GHz Noise Suppression Chip Ferrite Bead

BLM18GG471SN1

Reference Specification

1. Scope

This reference specification applies to Chip Ferrite Bead BLM18G_SN series.

2. Part Numbering

(ex.)	BL	M	18	GG	471	S	Ν	_1_	D	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	(1)Pro	oduct IF) (2)T	vne	(3)Dimer	sion(I	×W)	(4)Ch	aracteristics	(5)Typi

 $\hbox{(1)Product ID} \quad \hbox{(2)Type} \quad \hbox{(3)Dimension} (L\times W) \quad \hbox{(4)Characteristics} \quad \hbox{(5)Typical Impedance at 100MHz}$

(6)Performance (7)Category (8)Numbers of Circuit (9)Packaging(D:Taping / B:Bulk)

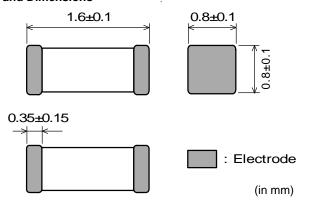
3. Rating

Customer		MURATA	Impedance (Ω) (Under Standard Testing Condition)		DC Resistant (Ω)			
	Part Number	Part Number	at 100MHz	at 1GHz	Current (mA)	Initial Values	Values After Testing	Remark
		BLM18GG471SN1D	470 : 250/	1000 - 200/	200	10.03	1.4500	For
		BLM18GG471SN1B	470±25%	1800±30%	200	1.0 ± 0.3	1.4max.	general use

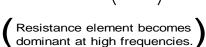
• Operating Temperature : -55°C to +125°C • Storage Temp

Storage Temperature : -55°C to +125°C

4. Style and Dimensions



Equivalent Circuit



Unit Mass (Typical value) 0.004g

5. Marking

No marking.

6. Standard 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

<u>/-1. EI</u>	. Electrical Performance					
No.	Item	Specification	Test Method			
7-1-1	Impedance	Meet item 3.	Measuring Frequency: 100MHz±1MHz, 1GHz±1MHz Measuring Equipment: Agilent 4291A or the equivalent Test Fixture: Agilent 16192A or the equivalent			
7-1-2	DC Resistance	Meet item 3.	Measuring Equipment : Digital multi meter			

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7-2. Mechanical Performance

No.	Item	Specification	Test Method		
7-2-1	Appearance and	Meet item 4.	Visual Inspection and measured with Silde Calipers.		
	Dimensions				
7-2-2	Bonding Strength	Meet Table 1. Table 1	It shall be soldered on the substrate. Applying Force(F): 10N Applying Time: 5s±1s		
		Appearance No damage	Applied direction : Parallel to substrate		
		Impedance Within	Side view		
		Change ±30%	<u>F</u> F		
		DC Meet item Resistance 3.	R0.5		
			Substrate		
7-2-3	Bending Strength		It shall be soldered on the substrate. Subatrate: Glass-epoxy 100mm×40mm×1.0mm Deflection(n): 2.0mm		
			Spped of Applying Force : 0.5mm/s		
			Keeping Time : 30s Pressure jig		
			Deflection		
			45mm 45mm Product		
7-2-4	Vibration		It shall be soldered on the substrate. Oscillation Frequency: 10Hz to 2000Hz to 10Hz for 20 min Total Amplitude: 1.5mm or Acceleration amplitude 196m/s² whichever is smaller.		
			Testing Time: A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 h)		
7-2-5	Resistance		Pre-Heating: 150°C±10°C, 60s ~ 90s		
	to Soldering		Solder : Sn-3.0Ag-0.5Cu		
	Heat		Solder Temperature : 270°C±5°C Immersion Time : 10s±0.5s		
			Immersion and emersion rates : 25mm/s		
			Then measured after exposure in the room condition for		
7-2-6	Drop	Products shall be no failure	48h±4h. It shall be dropped on concrete or steel board.		
	- r	after tested.	Method : free fall Height : 75cm		
			Attitude from which the product is dropped : 3 direction The number of times : 3 times for each direction (Total 9 times)		
7-2-7	Solderability	The electrodes shall be at	Flux: Ethanol solution of rosin,25(wt)%		
		least 95% covered with new solder coating.	Pre-Heating : 150°C±10°C, 60s ~ 90s Solder : Sn-3.0Ag-0.5Cu		
		Joseph Joanny.	Solder Temperature : 240°C±5°C		
			Immersion Time : 3s±1s		
			Immersion and emersion rates : 25mm/s		

(in mm)

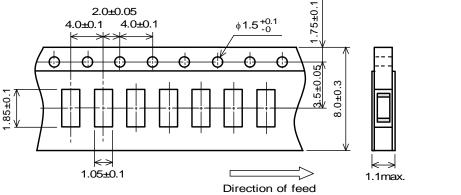
7-3. Environmental Performance

It shall be soldered on the substrate.

