4	Pitch of four places of sprocket hole
P <sub>20</sub>	Pitch of sprocket hole	254 ± 1.0	Pitch of 20th places of sprocket hole.
P <sub>1</sub>	Hole center to lead	3.85 ± 0.5	
P <sub>2</sub>	Hole center to component center	6.35 ± 0.5	Tape deviation in feeding direction and lead center..
		6.35 ± 1.0	Tape deviation in feeding direction and component center..
D	Outer diameter of product	4.5 max.	
ΔS	Deviation along tape,left or right	0 ± 1.0	They include deviation by lead bend.
W	Carrier tape width	18.0 ± 0.5	
W <sub>1</sub>	Position of sprocket hole	9.0 (+0 , -0.5)	Tape with deviation.
l	Protruding length	+ 0.5 ~ - 1.0	
D <sub>0</sub>	Diameter of sprocket hole	φ 4.0 ± 0.1	
d	Lead Diameter	φ 0.50 ± 0.05	
t <sub>1</sub>	Total tape thickness	0.6 ± 0.3	They Include hold down tape thickness.
t <sub>2</sub>	Total thickness of tape and lead wire	1.5 max.	
Δh <sub>1</sub>	Deviation across tape	1.0 max.	
Δh <sub>2</sub>	Deviation across tape rear	1.0 max.	
L	Cutting position of Failure	11.0 (+0 , -1.0)	
W <sub>0</sub>	Hold down tape width	12.0 ± 0.5	
W <sub>2</sub>	Hold down tape position	1.5 ± 1.5	
H	Lead length between sprocket hole and forming position	20.0 ± 1.0	
F	Lead spacing	2.6 ± 0.3	

(in mm)

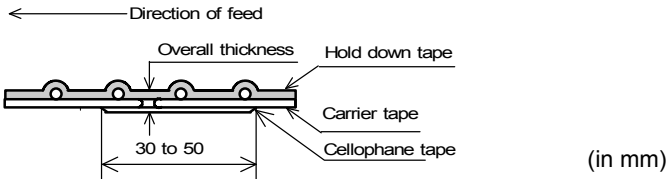
**10. Taping**

- (1) A maximum of 0.3% of the components quantity per reel or Ammo pack may be missing without consecutive missing components.
- (2) The adhesive power of the tape shall have over 2.94N at the following condition.



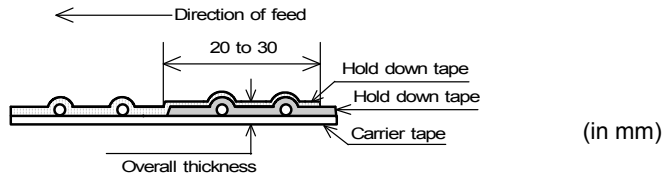
- (3) Splicing method of tape
  - 1. Carrier tape

Carrier tape shall be spliced by cellophane tape.  
Overall thickness shall be less than 1.05 mm.



- 2. Hold down tape

Hold down tape shall be spliced with overlapping.  
Overall thickness shall be less than 1.05 mm.



- 3. Both carrier tape and hold down tape

Both tapes shall be cut zigzag and spliced with splicing tape.

**11. Packing**

11-1. Packing quantity

The standard packing quantity is as follows.

(The packing quantity may be changed due to a fraction of order.)

Minimum Packing Form and Quantity

Terminal Configuration	A Unit Quantity	Packing Form
Bulk	500 pcs.	In a plastic bag
Taping	2000 pcs.	In an Ammo pack

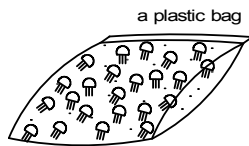
\* A quantity in a container is depending on a quantity of an order.

11-2 Packing Form

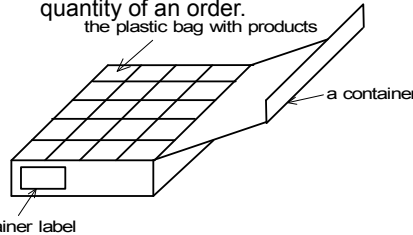
- (1) Bulk

<A plastic bag pack>

1. Products are packed into a plastic bag.



2. The plastic bags are put into a container (corrugated cardboard box) depending on a quantity of an order.

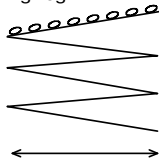


(2) Taping

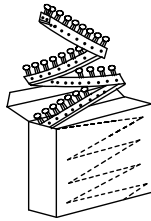
<An ammo pack>

1. Folding the tape per 25 pitches, products are packed into an ammo package so that each product of each layer wound zigzag is put on top of one another. [Fig 3]
2. The dimensions of the ammo package are indicated in [Fig 4].
3. The ammo packages are put into a container (corrugated cardboard box) depending on a quantity of an order.
4. Not less than 3 consecutive of component shall be missing on both edge of tape.

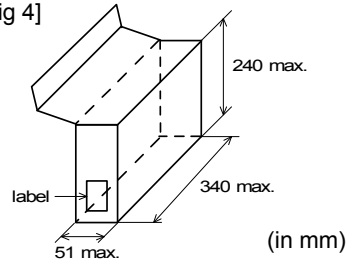
[Fig 3] zig zag



The unloading direction : Right  
 The hold down tape : Upper  
 The product body : Left along the unloading direction



[Fig 4]



(in mm)

**12. Marking on package**

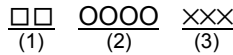
12-1. Unit Package

- Bulk : Marked on a plastic bag.
- Taping : Marked on a label stuck on an ammo package.

