

## ■ Test and Measurement Conditions

<Unless otherwise specified>

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

<In case of doubt>

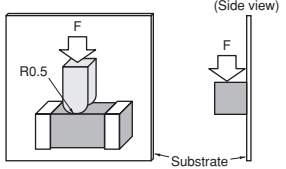
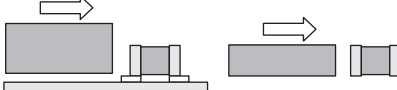
Temperature: 20±2°C  
Humidity: 60 to 70% (RH)  
Atmospheric Pressure: 86 to 106kPa

## ■ Specifications

### 1. Electrical Performance

No.	Item	Specifications	Test Methods						
1	Impedance	Within the specified tolerance. Impedance Frequency Characteristics (Typical): See the appendix.	Measuring Frequency <table border="1"> <tr> <td><b>BLM15/18/21/31/41 series</b></td> <td>100±1MHz</td> </tr> <tr> <td><b>BLM18HG/HD type</b></td> <td>100±1MHz, 1GHz±1MHz</td> </tr> </table> Measuring Equipment: Agilent 4291A or the equivalent Test Fixture <table border="1"> <tr> <td><b>BLM15/18/21/31/41 series</b></td> <td>Agilent 16192A or the equivalent</td> </tr> </table>	<b>BLM15/18/21/31/41 series</b>	100±1MHz	<b>BLM18HG/HD type</b>	100±1MHz, 1GHz±1MHz	<b>BLM15/18/21/31/41 series</b>	Agilent 16192A or the equivalent
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<b>BLM18HG/HD type</b>	100±1MHz, 1GHz±1MHz								
<b>BLM15/18/21/31/41 series</b>	Agilent 16192A or the equivalent								
2	DC Resistance	Meet specifications.	Measuring Equipment: Digital multi-meter						

### 2. Mechanical Performance

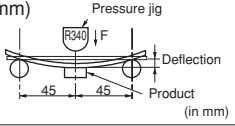
No.	Item	Specifications	Test Methods
1	Appearance and Dimensions	Meet dimensions.	Visual Inspection and measured with micrometer.
2	Solderability* <sup>1</sup>	The electrodes should be at least 95% covered with new solder coating.	Flux: Ethanol solution of rosin, 25wt% Pre-heating: 150±10°C, 60 to 90s Solder: ①Sn/Pb=60/40 ②Sn-3.0Ag-0.5Cu solder Solder Temperature: ①230±5°C ②240±5°C Immersion Time: ①4±1s ②3±1s (BLM15/18 series) ③4±1s (BLM21/31/41 series) Immersion and emersion rates: 25mm/s
3	Resistance to Soldering Heat* <sup>1</sup>		Flux: Ethanol solution of rosin, 25wt% Pre-heating: 150±10°C, 60 to 90s Solder: Sn/Pb=60/40 or Sn-3.0Ag-0.5Cu solder Solder Temperature: 270±5°C Immersion Time: 10±0.5s Immersion and emersion rates: 25mm/s Then measured after exposure to room conditions for 48±4 hrs.
4	Bonding Strength I * <sup>1</sup>	Meet Table 1, two pages ahead.	It should be soldered on the substrate. Applying Force (F): 4.9N (BLM15 series) 6.8N (BLM18 series) 9.8N (BLM21/31/41 series) Applying Time: 5±1s 
5	Bonding Strength II * <sup>2</sup>		It should be mounting with conductive glue on the substrate. Applying Force (F): 8N Applying Time: 5±1s Applying Direction as shown below. 

\*1 Except for BLM18AG□□□WH1

\*2 BLM18AG□□□WH1 only.

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No.	Item	Specifications	Test Methods
6	Bending Strength*1		<p>It should be soldered on the glass-epoxy substrate.            Substrate: 100 × 40 × 1.6mm            (BLM15 series: 100 × 40 × 0.8mm)            (BLM18H series: 100 × 40 × 1.0mm)</p> <p>Deflection (n): 1.0mm            (BLM15 series: 2.0mm)            (BLM18H series: 2.0mm)</p> <p>Speed of Applying Force: 0.5mm/s            Keeping Time: 30s</p> 
7	Vibration I *1	Meet Table 1, next page.	<p>It should be soldered on the substrate.            Oscillation Frequency: 10 to 2000 to 10Hz for 20 min.            Total Amplitude: 1.5mm or Acceleration amplitude 49m/s<sup>2</sup>            whichever is smaller.            Testing Time: A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 hrs.)</p>
8	Vibration II *2		<p>It should be mounted with conductive glue on the substrate.            Oscillation Frequency: 10 to 2000 to 10Hz for 20 min.            Total Amplitude: 1.5mm or Acceleration amplitude 49m/s<sup>2</sup>            whichever is smaller.            Testing Time: A period of 2 hours in each of 3 mutually perpendicular directions. (Total 6 hrs.)</p>


\*1 Except for BLM18AG□□□WH1

\*2 BLM18AG□□□WH1 only.

