THE DATASHEET OF

BLM18BD252SH1D

Reference Only

Chip Ferrite Bead BLM18□□□□□□H1D
Murata Standard Reference Specification[AEC-Q200]

1.Scope

This reference specification applies to Chip Ferrite Bead for Automotive Electronics BLM18_□H Series based on AEC-Q200.

2.Part Numbering

(ex.) BL (1) M (2) 18 (3) AG (4) 121 (5) S (6) H (7) 1 (8) D (9)

(1)Product ID (4)Characteristics (7)Category(for Automotive Electronics)
(2)Type (5)Typical Impedance at 100MHz (8)Numbers of Circuit
(3)Dimension (L×W) (6)Performance (9)Packaging (D:Taping)

3.Rating

Customer Part Number	MURATA Part Number	Impedance (Ω) (at 100MHz)**(*1)** (refer to below comment)		Rated Current (mA)		DC Resistance (Ω max.) **(*1)** (refer to below comment)		Remark	ESD Rank 2:2kV 6:25kV
			Typical	at 85℃	at 125℃	Initial Values	Values After Testing		
	BLM18PG300SH1D	20 min.	30	1000		0.05	0.10	For DC power line	6
	BLM18PG330SH1D	33±25%	33	3000*2	1000*2	0.025	0.050		
	BLM18PG600SH1D	40 min.	60	1000		0.1	0.2		
	BLM18PG121SH1D	120±25%	120	2000*2	1000*2	0.05	0.10		
	BLM18PG181SH1D	180±25%	180	1500*2	1000*2	0.09	0.18		
	BLM18PG221SH1D	220±25%	220	1400*2	1000*2	0.10	0.14		
	BLM18PG331SH1D	330±25%	330	1200*2	1000*2	0.15	0.20		
	BLM18PG471SH1D	470±25%	470	1000		0.20	0.26		
	BLM18KG221SH1D	220±25%	220	2200*2	1500*2	0.050	0.060		2
	BLM18KG331SH1D	330±25%	330	1700*2	1200*2	0.080	0.095		
	BLM18KG471SH1D	470±25%	470	1500*2	1000*2	0.130	0.145		
	BLM18KG601SH1D	600±25%	600	1300*2	1000*2	0.150	0.165		
	BLM18KG102SH1D	1000±25%	1000	1000*2	800*2	0.200	0.230		
	BLM18SN220TH1D	22±7	22	8000*2	5000*2	0.004	0.005	For DC power line (Thin type)	2
	BLM18KG260TH1D	26±25%	26	6000*2	4000*2	0.007	0.012		
	BLM18KG300TH1D	30±25%	30	5000*2	3300*2	0.010	0.015		
	BLM18KG700TH1D	70±25%	70	3500*2	2200*2	0.022	0.032		
	BLM18KG101TH1D	100±25%	100	3000*2	1900*2	0.030	0.040		
	BLM18KG121TH1D	120±25%	120	3000*2	1900*2	0.030	0.040		
	BLM18AG121SH1D	120±25%	120	800		0.18	0.28	For general use	2
	BLM18AG151SH1D	150±25%	150	700		0.25	0.35		
	BLM18AG221SH1D	220±25%	220	700		0.25	0.35		
	BLM18AG331SH1D	330±25%	330	600		0.30	0.40		
	BLM18AG471SH1D	470±25%	470	550		0.35	0.45		
	BLM18AG601SH1D	600±25%	600	500		0.38	0.48		
	BLM18AG102SH1D	1000±25%	1000	450		0.50	0.60		
	BLM18BB050SH1D	5±25%	5	800		0.05	0.10	For high speed signal line	2
	BLM18BA050SH1D	5±25%	5	500		0.2	0.3		
	BLM18BB100SH1D	10±25%	10	700		0.10	0.20		
	BLM18BA100SH1D	10±25%	10	500		0.25	0.35		
	BLM18BB220SH1D	22±25%	22	700		0.20	0.30		
	BLM18BA220SH1D	22±25%	22	500		0.35	0.45		
	BLM18BB470SH1D	47±25%	47	600		0.25	0.35		
	BLM18BD470SH1D	47±25%	47	500		0.3	0.4		
	BLM18BA470SH1D	47±25%	47	300		0.55	0.65		

