

Chip Ferrite Bead BLM18□□□□□□N1□ Reference Specification

1.Scope

This Reference Specification applies to Chip Ferrite Bead BLM18_□N Series.

2.Part Numbering

(ex.) $\frac{BL}{(1)}$ $\frac{M}{(2)}$ $\frac{18}{(3)}$ $\frac{AG}{(4)}$ $\frac{121}{(5)}$ $\frac{S}{(6)}$ $\frac{N}{(7)}$ $\frac{1}{(8)}$ $\frac{D}{(9)}$

(1)Product ID (2)Type (3)Dimension(LxW) (4)Characteristics (5)Typical Impedance at 100MHz
 (6)Performance (7)Category (8)Numbers of Circuit (9)Packaging(D:Taping / 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.) | | Remark | |
|----------------------|----------------------------------|---|------|--------------------|----------|--------------------------------|----------------------|-----------------------|-------------------|
| | | Typical | | at 85°C | at 125°C | Initial Values | Values After Testing | | |
| | BLM18RK121SN1D BLM18RK121SN1B | 120±25% | 120 | 200 | | 0.25 | 0.35 | For Digital Interface | |
| | BLM18RK221SN1D BLM18RK221SN1B | 220±25% | 220 | 200 | | 0.30 | 0.40 | | |
| | BLM18RK471SN1D BLM18RK471SN1B | 470±25% | 470 | 200 | | 0.50 | 0.60 | | |
| | BLM18RK601SN1D BLM18RK601SN1B | 600±25% | 600 | 200 | | 0.60 | 0.70 | | |
| | BLM18RK102SN1D BLM18RK102SN1B | 1000±25% | 1000 | 200 | | 0.80 | 0.90 | | |
| | BLM18PG300SN1D BLM18PG300SN1B | 20 min. | 30 | 1000 | | 0.05 | 0.10 | | For DC power line |
| | BLM18PG330SN1D BLM18PG330SN1B | 33±25% | 33 | 3000*1 | 1000*1 | 0.025 | 0.050 | | |
| | BLM18PG600SN1D BLM18PG600SN1B | 40 min. | 60 | 500 | | 0.1 | 0.2 | | |
| | BLM18PG121SN1D BLM18PG121SN1B | 120±25% | 120 | 2000*1 | 1000*1 | 0.05 | 0.10 | | |
| | BLM18PG181SN1D BLM18PG181SN1B | 180±25% | 180 | 1500*1 | 1000*1 | 0.09 | 0.18 | | |
| | BLM18PG221SN1D BLM18PG221SN1B | 220±25% | 220 | 1400*1 | 1000*1 | 0.10 | 0.14 | | |
| | BLM18PG331SN1D BLM18PG331SN1B | 330±25% | 330 | 1200*1 | 1000*1 | 0.15 | 0.20 | | |
| | BLM18PG471SN1D BLM18PG471SN1B | 470±25% | 470 | 1000 | | 0.20 | 0.26 | | |
| | BLM18KG221SN1D BLM18KG221SN1B | 220±25% | 220 | 2200*1 | 1000*1 | 0.050 | 0.060 | | |
| | BLM18KG331SN1D BLM18KG331SN1B | 330±25% | 330 | 1700*1 | 1000*1 | 0.080 | 0.095 | | |
| | BLM18KG471SN1D BLM18KG471SN1B | 470±25% | 470 | 1500*1 | 1000*1 | 0.130 | 0.145 | | |
| | BLM18KG601SN1D BLM18KG601SN1B | 600±25% | 600 | 1300*1 | 1000*1 | 0.150 | 0.165 | | |
| | BLM18AG121SN1D BLM18AG121SN1B | 120±25% | 120 | 500 | | 0.18 | 0.28 | For general use | |
| | BLM18AG151SN1D BLM18AG151SN1B | 150±25% | 150 | 500 | | 0.25 | 0.35 | | |
| | BLM18AG221SN1D BLM18AG221SN1B | 220±25% | 220 | 500 | | 0.25 | 0.35 | | |