### 3. Environmental Performance (It should be soldered on the substrate.)

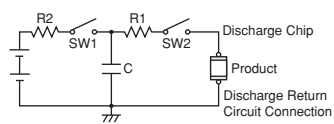
No.	Item	Specifications	Test Methods
1	Humidity		<p>Temperature: 70±2°C            Humidity: 90 to 95% (RH)            Time: 1000 hrs. (±4<sup>8</sup>hrs.)            Then measured after exposure to room conditions for 48±4 hrs.</p>
2	Heat Life	Meet Table 1, next page.	<p>Temperature: 150±3°C (BLM18AG□□□WH1 only)            125±3°C (BLM15/18/21/31 series)*1            85±3°C (BLM18PG330/121/181/221/331 type            BLM21PG/31PG/41PG series)</p> <p>Applying Current: Rated Current            Time: 1000 hrs. (±4<sup>8</sup>hrs.)            Then measured after exposure to room conditions for 48±4 hrs.</p>
3	Cold Resistance		<p>Temperature: -55±2°C            Time: 1000 hrs. (±4<sup>8</sup>hrs.)            Then measured after exposure to room conditions for 48±4 hrs.</p>
4	Temperature Cycle		<p>1 Cycle            1 step: -55±3°C/30±3 min.            2 step: Room Temperature/within 5 min.            3 step: +125±3°C/30±3 min.            4 step: Room Temperature/within 5 min.            Total of 1000 cycles            Then measured after exposure to room conditions for 48±4 hrs.</p>

\*1 Except for BLM18AG□□□WH1

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#### 4. Other Performance

No.	Item	Specifications	Test Methods																	
1	ESD Test I *1	Meet Table 1, below.	<p>The products are adhered on the substrate with the conductive glue and tested under the condition in Table, and then measured after exposure in room condition for 1 or 2 hours. Please refer to the figure about the equivalent circuit.</p> <table border="1"> <tr> <td>Capacitance for Charging and Discharging</td> <td>150pF</td> </tr> <tr> <td>Resistance for Discharging R1</td> <td>330Ω</td> </tr> <tr> <td>Resistance for Charge R2</td> <td>50 to 100MΩ</td> </tr> <tr> <td>Applying Method</td> <td>+20 times/-20 times</td> </tr> </table> 	Capacitance for Charging and Discharging	150pF	Resistance for Discharging R1	330Ω	Resistance for Charge R2	50 to 100MΩ	Applying Method	+20 times/-20 times									
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Resistance for Discharging R1	330Ω																			
Resistance for Charge R2	50 to 100MΩ																			
Applying Method	+20 times/-20 times																			
2	ESD Test II *1	<p>The products are adhered on the substrate with the conductive glue and tested under the condition of Table, and then measured after exposure in room condition for 1 or 2 hours.</p> <table border="1"> <thead> <tr> <th></th> <th>Machine Model (MM)</th> <th>Human Body Model (HBM)</th> </tr> </thead> <tbody> <tr> <td>Capacitance for Charging and Discharging</td> <td>200pF</td> <td>100pF</td> </tr> <tr> <td>Resistance for Discharging R1</td> <td>0Ω</td> <td>1500Ω</td> </tr> <tr> <td>Resistance for Charge R2</td> <td>1MΩ</td> <td>1MΩ</td> </tr> <tr> <td>Applying Method</td> <td>±10 times</td> <td>±5 times</td> </tr> <tr> <td>Applying Voltage</td> <td>300V</td> <td>2kV</td> </tr> </tbody> </table>		Machine Model (MM)	Human Body Model (HBM)	Capacitance for Charging and Discharging	200pF	100pF	Resistance for Discharging R1	0Ω	1500Ω	Resistance for Charge R2	1MΩ	1MΩ	Applying Method	±10 times	±5 times	Applying Voltage	300V	2kV
	Machine Model (MM)	Human Body Model (HBM)																		
Capacitance for Charging and Discharging	200pF	100pF																		
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Resistance for Charge R2	1MΩ	1MΩ																		
Applying Method	±10 times	±5 times																		
Applying Voltage	300V	2kV																		

\*1 BLM18AG□□□WH1 only.

Table 1.

Appearance	No damage
Impedance Change (at 100MHz)	within ±30%
DC Resistance	Meet Table 2, next page.

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Table 2.