Customer Part Number	MURATA Part Number	Impedance (Ω) (at 100MHz)**(*1)** (refer to below comment)		Rated Current (mA) (*2)		DC Resistance (Ω max.) **(*1)** (refer to below comment)		Remark	ESD Rank 2:2kV 6:25kV
			Typical	at 85℃	at 125℃	Initial Values	Values After Testing		
	BLM18BB600SH1D	60±25%	60	600		0.25	0.35	For high speed signal line	2
	BLM18BA750SH1D	75±25%	75	300		0.70	0.80		
	BLM18BB750SH1D	75±25%	75	600		0.30	0.40		
	BLM18BB121SH1D	120±25%	120	550		0.30	0.40		
	BLM18BD121SH1D	120±25%	120	300		0.4	0.5		
	BLM18BA121SH1D	120±25%	120	200		0.9	1.0		
	BLM18BB141SH1D	140±25%	140	500		0.35	0.45		
	BLM18BB151SH1D	150±25%	150	450		0.37	0.47		
	BLM18BD151SH1D	150±25%	150	300		0.4	0.5		
	BLM18BB221SH1D	220±25%	220	450		0.45	0.55		
	BLM18BD221SH1D	220±25%	220	250		0.45	0.55		
	BLM18BB331SH1D	330±25%	330	400		0.58	0.68		
	BLM18BD331SH1D	330±25%	330	250		0.5	0.6		
	BLM18BD421SH1D	420±25%	420	250		0.55	0.65		
	BLM18BB471SH1D	470±25%	470	300		0.85	0.95		
	BLM18BD471SH1D	470±25%	470	250		0.55	0.65		
	BLM18BD601SH1D	600±25%	600	200		0.65	0.75		
	BLM18BD102SH1D	1000±25%	1000	200		0.85	0.95		
	BLM18BD152SH1D	1500±25%	1500	150		1.2	1.3		
	BLM18BD182SH1D	1800±25%	1800	150		1.5	1.6		
	BLM18BD222SH1D	2200±25%	2200	150		1.5	1.6		
	BLM18BD252SH1D	2500±25%	2500	150		1.5	1.6		

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

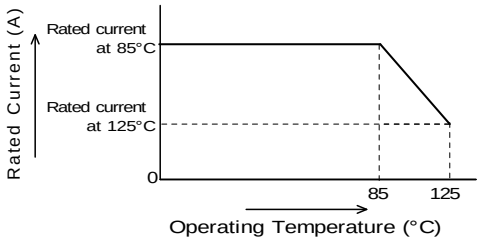
(*1)

Standard Testing Conditions

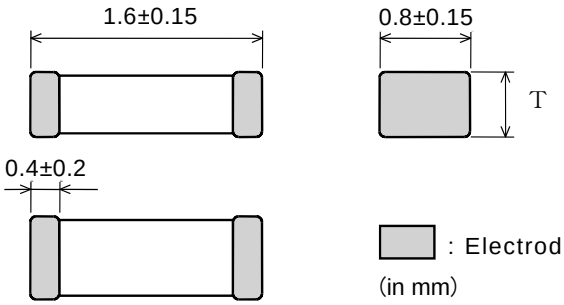
< Unless otherwise specified >
Temperature : Ordinary Temp. (15 °C to 35 °C)
Humidity : Ordinary Humidity (25%(RH) to 85%(RH))

< In case of doubt >
Temperature : 20°C±2 °C
Humidity : 60%(RH) to 70%(RH)
Atmospheric pressure : 86kPa to 106kPa

(Note)As for Rated currentmarked with *2,
Rated Current is derated as right figure depending on the operating temperature.