Marking on a unit package consists of :

Customer part number, MURATA part number, Inspection number(\*1), RoHS marking (\*2), Quantity, etc

\*1) « Expression of Inspection No. »

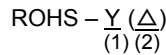


- (1) Factory Code
- (2) Date

First digit : Year / Last digit of year  
 Second digit : Month / Jan. to Sep. → 1 to 9, Oct. to Dec. → O, N, D  
 Third, Fourth digit : Day

(3) Serial No.

\*2) « Expression of RoHS marking »



- (1) RoHS regulation conformity parts.
- (2) MURATA classification number

12-2. Container

Marking on the label stuck on a container consists of :

Customer name Purchasing Order Number, Customer Part Number, MURATA part number, RoHS marking (\*2), Quantity, etc

**13. Caution**

13-1. Mounting holes

Mounting holes should be designed as specified in this specifications.

Or different design from this specifications may cause cracks in ceramics which may lead to smoking / firing.

13-2. Caution for the product angle adjust work

Take care not to apply any mechanical stress to product body at the lead terminal bending process for product angle adjustment after insertion.

13-3. Bonding, resin molding and coating

In case of bonding, molding or coating this product, verify that these processes do not affect the quality of the capacitor by testing the performance of the bonded, molded or coated product in the intended equipment.

In case the amount of application, dryness / hardening conditions of adhesives and molding resins containing organic solvents ( ethyl acetate, methyl ethyl ketone, toluene, etc.) are unsuitable, the outer coating resin of a capacitor may be damaged by the organic solvents and may result, worst case, in a short circuit.

The variation in thickness of adhesive or molding resin or coating may cause an outer coating resins cracking and /or ceramic element cracking of this product in a temperature cycling.

13-4. Treatment after bonding, resin molding and coating

When the outer coating is hot (over 100 degrees centigrade) after soldering, it becomes soft and fragile, so please be careful not to give it mechanical stress

13-5. About the Rated current

Do not use products beyond the rated current as this may create excessive heat and deteriorate the insulation resistance.

13-6. Surge current

Excessive surge current (pulse current or rush current) than specified rated current applied to the product may cause a critical failure, such as an open circuit, burn out caused by excessive temperature rise  
Please contact us in advance in case of applying the surge current.

13-7. Fail Safe

Be sure to provide an appropriate fail-safe function on your product to prevent from a second damage that may be caused by the abnormal function or the failure of our products.

13-8. Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

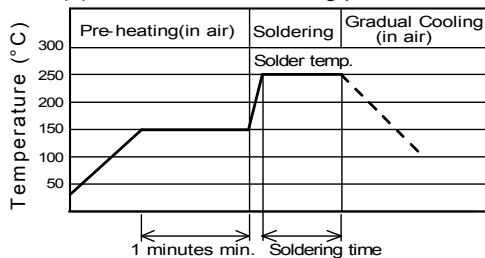
- (1) Aircraft equipment
- (2) Aerospace equipment
- (3) Undersea equipment
- (4) Power plant control equipment
- (5) Medical equipment
- (6) Transportation equipment (trains, ships, etc.)
- (7) Traffic signal equipment
- (8) Disaster prevention / crime prevention equipment
- (9) Data-processing equipment
- (10) Applications of similar complexity and /or reliability requirements to the applications listed in the above

**14. Notice**

14-1. Soldering

- (1) Use rosin-based flux. Do not use strong acidic flux with halide content exceeding 0.2(wt)% (chlorine conversion value).  
Use Sn-3.0Ag-0.5Cu solder

(2) Standard flow soldering profile.



Solder temperature	Soldering time
250~260 °C	4~6s

- (3) Resistance to soldering iron goes in the following condition that tip temperature is 350 °C max. And soldering time is 5 s max.
- (4) Products and the leads should not be subjected to any mechanical stress during soldering process. (and also while subjected to the equivalent high temperature.)

14-2. Cleaning

Do not clean after soldering. If cleaning, please contact us.

14-3. Operating Environment

- (1) Do not use products in corrosive gases such as chlorine gas, acid or sulfide gas.
- (2) Do not use products in the environment where water, oil or organic solvents may adhere to products.
- (3) Do not adhere any resin to products, coat nor mold products with any resin (including adhesive) to prevent mechanical and chemical stress on products.

**14-4. Storage and handling requirements.****(1) Storage period**

Use the products within 12 months after delivered.  
Solderability should be checked if this period is exceeded.

**(2) Storage environment condition**

To prevent products quality deterioration, stored conditions should be controlled as follows ;

1. Temperature : -10 to 40 degrees centigrade
2. Humidity : 15 to 85% relative humidity
3. Products should be stored without sudden changes in temperature and humidity.  
Don't keep products in corrosive gases such as sulfur, chlorine gas or acid,  
or it may cause oxidization of lead terminals resulting in poor solderability.
4. Products should be stored on the palette for the prevention of the influence from humidity, dust and so on.
5. Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.

**(3) Handling Conditions**

Care should be taken when transporting or handling product to avoid excessive vibration or mechanical shock.

**15  Note**

- (1) Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- (2) You are requested not to use our product deviating from the reference specifications.
- (3) The contents of this reference specification are subject to change without advance notice.  
Please approve our product specifications or transact the approval sheet for product specifications before ordering.