Reference Only

Spec. No. JENF243A-0003W-01

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| Customer Part Number | MURATA Part Number | Impedance (Ω) (at 100MHz, Under Standard Testing Condition) | | Rated Current (mA) | | DC Resistance (Ω max.) | | Remark |
|----------------------|----------------------------------|---|------|--------------------|---------|--------------------------------|----------------------------|--------|
| | | | | Typical | at 85°C | at 125°C | Initial Values | |
| | | | | | | | | |
| | BLM18AG331SN1D BLM18AG331SN1B | 330±25% | 330 | 500 | 0.30 | 0.40 | For general use | |
| | BLM18AG471SN1D BLM18AG471SN1B | 470±25% | 470 | 500 | 0.35 | 0.45 | | |
| | BLM18AG601SN1D BLM18AG601SN1B | 600±25% | 600 | 500 | 0.38 | 0.48 | | |
| | BLM18AG102SN1D BLM18AG102SN1B | 1000±25% | 1000 | 400 | 0.50 | 0.60 | | |
| | BLM18BB050SN1D BLM18BB050SN1B | 5±25% | 5 | 700 | 0.05 | 0.10 | | |
| | BLM18BA050SN1D BLM18BA050SN1B | 5±25% | 5 | 500 | 0.2 | 0.3 | | |
| | BLM18BB100SN1D BLM18BB100SN1B | 10±25% | 10 | 700 | 0.10 | 0.20 | For high speed signal line | |
| | BLM18BA100SN1D BLM18BA100SN1B | 10±25% | 10 | 500 | 0.25 | 0.35 | | |
| | BLM18BB220SN1D BLM18BB220SN1B | 22±25% | 22 | 600 | 0.20 | 0.30 | | |
| | BLM18BA220SN1D BLM18BA220SN1B | 22±25% | 22 | 500 | 0.35 | 0.45 | | |
| | BLM18BB470SN1D BLM18BB470SN1B | 47±25% | 47 | 550 | 0.25 | 0.35 | | |
| | BLM18BD470SN1D BLM18BD470SN1B | 47±25% | 47 | 500 | 0.3 | 0.4 | | |
| | BLM18BA470SN1D BLM18BA470SN1B | 47±25% | 47 | 300 | 0.55 | 0.65 | | |
| | BLM18BB600SN1D BLM18BB600SN1B | 60±25% | 60 | 550 | 0.25 | 0.35 | | |
| | BLM18BA750SN1D BLM18BA750SN1B | 75±25% | 75 | 300 | 0.70 | 0.80 | | |
| | BLM18BB750SN1D BLM18BB750SN1B | 75±25% | 75 | 500 | 0.30 | 0.40 | | |
| | BLM18BB121SN1D BLM18BB121SN1B | 120±25% | 120 | 500 | 0.30 | 0.40 | | |
| | BLM18BD121SN1D BLM18BD121SN1B | 120±25% | 120 | 300 | 0.4 | 0.5 | | |
| | BLM18BA121SN1D BLM18BA121SN1B | 120±25% | 120 | 200 | 0.9 | 1.0 | | |
| | BLM18BB141SN1D BLM18BB141SN1B | 140±25% | 140 | 450 | 0.35 | 0.45 | | |
| | BLM18BB151SN1D BLM18BB151SN1B | 150±25% | 150 | 450 | 0.37 | 0.47 | | |
| | BLM18BD151SN1D BLM18BD151SN1B | 150±25% | 150 | 300 | 0.4 | 0.5 | | |
| | BLM18BB221SN1D BLM18BB221SN1B | 220±25% | 220 | 450 | 0.45 | 0.55 | | |
| | BLM18BD221SN1D BLM18BD221SN1B | 220±25% | 220 | 250 | 0.45 | 0.55 | | |
| | BLM18BB331SN1D BLM18BB331SN1B | 330±25% | 330 | 400 | 0.58 | 0.68 | | |
| | BLM18BD331SN1D BLM18BD331SN1B | 330±25% | 330 | 250 | 0.5 | 0.6 | | |
| | BLM18BD421SN1D BLM18BD421SN1B | 420±25% | 420 | 250 | 0.55 | 0.65 | | |