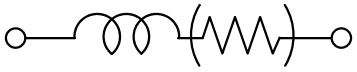
4.Style and Dimensions



P/N	T
BLM18_SH	0.8±0.15
BLM18_TH	0.6±0.15

(in mm)

■ Equivalent Circuit



(Resistance element becomes dominant at high frequencies.)

■ Unit Mass (Typical value)
BLM18_SH : 0.005g
BLM18_TH : 0.004g

5.Marking

No marking.

6.Specifications

6-1.Electrical Performance

No.	Item	Specification	Test Method
6-1-1	Impedance	Meet item 3.	Measuring Frequency : 100MHz±1MHz Measuring Equipment : KEYSIGHT 4991A or the equivalent Test Fixture : KEYSIGHT 16192A or the equivalent
6-1-2	DC Resistance	Meet item 3.	Measuring Equipment : Digital multi meter For BLM18SN Measuring Equipment : YOKOGAWA 755611 or the equivalent Test Fixture : KEYSIGHT 16044A or the equivalent ＊Except resistance of the Substrate and Wire

6-2. Mechanical Performance(based on Table 13 for FILTER EMI SUPPRESSORS/FILTERS)

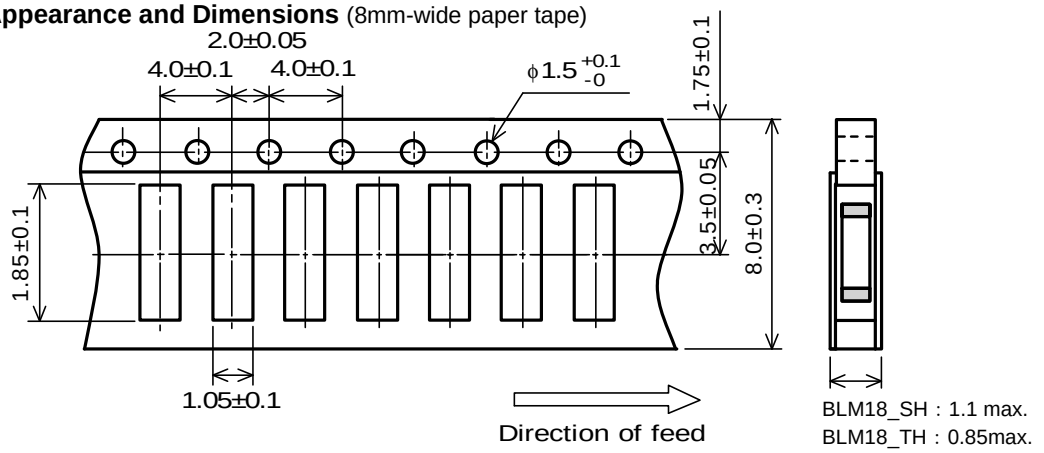
AEC-Q200 Rev.D issued June. 1 2010

<table>
<tr><th colspan="3">AEC-Q200</th><th rowspan="2">Murata Specification / Deviation</th></tr>
<tr><th>No.</th><th>Stress</th><th>Test Method</th></tr>
<tr><td>3</td><td>High
Temperature
Exposure</td><td>1000hours at 125 deg C
Set for 24hours at room
temperature, then measured.</td><td>Meet Table A after testing.
Table A
<table><tr><td>Appearance</td><td>No damage</td></tr><tr><td>Impedance
Change
(at 100MHz)</td><td>Within ±30%
（for BLM18SN
Within ±50%）</td></tr><tr><td>DC
Resistance</td><td>Meet item 3.</td></tr></table></td></tr>
<tr><td>4</td><td>Temperature Cycling</td><td>1000cycles
-55 deg C to +125 deg C
Set for 24hours at room
temperature, then measured.</td><td>Meet Table B after testing.
TableB
<table><tr><td>Appearance</td><td>No damage</td></tr><tr><td>Impedance
Change
(at 100MHz)</td><td>Within ±30%
（for BLM18SN
Within ±50%）
(for BLM18KG
Within-10%to+50%)</td></tr><tr><td>DC Resistance</td><td>Meet item 3.</td></tr></table></td></tr>
<tr><td>5</td><td>Destructive
Physical Analysis</td><td>Per EIA469
No electrical tests</td><td>No defects</td></tr>
<tr><td>7</td><td>Biased Humidity</td><td>1000hours at 85 deg C, 85%RH
Apply max rated current.</td><td>Meet Table C after testing.
TableC
<table><tr><td>Appearance</td><td>No damage</td></tr><tr><td>Impedance
Change
(at 100MHz)</td><td>Within ±30%
（for BLM18KG/SN
Within ±50%）</td></tr><tr><td>DC
Resistance</td><td>Meet item 3.</td></tr></table></td></tr>