No.	Item	Specification	Test Method
7-3-1	Temperature Cycle	Meet Table 1.	1 cycle: 1 step:-55 °C(+0 °C,-3 °C) / 30min±3min 2 step:Ordinary temp. / within 3min 3 step:+125 °C(+3 °C,-0 °C) / 30min±3min 4 step: Ordinary temp. / within 3min Total of 100 cycles Then measured after exposure in the room condition for 48h±4h.
7-3-2	Humidity		Temperature: 85°C±2°C Humidity: 80%(RH) to 85%(RH) Time: 1000h(+48h,-0h) Then measured after exposure in the room condition for 48h±4h.
7-3-3	Heat Life		Temperature: 125°C±3°C Applying Current: Rated Current Time: 1000h(+48h,-0h) Then measured after exposure in the room condition for 48h±4h.
7-3-4	Cold Resistance		Temperature: -55±2°C Time: 1000h(+48h,-0h) Then measured after exposure in the room condition for 48h±4h.

8. Specification of Packaging

8-1. Appearance and Dimensions (8mm-wide paper tape)



(1) Taping

Products shall be packaged in the cavity of the base tape of 8mm-wide,4mm-pitch continuously and sealed by top tape and bottom tape.

(2) Sprocket hole

The sprocket holes are to the right as the tape is pulled toward the user.

(3) Spliced point

The base tape and top tape have no spliced point

(4) Cavity

There shall not be burr in the cavity.

(5) Missing components number

Missing components number within 0.1% of the number per reel or 1 pc., whichever is greater, and are not continuous. The specified quantity per reel are kept.

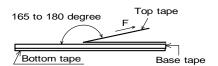
8-2. Tape Strength

(1) Pull Strength

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	Top tape	5N min
	Bottom tape	OIN IIIIII.

(2) Peeling off force of Top tape

0.1N to 0.6N (Minimum value is typical.)
*Speed of Peeling off:300mm/min



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8-3. Taping Condition

- (1) Standard quantity per reel
 - Quantity per 180mm reel: 4000 pcs. / reel
- (2) There shall be leader-tape (top tape and empty tape) and trailer- tape(empty tape) as follows.
- (3) On paper tape, the top tape and the base tape shall not be adhered at the tip of the empty leader tape for more than 5 pitch.
- (4) Marking for reel

The following items shall be marked on a label and the label is sticked on the reel.

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

*1) « Expression of Inspection No. »

$$\frac{}{(1)}$$
 $\frac{OOOO}{(2)}$ $\frac{\times \times \times}{(3)}$

(1) Factory Code

First digit (2) Date

: Year $\,$ / Last digit of year : Month / Jan. to Sep. \rightarrow 1 to 9, Oct. to Dec. \rightarrow O,N,D Second digit

Third, Fourth digit: Day

(3) Serial No.

*2) « Expression of RoHS marking»

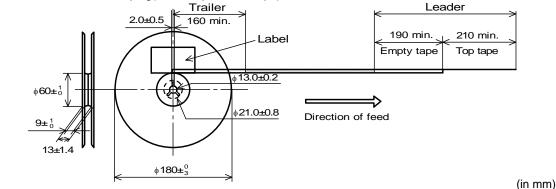
- (1) RoHS regulation conformity parts.
- (2) MURATA classification number
- (5) Outside package

These reels shall be packed in the corrugated cardboard package and the following items shall be marked on a label and the label is sticked on the box.

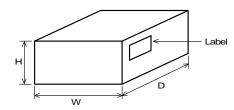
(Customer name, Purchasing Order Number, Customer Part Number, MURATA part number,

RoHS marking(*2), Quantity, etc)

(6) Dimensions of reel and taping(leader-tape, trailer-tape)



8-4. Specification of Outer Case



	Outer (r Case Dime (mm)	Case Dimensions (mm)	Standard Reel Quantity in Outer Case
W D H (11881)	W	D	D H	(Reel)
186 186 93 5	186	186	186 93	5

^{*} Above Outer Case size is typical. It depends on a quantity of an order.

9. <u>(1)</u> Caution

9-1. 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, burnout caused by excessive temperature rise. Please contact us in advance in case of applying the surge current.

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

(5) Medical equipment

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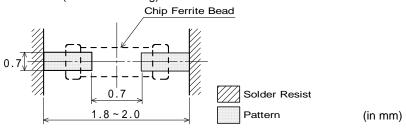
10. Notice

This product is designed for solder mounting. (reflow soldering only)

Please consult us in advance for applying other mounting method such as conductive adhesive.

10-1. Land pattern designing

• Standard land dimensions (Reflow soldering)



10-2. Soldering Conditions

Products can be applied to reflow soldering.