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| Customer Part Number | MURATA Part Number | Impedance (Ω) (at 100MHz, Under Standard Testing Condition) | | Rated Current (mA) | | DC Resistance (Ω max.) | | Remark |
|----------------------|--------------------|---|---------|--------------------|--------------------|--------------------------------|----------------------|-------------------------------|
| | | | | | | Initial Values | Values After Testing | |
| | | Typical | at 85°C | at 125°C | | | | |
| | BLM18BB471SN1D | 470 \pm 25% | 470 | 300 | | 0.85 | 0.95 | For high speed signal line |
| | BLM18BB471SN1B | | | | | | | |
| | BLM18BD471SN1D | 470 \pm 25% | 470 | 250 | | 0.55 | 0.65 | |
| | BLM18BD471SN1B | | | | | | | |
| | BLM18BD601SN1D | 600 \pm 25% | 600 | 200 | | 0.65 | 0.75 | |
| | BLM18BD601SN1B | | | | | | | |
| | BLM18BD102SN1D | 1000 \pm 25% | 1000 | 200 | | 0.85 | 0.95 | |
| | BLM18BD102SN1B | | | | | | | |
| | BLM18BD152SN1D | 1500 \pm 25% | 1500 | 150 | | 1.2 | 1.3 | |
| | BLM18BD152SN1B | | | | | | | |
| | BLM18BD182SN1D | 1800 \pm 25% | 1800 | 150 | | 1.5 | 1.6 | |
| | BLM18BD182SN1B | | | | | | | |
| | BLM18BD222SN1D | 2200 \pm 25% | 2200 | 150 | | 1.5 | 1.6 | |
| | BLM18BD222SN1B | | | | | | | |
| | BLM18BD252SN1D | 2500 \pm 25% | 2500 | 150 | | 1.5 | 1.6 | |
| | BLM18BD252SN1B | | | | | | | |
| | BLM18TG121TN1D | 120 \pm 25% | 120 | 200 | | 0.25 | 0.3 | For general use (Thin type) |
| | BLM18TG121TN1B | | | | | | | |
| | BLM18TG221TN1D | 220 \pm 25% | 220 | 200 | | 0.3 | 0.4 | |
| | BLM18TG221TN1B | | | | | | | |
| | BLM18TG601TN1D | 600 \pm 25% | 600 | 200 | | 0.45 | 0.6 | |
| | BLM18TG601TN1B | | | | | | | |
| | BLM18TG102TN1D | 1000 \pm 25% | 1000 | 100 | | 0.6 | 0.8 | |
| | BLM18TG102TN1B | | | | | | | |
| | BLM18SG260TN1D | 26 \pm 25% | 26 | 6000* ¹ | 1000* ¹ | 0.007 | 0.012 | For DC power line (Thin type) |
| | BLM18SG260TN1B | | | | | | | |
| | BLM18SG700TN1D | 70 \pm 25% | 70 | 4000* ¹ | 1000* ¹ | 0.020 | 0.030 | |
| | BLM18SG700TN1B | | | | | | | |
| | BLM18SG121TN1D | 120 \pm 25% | 120 | 3000* ¹ | 1000* ¹ | 0.025 | 0.035 | |
| | BLM18SG121TN1B | | | | | | | |
| | BLM18SG221TN1D | 220 \pm 25% | 220 | 2500* ¹ | 1000* ¹ | 0.040 | 0.055 | |
| | BLM18SG221TN1B | | | | | | | |
| | BLM18SG331TN1D | 330 \pm 25% | 330 | 1500* ¹ | 1000* ¹ | 0.070 | 0.085 | |
| | BLM18SG331TN1B | | | | | | | |
| | BLM18SN220TN1D | 22 \pm 7 | 22 | 8000* ¹ | 5000* ¹ | 0.004 | 0.005 | |
| | BLM18SN220TN1B | | | | | | | |
| | BLM18KG260TN1D | 26 \pm 25% | 26 | 6000* ¹ | 1000* ¹ | 0.007 | 0.012 | |
| | BLM18KG260TN1B | | | | | | | |
| | BLM18KG300TN1D | 30 \pm 25% | 30 | 5000* ¹ | 1000* ¹ | 0.010 | 0.015 | |
| | BLM18KG300TN1B | | | | | | | |
| | BLM18KG700TN1D | 70 \pm 25% | 70 | 3500* ¹ | 1000* ¹ | 0.022 | 0.032 | |
| | BLM18KG700TN1B | | | | | | | |
| | BLM18KG101TN1D | 100 \pm 25% | 100 | 3000* ¹ | 1000* ¹ | 0.030 | 0.040 | |
| | BLM18KG101TN1B | | | | | | | |
| | BLM18KG121TN1D | 120 \pm 25% | 120 | 3000* ¹ | 1000* ¹ | 0.030 | 0.040 | |
| | BLM18KG121TN1B | | | | | | | |