<tr><td>8</td><td>Operational Life</td><td>Apply 125 deg C 1000hours
Set for 24hours at room
temperature, then measured</td><td>Meet Table C after testing.
If the rated current of parts exceed 1A,
the operating temperature should be 85 deg C.</td></tr>
</table>

<table>
<tr><th colspan="3">AEC-Q200</th><th rowspan="2">Murata Specification / Deviation</th></tr>
<tr><th>No.</th><th>Stress</th><th>Test Method</th></tr>
<tr><td>9</td><td>External Visual</td><td>Visual inspection</td><td>No abnormalities</td></tr>
<tr><td>10</td><td>Physical Dimension</td><td>Meet ITEM 4
（Style and Dimensions）</td><td>No defects</td></tr>
<tr><td>12</td><td>Resistance to Solvents</td><td>Per MIL-STD-202
Method 215</td><td>Not Applicable</td></tr>
<tr><td>13</td><td>Mechanical Shock</td><td>Per MIL-STD-202 Method 213
Condition F
1500g's (14.7N)/0.5ms/
Half sine</td><td>Meet Table D after testing.
Table D
<table><tr><td>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></td></tr>
<tr><td>14</td><td>Vibration</td><td>5g's(0.049N) for 20 minutes,
12cycles each of 3 orientations
Test from 10-2000Hz.</td><td>Meet Table D after testing.</td></tr>
<tr><td>15</td><td>Resistance
to Soldering Heat</td><td>Solder temperature
260C+/-5 deg C
Immersion time 10s</td><td>Pre-heating:150C +/-10 deg,60s to 90s
Meet Table C after testing.</td></tr>
<tr><td>17</td><td>ESD</td><td>Per AEC-Q200-002</td><td>Meet Table D after testing.
ESD Rank: Meet Item 3. (Rating)</td></tr>
<tr><td>18</td><td>Solderability</td><td>Per J-STD-002</td><td>Method b : Not Applicable
95% of the terminations is to be soldered.</td></tr>
<tr><td>19</td><td>Electrical
Characterization</td><td>Measured : Impedance</td><td>No defects</td></tr>
<tr><td>20</td><td>Flammability</td><td>Per UL-94</td><td>Not Applicable</td></tr>
<tr><td>21</td><td>Board Flex</td><td>Epoxy-PCB(1.6mm)
Deflection 2mm(min)
60s minimum holding tim</td><td>Meet Table C after testing.</td></tr>
<tr><td>22</td><td>Terminal Strength</td><td>Per AEC-Q200-006</td><td>No defects</td></tr>
<tr><td>30</td><td>Electrical
Transient
Conduction</td><td>Per ISO-7637-2</td><td>Not Applicable</td></tr>
</table>

7.Specification of Packaging

7-1.Appearance and Dimensions (8mm-wide paper tape)



(in mm)

(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) 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.