(1) Flux, Solder

Flux	Use rosin-based flux, but not highly acidic flux (with chlorine content exceeding 0.2(wt)%.) Do not use water-soluble flux.
Solder	Use Sn-3.0Ag-0.5Cu solder
	Standard thickness of solder paste : 100 μm to 200 μm

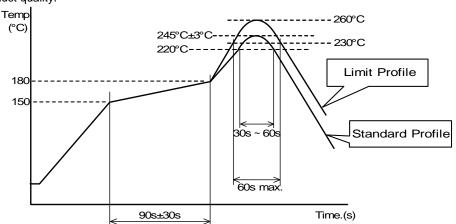
(2) Soldering conditions

 Pre-heating should be in such a way that the temperature difference between solder and ferrite surface is limited to 150 max. Also cooling into solvent after soldering should be in such a way that the temperature difference is limited to 100 max.

Unenough pre-heating may cause cracks on the ferrite, resulting in the deterioration of product quality.

• Standard soldering profile and the limit soldering profile is as follows.

The excessive limit soldering conditions may cause leaching of the electrode and / or resulting in the deterioration of product quality.



	Standard Profile	Limit Profile
Pre-heating	150 ~ 180°C, 90s ± 30s	
Heating	above 220°C, 30s ~ 60s	above 230°C, 60s max.
Peak temperature	245 ± 3°C	260°C, 10s
Cycle of reflow	2 times	2 times

10-3. Reworking with soldering iron

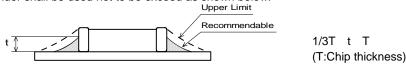
Pre-heating: 150°C, 1 min
Tip temperature: 350°C max.
Soldering time: 3(+1,-0) seconds.
Soldering iron output: 80W max.
Tip diameter: 3mm max.

• Times : 2times max.

Note: Do not directly touch the products with the tip of the soldering iron in order to prevent the crack on the ferrite material due to the thermal shock.

10-4. Solder Volume

Solder shall be used not to be exceed as shown below.

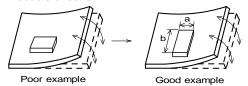


Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance.

10-5. Attention regarding P.C.B. bending

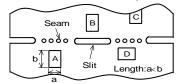
The following shall be considered when designing and laving out P.C.B.'s.

(1) P.C.B. shall be designed so that products are not subjected to the mechanical stress for board warpage. <Products direction>



Products shall be located in the sideways direction (Length:a<b) to the mechanical stress.

(2) Products location on P.C.B. separation.



Products (A,B,C,D) shall be located carefully so that products are not subjected to the mechanical stress due to warping the board. Because they may be subjected the mechanical stress in order of A>C>B \cong D.

10-6. Mounting density

Add special attention to radiating heat of products when mounting the inductor near the products with heating. The excessive heat by other products may cause deterioration at joint of this product with substrate.

10-7. Operating Environment

Do not use this product under the following environmental conditions, on deterioration of the Insulation Resistance of the Ferrite material and/or corrosion of Inner Electrode may result from the use.

- (1) in the corrodible atmosphere (acidic gass, alkaline gass, chlorine, sulfur gass, organic gass and etc.)
- (2) in the atmosphere where liquid such as organic solvent, may splash on the products.
- (3) in the atmosphere where the temperature / humidity changes rapidly and it is easy to dew.

10-8. Resin coating

The impedance value may change and/or it may affect on the product's performance due to high cure-stress of resin to be used for coating / molding products. So please pay your careful attention in selecting resin. In prior to use, please make the reliability evaluation with the product mounted in your application set.

10-9. Cleaning Conditions

Products shall be cleaned on the following conditions.

- (1) Cleaning temperature shall be limited to 60°C max. (40°C max. for IPA.)
- (2) Ultrasonic cleaning shall comply with the following conditions, avoiding the resonance phenomenon at the mounted products and P.C.B.

Power:20W/I max. Frequency:28kHz to 40kHz Time:5 min max.

- (3) Cleaner
 - 1.Alternative cleaner
 - •Isopropyl alcohol (IPA)
 - 2. Aqueous agent
 - •Higher Alcohol Type (PINE ALPHA ST-100S)
- (4) There shall be no residual flux and residual cleaner after cleaning.

In the case of using aqueous agent, products shall be dried completely after rinse with de-ionized water in order to remove the cleaner.

(5) Rinsing by Ultrasonic cleaning

Using water for ultrasonic cleaning may affect the resin quality used for the product by water element . In case of set cleaning conditions, please make sure the reliability according to the cleaning conditions.

(6) Other cleaning

Please contact us.

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P7/7

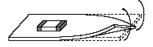
10-10. Handling of a substrate

After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.

Excessive mechanical stress may cause cracking in the product.



Twisting



10-11. Storage Conditions

(1) Storage period

Use the products within 6 months after delivered.

Solderability should be checked if this period is exceeded.

(2) Storage conditions

• Products should be storage in the warehouse on the following conditions.

Temperature : -10°C to 40°C

Humidity : 15% to 85% relative humidity No rapid change on temperature and humidity

- Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solderability.
- Products should be storaged on the palette for the prevention of the influence from humidity, dust and so on.
- Products should be storaged in the warehouse without heat shock, vibration, direct sunlight and so on.
- Products should be storaged under the airtight packaged condition.

(3)Delivery

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

11. / 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.