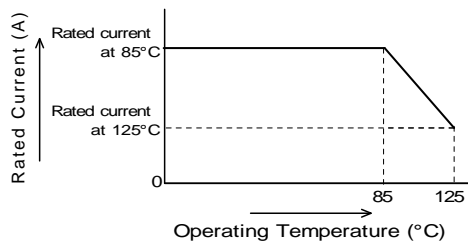
• Operating Temperature : -55°C to +125°C • Storage Temperature : -55°C to +125°C

Reference Only

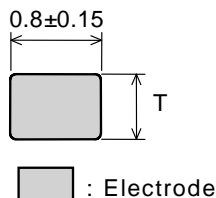
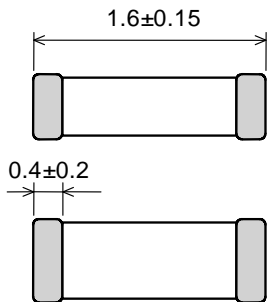
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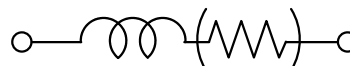
(*1) In case of Rated current is more than 1A, Rated Current is derated as right figure depending on the operating temperature.



4. Style and Dimensions



Equivalent Circuit



(Resistance element becomes dominant at high frequencies.)

Unit Mass (Typical value)

BLM18****SN1*: 0.005g
BLM18****TN1*: 0.004g

5. Marking

No marking.

(in mm)

| | |
|----------------|----------|
| BLM18SG***TN1* | 0.5±0.15 |
| BLM18SN***TN1* | 0.6±0.15 |
| BLM18TG***TN1* | 0.6±0.1 |
| BLM18KG***TN1* | 0.6±0.15 |
| BLM18****SN1* | 0.8±0.15 |

6. Standard

< Unless otherwise

Testing

Conditions

specified >

< In case of doubt

Temperature : Ordinary Temp. (15 °C to 35 °C)

Humidity : Ordinary Humidity (25%(RH) to 85%(RH))

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 : 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 For BLM18SN_TN Measuring Equipment : YOKOGAWA 755611 or the equivalent Test Fixture : Agilent 16044A or the equivalent * Except resistance of the Substrate and Wire |