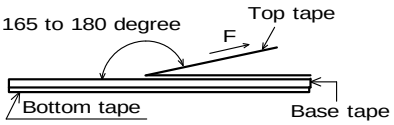
(5) Missing components number
Missing components number within 0.1% of the number per reel or 1 pc., whichever is greater, and are not continuous. The specified quantity per reel are kept.

7-2.Tape Strength

(1)Pull Strength

Top tape	5N min.
Bottom tape	

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



7-3.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 stuck on the reel.
(Customer part number, MURATA part number, Inspection number(∗1) , RoHS marking (∗2) , Quantity, etc)

∗1) « Expression of Inspection No. » $\underset{(1)}{\square\square}\ \underset{(2)}{OOOO}\ \underset{(3)}{\times\times\times}$

(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.

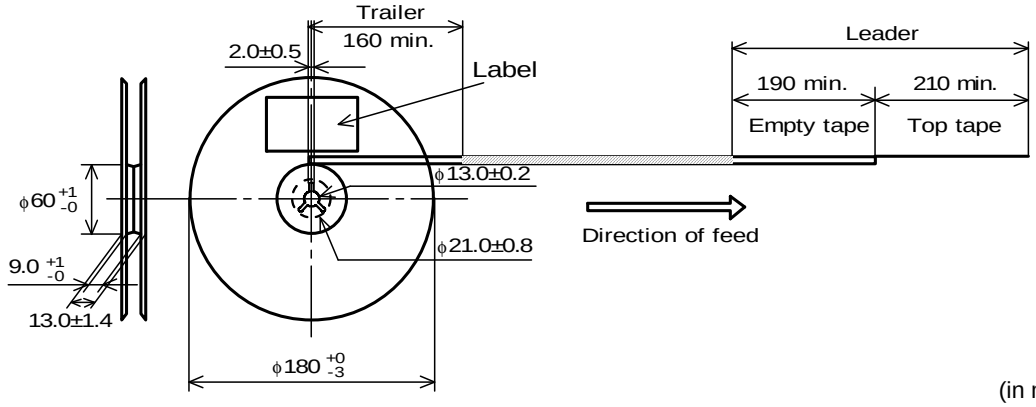
∗2) « Expression of RoHS marking » ROHS – $\underset{(1)}{Y}$ ($\underset{(2)}{\triangle}$)

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

(5)Outside package

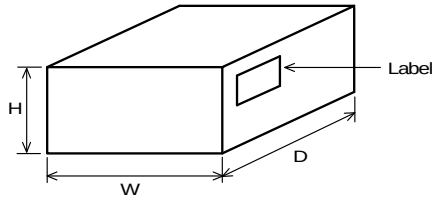
These reels shall be packed in the corrugated cardboard package and the following items shall be marked on a label and the label is stuck on the box.
(Customer name, Purchasing order number, Customer part number, MURATA part number, RoHS discrimination(*2) ,Quantity, etc)

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



(in mm)

7-4. Specification of Outer Case



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

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

8. ⚠ Caution

8-1.Rating

Do not use products beyond the Operating Temperature Range and Rated Current.

8-2.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.

8-3.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.

8-4.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.

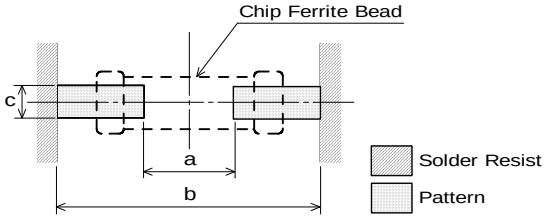
(1)Aircraft equipment
(2)Aerospace equipment
(3)Undersea equipment
(4)Power plant control equipment
(5)Medical equipment
(6)Disaster prevention / crime prevention equipment
(7)Traffic signal equipment
(8)Transportation equipment (trains,ships,etc.)
(9)Data-processing equipment
(10)Applications of similar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

9. Notice

This product is designed for solder mounting.
Please consult us in advance for applying other mounting method such as conductive adhesive.