Part Number	DC Resistance (ohm max.) Values After Testing	Part Number	DC Resistance (ohm max.) Values After Testing	Part Number	DC Resistance (ohm max.) Values After Testing	Part Number	DC Resistance (ohm max.) Values After Testing
BLM15AG100SH1	0.10	BLM18BA470SH1	0.65	BLM18HG601SH1	1.10	BLM21BD421SH1	0.40
BLM15AG700SH1	0.20	BLM18BB470SH1	0.35	BLM18HG102SH1	1.70	BLM21BB471SH1	0.55
BLM15AG121SH1	0.35	BLM18BD470SH1	0.40	BLM18HD471SH1	1.30	BLM21BD471SH1	0.45
BLM15AG221SH1	0.45	BLM18BB600SH1	0.35	BLM18HD601SH1	1.60	BLM21BD601SH1	0.45
BLM15AG601SH1	0.70	BLM18BA750SH1	0.80	BLM18HD102SH1	1.90	BLM21BD751SH1	0.50
BLM15AG102SH1	1.10	BLM18BB750SH1	0.40	BLM18EG101TH1	0.07	BLM21BD102SH1	0.50
BLM15BB050SH1	0.15	BLM18BA121SH1	1.00	BLM18EG121SH1	0.06	BLM21BD152SH1	0.55
BLM15BB100SH1	0.15	BLM18BB121SH1	0.40	BLM18EG181SH1	0.08	BLM21BD182SH1	0.60
BLM15BB220SH1	0.30	BLM18BD121SH1	0.50	BLM18EG221TH1	0.21	BLM21BD222SH1	0.70
BLM15BB470SH1	0.45	BLM18BB141SH1	0.45	BLM18EG331TH1	0.30	BLM21BD222TH1	0.70
BLM15BB750SH1	0.50	BLM18BB151SH1	0.47	BLM18EG391TH1	0.40	BLM21BD272SH1	0.90
BLM15BB121SH1	0.65	BLM18BD151SH1	0.50	BLM18EG471SH1	0.30	BLM21PG220SH1	0.02
BLM15BB221SH1	0.90	BLM18BB221SH1	0.55	BLM18EG601SH1	0.45	BLM21PG300SH1	0.03
BLM15BD471SH1	0.70	BLM18BD221SH1	0.55			BLM21PG600SH1	0.05
BLM15BD601SH1	0.75	BLM18BB331SH1	0.68			BLM21PG221SH1	0.10
BLM15BD102SH1	1.00	BLM18BD331SH1	0.60	BLM21AG121SH1	0.25	BLM21PG331SH1	0.18
BLM15BD182SH1	1.50	BLM18BD421SH1	0.65	BLM21AG151SH1	0.25		
		BLM18BB471SH1	0.95	BLM21AG221SH1	0.30		
		BLM18BD471SH1	0.65	BLM21AG331SH1	0.35	BLM31AJ601SH1	0.10
BLM18AG121SH1	0.28	BLM18BD601SH1	0.75	BLM21AG471SH1	0.35	BLM31PG330SH1	0.02
BLM18AG151SH1	0.35	BLM18BD102SH1	0.95	BLM21AG601SH1	0.40	BLM31PG500SH1	0.05
BLM18AG221SH1	0.35	BLM18BD152SH1	1.30	BLM21AG102SH1	0.55	BLM31PG121SH1	0.05
BLM18AG331SH1	0.40	BLM18BD182SH1	1.60	BLM21BB050SH1	0.14	BLM31PG391SH1	0.10
BLM18AG471SH1	0.45	BLM18BD222SH1	1.60	BLM21BB600SH1	0.25	BLM31PG601SH1	0.18
BLM18AG601SH1	0.48	BLM18BD252SH1	1.60	BLM21BB750SH1	0.35		
BLM18AG102SH1	0.60	BLM18PG300SH1	0.10	BLM21BB121SH1	0.35		
BLM18AG471WH1	0.26	BLM18PG330SH1	0.05	BLM21BD121SH1	0.35	BLM41PG600SH1	0.02
BLM18AG102WH1	0.80	BLM18PG600SH1	0.20	BLM21BB151SH1	0.35	BLM41PG750SH1	0.05
BLM18BA050SH1	0.30	BLM18PG121SH1	0.10	BLM21BD151SH1	0.35	BLM41PG181SH1	0.05
BLM18BB050SH1	0.10	BLM18PG181SH1	0.18	BLM21BB201SH1	0.45	BLM41PG471SH1	0.10
BLM18BA100SH1	0.35	BLM18PG221SH1	0.14	BLM21BB221SH1	0.45	BLM41PG102SH1	0.18
BLM18BB100SH1	0.15	BLM18PG331SH1	0.195	BLM21BD221SH1	0.35		
BLM18BA220SH1	0.45	BLM18PG471SH1	0.26	BLM21BB331SH1	0.50		
BLM18BB220SH1	0.30	BLM18HG471SH1	0.95	BLM21BD331SH1	0.40		