7-2.Mechanical Performance

| No. | Item | Specification | Test Method | | | | | | |
|------------------------------|---|--|---|-----------|------------------------------|---|---------------|--------------|--|
| 7-2-1 | Appearance and Dimensions | Meet item 4. | Visual Inspection and measured with Slide Calipers. | | | | | | |
| 7-2-2 | Bonding Strength | Meet Table 1. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <caption>Table 1</caption> <tr> <td style="width: 50%;">Appearance</td> <td>No damage</td> </tr> <tr> <td>Impedance Change (at 100MHz)</td> <td>Within $\pm 30\%$ (for BLM18SN Within $\pm 50\%$)</td> </tr> <tr> <td>DC Resistance</td> <td>Meet item 3.</td> </tr> </table> | Appearance | No damage | Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18SN Within $\pm 50\%$) | DC Resistance | Meet item 3. | It shall be soldered on the substrate. Applying Force(F) : 6.8N Applying Time : 5s \pm 1s Applied direction : Parallel to substrate <div style="text-align: center; margin-top: 10px;"> </div> |
| Appearance | No damage | | | | | | | | |
| Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18SN Within $\pm 50\%$) | | | | | | | | |
| DC Resistance | Meet item 3. | | | | | | | | |
| 7-2-3 | Bending Strength | | It shall be soldered on the substrate. Substrate: Glass-epoxy 100mm \times 40mm \times 1.6mm Deflection : 1.0mm Speed of Applying Force : 0.5mm/s Keeping Time : 30s <div style="text-align: center; margin-top: 10px;"> </div> | | | | | | |
| 7-2-4 | Vibration | | It shall be soldered on the substrate. Oscillation Frequency : 10Hz to 55Hz to 10Hz for 1 min Total Amplitude : 1.5mm Testing Time : A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 h) | | | | | | |
| 7-2-5 | Resistance to Soldering Heat | Meet Table 2. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <caption>Table 2</caption> <tr> <td style="width: 50%;">Appearance</td> <td>No damage</td> </tr> <tr> <td>Impedance Change (at 100MHz)</td> <td>Within $\pm 30\%$ (for BLM18KG Within $\pm 40\%$) (for BLM18SN Within $\pm 50\%$)</td> </tr> <tr> <td>DC Resistance</td> <td>Meet item 3.</td> </tr> </table> | Appearance | No damage | Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18KG Within $\pm 40\%$) (for BLM18SN Within $\pm 50\%$) | DC Resistance | Meet item 3. | Pre-Heating : 150 $^{\circ}$ C \pm 10 $^{\circ}$ C, 60s~90s Solder : Sn-3.0Ag-0.5Cu Solder Temperature : 270 $^{\circ}$ C \pm 5 $^{\circ}$ C Immersion Time : 10s \pm 0.5s Immersion and emersion rates : 25mm/s Then measured after exposure in the room condition for 48h \pm 4h. |
| Appearance | No damage | | | | | | | | |
| Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18KG Within $\pm 40\%$) (for BLM18SN Within $\pm 50\%$) | | | | | | | | |
| DC Resistance | Meet item 3. | | | | | | | | |
| 7-2-6 | Drop | Products shall be no failure after tested. | It shall be dropped on concrete or steel board. 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 least 95% covered with new solder coating. | Flux : Ethanol solution of rosin,25(wt)% Pre-Heating : 150 $^{\circ}$ C \pm 10 $^{\circ}$ C, 60s~90s Solder : Sn-3.0Ag-0.5Cu Solder Temperature : 240 $^{\circ}$ C \pm 5 $^{\circ}$ C Immersion Time : 3s \pm 1s Immersion and emersion rates : 25mm/s | | | | | | |

Reference Only

7-3.Environmental Performance

It shall be soldered on the substrate.

| No. | Item | Specification | Test Method | | | | | | |
|------------------------------|---|---|--|-----------|------------------------------|---|---------------|--------------|---|
| 7-3-1 | Temperature Cycle | Meet Table 3. Table 3 <table border="1" style="width: 100%;"> <tr> <td>Appearance</td> <td>No damage</td> </tr> <tr> <td>Impedance Change (at 100MHz)</td> <td> Within $\pm 30\%$ (for BLM18KG Within -10% to $+50\%$ (for BLM18SN Within $\pm 50\%$) </td> </tr> <tr> <td>DC Resistance</td> <td>Meet item 3.</td> </tr> </table> | Appearance | No damage | Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18KG Within -10% to $+50\%$ (for BLM18SN Within $\pm 50\%$) | DC Resistance | Meet item 3. | 1 cycle: 1 step: $-55\text{ }^{\circ}\text{C}(+0\text{ }^{\circ}\text{C}, -3\text{ }^{\circ}\text{C}) / 30\text{min} \pm 3\text{min}$ 2 step: Ordinary temp. / 10min to 15min 3 step: $+125\text{ }^{\circ}\text{C}(+3\text{ }^{\circ}\text{C}, -0\text{ }^{\circ}\text{C}) / 30\text{min} \pm 3\text{min}$ 4 step: Ordinary temp. / 10min to 15min Total of 100 cycles Then measured after exposure in the room condition for $48\text{h} \pm 4\text{h}$. |
| Appearance | No damage | | | | | | | | |
| Impedance Change (at 100MHz) | Within $\pm 30\%$ (for BLM18KG Within -10% to $+50\%$ (for BLM18SN Within $\pm 50\%$) | | | | | | | | |
| DC Resistance | Meet item 3. | | | | | | | | |
| 7-3-2 | Humidity | Meet Table 1. | Temperature : $40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ Humidity : 90%(RH) to 95%(RH) Time : 1000h(+48h,-0h) Then measured after exposure in the room condition for $48\text{h} \pm 4\text{h}$. | | | | | | |
| 7-3-3 | Heat Life | | Temperature : $125\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ (in case of Rated current is more than 1A, do the test at : $+85\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$) Applying Current : Rated Current Time : 1000h(+48h,-0h) Then measured after exposure in the room condition for $48\text{h} \pm 4\text{h}$. | | | | | | |
| 7-3-4 | Cold Resistance | | Temperature : $-55 \pm 2\text{ }^{\circ}\text{C}$ Time : 1000h(+48h,-0h) Then measured after exposure in the room condition for $48\text{h} \pm 4\text{h}$. | | | | | | |