9-1.Land pattern designing

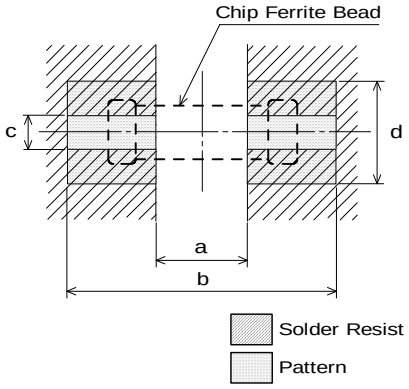
< For BLM18 series (except BLM18P/BLM18S/BLM18K type) >



Type	Soldering	a	b	c
BLM18 (except18P/18S/ BLM18K type)	Flow	0.8	2.5	0.7
	Reflow	0.7	2.0	0.7

(in mm)

< For BLM18P/BLM18S/BLM18K type >



Type	Rated Current (A)	Soldering	a	b	c	Land pad thickness and dimension d		
						18μm	35μm	70μm
BLM18P BLM18K	0.5 to 1.5	Flow/ Reflow	Flow 0.8 Reflow 0.7	Flow 2.5 Reflow 2.0	0.7	0.7	0.7	0.7
	1.7 to 2.5					1.2	0.7	0.7
	3 to 4					2.4	1.2	0.7
	5 to 6					6.4	3.3	1.65
BLM18SN	8					-	6.4	3.3

(in mm)

∗The excessive heat by land pads may cause deterioration at joint of products with substrate.

9-2.Soldering Conditions

Products can be applied to reflow and flow soldering.

(1) Flux,Solder

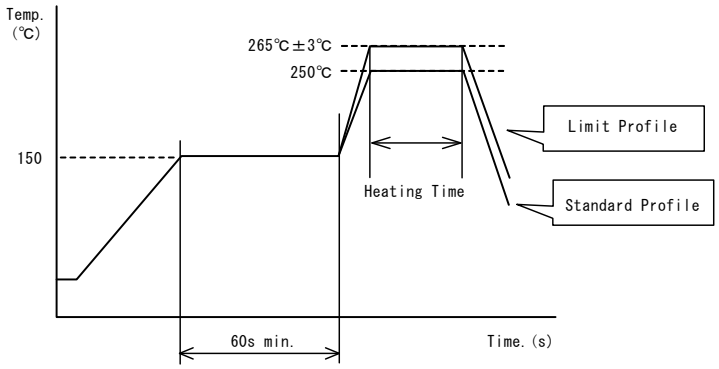
Flux	Use rosin-based flux, but not highly acidic flux (with chlorine content exceeding 0.2(wt)%.) Do not use water-soluble flux.
Solder	Use Sn-3.0Ag-0.5Cu solder Standard thickness of solder paste : 100 μm to 200 μm

(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.
  Insufficient 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.

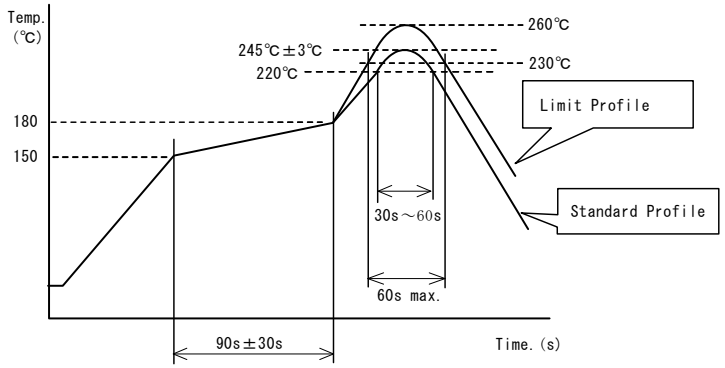
(3)soldering profile

☐Flow soldering profile



	Standard Profile	Limit Profile
Pre-heating	150℃、60s min.	
Heating	250℃、4～6s	265℃±3℃、5s max.
Cycle of flow	2 times	2 times

☐Reflow soldering profile



	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

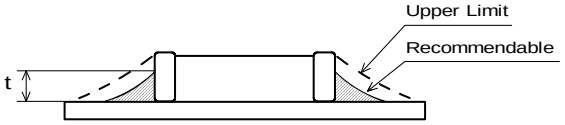
9-3.Reworking with soldering iron

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

9-4.Solder Volume

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



1/3T≦t≦T
(T:Chip thickness)

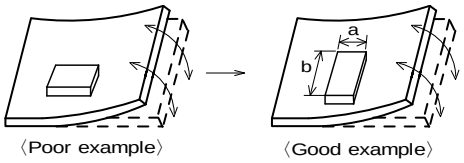
Accordingly increasing the solder volume, the mechanical stress to product is also increased.
Exceeding solder volume may cause the failure of mechanical or electrical performance.

9-5.Attention regarding P.C.B. bending

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

(1) P.C.B. shall be designed so that products are not subject to the mechanical stress for board warpage.

<Products direction>

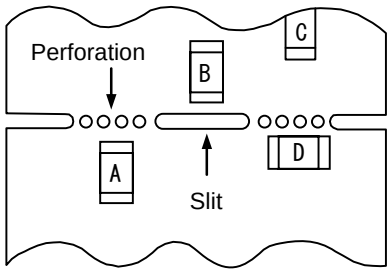


Products shall be located in the sideways direction (Length:a<b) to the mechanical stress.

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

It is effective to implement the following measures, to reduce stress in separating the board.
It is best to implement all of the following three measures; however, implement as many measures as possible to reduce stress.

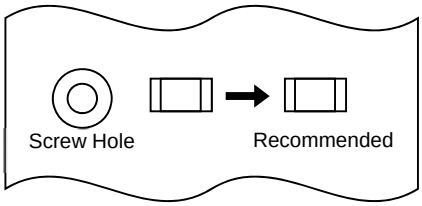
Contents of Measures	Stress Level
(1) Turn the mounting direction of the component parallel to the board separation surface.	A > D *1
(2) Add slits in the board separation part.	A > B
(3) Keep the mounting position of the component away from the board separation surface.	A > C



*1 A > D is valid when stress is added vertically to the perforation as with Hand Separation.
If a Cutting Disc is used, stress will be diagonal to the PCB, therefore A > D is invalid.

(3) Mounting Components Near Screw Holes

When a component is mounted near a screw hole, it may be affected by the board deflection that occurs during the tightening of the screw. Mount the component in a position as far away from the screw holes as possible.



9-6.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.

9-7. 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 such as acidic gases, alkaline gases, chlorine, sulfur gases, organic gases and etc. (the sea breeze, Cl_2, H_2S, NH_3, SO_2, NO_2,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.

9-8. 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 when you select resin. In prior to use, please make the reliability evaluation with the product mounted in your application set.

9-9.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/ℓ max. Frequency:28kHz to 40kHz Time:5 min max.

(3)Cleaner

1.Alternative cleaner

- Isopropyl alcohol (IPA)

2.Aqueous agent

- 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)Other cleaning

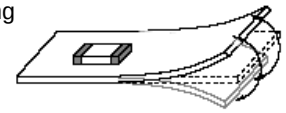
Please contact us.

9-10. Handling of a substrate

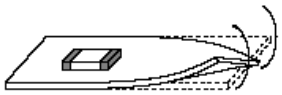
After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.

Excessive mechanical stress may cause cracking in the product.

Bending



Twisting



9-11.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 stored 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 stored on the palette for the prevention of the influence from humidity, dust and so on.
- Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.
- Products should be stored under the airtight packaged condition.

(3)Delivery

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

10. ⚠ 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 agreed 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.

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