8.Specification of Packaging

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

| Part Number | Type | Appearance and Dimensions | | | | | | | | |
|--|--------------------------------------|--|------|---------------|---------------|----------|----------------|-----------|----------------|--|
| BLM18RK***SN1D BLM18PG***SN1D BLM18AG***SN1D BLM18B***SN1D BLM18KG***N1D BLM18SN***TN1D | 8mm- wide Paper tape 4mm-pitch | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th>Item</th> <th>Dimension "a"</th> </tr> </thead> <tbody> <tr> <td>BLM18****SN1D</td> <td>1.1 max.</td> </tr> <tr> <td>BLM18KG***TN1D</td> <td>0.85 max.</td> </tr> <tr> <td>BLM18SN***TN1D</td> <td></td> </tr> </tbody> </table> | Item | Dimension "a" | BLM18****SN1D | 1.1 max. | BLM18KG***TN1D | 0.85 max. | BLM18SN***TN1D | |
| Item | Dimension "a" | | | | | | | | | |
| BLM18****SN1D | 1.1 max. | | | | | | | | | |
| BLM18KG***TN1D | 0.85 max. | | | | | | | | | |
| BLM18SN***TN1D | | | | | | | | | | |
| BLM18SG***TN1D BLM18TG***TN1D | 8mm- wide Paper tape 2mm-pitch | | | | | | | | | |

(in mm)

(1) Taping

Products shall be packaged in the cavity of the base tape 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 is kept.

8-2.Tape Strength

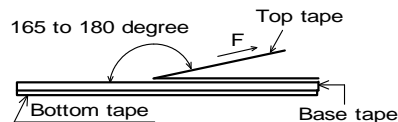
(1) Pull Strength

| | |
|-------------|---------|
| 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



9. 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 |
| (2) Aerospace equipment | (7) Traffic signal 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 | |

10. Notice

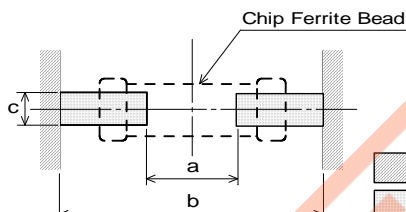
This product is designed for solder mounting.

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

10-1. Land pattern designing

- Standard land dimensions

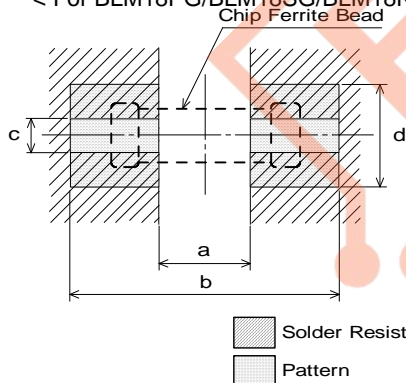
< For BLM18 series (except BLM18PG/BLM18SG/BLM18KG/ BLM18SN type) >



| Type | Soldering | a | b | c |
|--|-----------|-----|------------|-----|
| BLM18 (except 18PG/18SG/ BLM18KG/18SN type) | Flow | 0.7 | 2.2 to 2.6 | 0.7 |
| | Reflow | | 1.8 to 2.0 | |

(in mm)

< For BLM18PG/BLM18SG/BLM18KG/BLM18SN type >



| Type | Rated Current (A) | a | b | c | Land pad thickness and dimension d | | |
|---------|-------------------|-----|----------------------|-----|------------------------------------|------|------|
| | | | | | 18μm | 35μm | 70μm |
| BLM18PG | 0.5 to 1.5 | 0.7 | Flow 2.2 to 2.6 | 0.7 | 0.7 | 0.7 | 0.7 |
| | 1.7 to 2.5 | | | | 1.2 | 0.7 | 0.7 |
| BLM18SG | 3 to 4 | 0.7 | Reflow 1.8 to 2.0 | 0.7 | 2.4 | 1.2 | 0.7 |
| BLM18KG | 5 to 6 | | | | 6.4 | 3.3 | 1.65 |
| BLM18SN | 8 | 0.7 | 2.0 | 0.7 | - | 6.4 | 3.3 |

(in mm)

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

10-2. 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

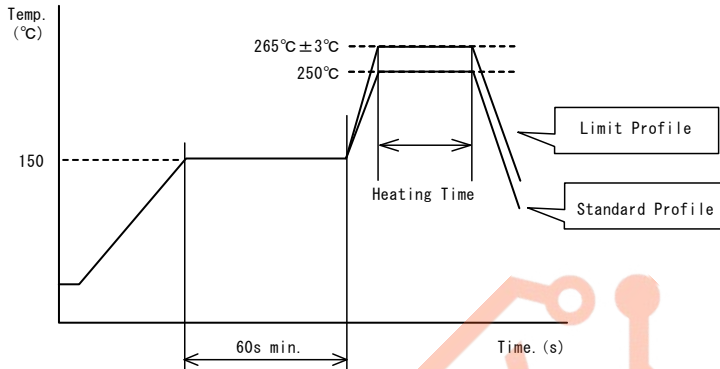
- Pre-heating should be in such a way that the temperature difference between solder and ferrite surface is limited to 150°C max. Also cooling into solvent after soldering should be in such a way that the temperature difference is limited to 100°C max.

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.

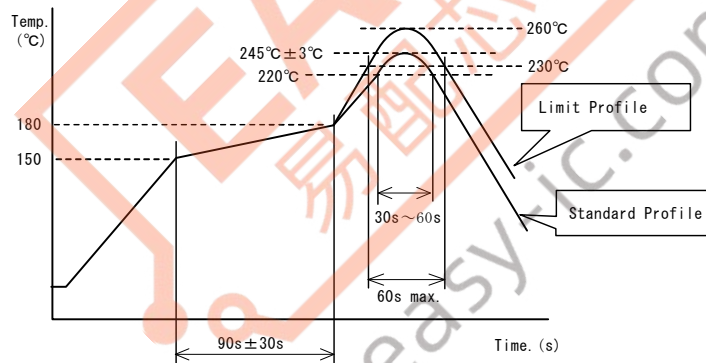
(3)soldering profile

□ Flow soldering profile



| | Standard Profile | Limit Profile |
|---------------|------------------|---------------------|
| Pre-heating | 150°C、60s min. | |
| Heating | 250°C、4~6s | 265°C ± 3°C、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 |

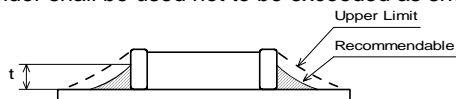
10-3.Reworking with soldering iron

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



$$1/3T \leq t \leq T$$

(T: Chip thickness)

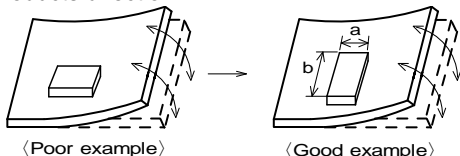
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance.

10-5.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.

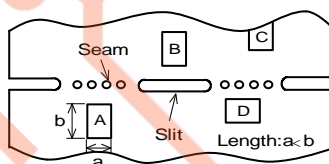
<Products direction>



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

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

Products (A, B, C, D) shall be located carefully so that products are not subject 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 gases, alkaline gases, chlorine, sulfur gases, organic gases 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 when you select 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.

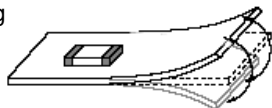
- (1) Cleaning temperature shall be limited to 60°C max. (40°C max. for IPA.)
- (2) Ultrasonic cleaning shall comply with the following conditions, avoiding the resonance phenomenon at the mounted products and P.C.B.
Power: 20W/l max. Frequency: 28kHz to 40kHz Time: 5 min max.
- (3) Cleaner
 1. Alternative 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.

10-10. Handling of a substrate

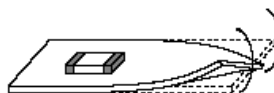
After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.

Excessive mechanical stress may cause cracking in the product.

Bending



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 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.

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.