

## CONDUCTIVE POLYMER ALUMINUM SOLID ELECTROLYTIC CAPACITORS

### HMB Series

#### CHIP TYPE, HIGHER CAPACITANCE

Operating with wide temperature range -55~+105°C

Higher capacitance, ultra-low ESR, ripple current

Load life of 2000 hours

RoHS & REACH compliant, Halogen-free

HMB ← Lower ESR → HMA



### SPECIFICATIONS

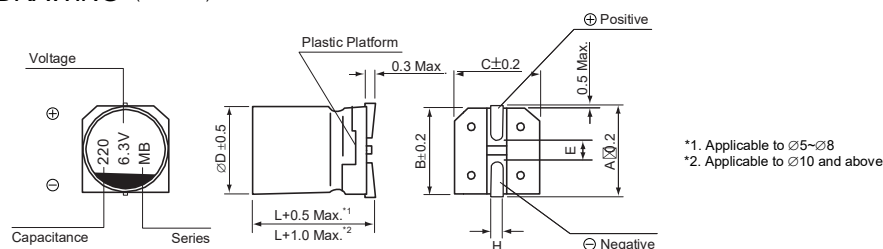
Items	Characteristics								
Operation Temperature Range	-55 ~ +105°C								
Voltage Range	2.5 ~ 16V								
Capacitance Range	100~ 1000μF								
Capacitance Tolerance	±20% at 120Hz, 20°C								
Leakage Current (*1)	≤ Specified value (after 2 minutes application of rated voltage at 20°C).								
Dissipation Factor (tan δ)	≤ Specified value at 120Hz, 20°C.								
ESR (*2)	≤ Specified value at 100KHz, 20°C.								
Stability at Low Temperature	Measurement frequency : 100KHz <table border="1"> <tr> <td>Impedance Ratio Z(+105°C)/Z(20°C)</td> <td>≤1.25</td> </tr> <tr> <td>ZT/Z20 (max.)</td> <td>Z(-55°C)/Z(20°C)</td> <td>≤1.25</td> </tr> </table>	Impedance Ratio Z(+105°C)/Z(20°C)	≤1.25	ZT/Z20 (max.)	Z(-55°C)/Z(20°C)	≤1.25			
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Damp Heat (Steady State)	When the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH, they meet the characteristics listed below. <table border="1"> <tr> <td>Capacitance Change</td> <td>Within±20% of initial value (*3)</td> </tr> <tr> <td>Dissipation Factor</td> <td>150% or less of initial specified value</td> </tr> <tr> <td>ESR (*2)</td> <td>150% or less of initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance Change	Within±20% of initial value (*3)	Dissipation Factor	150% or less of initial specified value	ESR (*2)	150% or less of initial specified value	Leakage Current	Initial specified value or less
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Dissipation Factor	150% or less of initial specified value								
ESR (*2)	150% or less of initial specified value								
Leakage Current	Initial specified value or less								
Endurance	After 2000 hours application of the rated voltage at 105°C, they meet the characteristics listed below. <table border="1"> <tr> <td>Capacitance Change</td> <td>Within±20% of initial value(*3)</td> </tr> <tr> <td>Dissipation Factor</td> <td>150% or less of initial specified value</td> </tr> <tr> <td>ESR (*2)</td> <td>150% or less of initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance Change	Within±20% of initial value(*3)	Dissipation Factor	150% or less of initial specified value	ESR (*2)	150% or less of initial specified value	Leakage Current	Initial specified value or less
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Resistance to Soldering Heat	After reflow soldering and restored at room temperature, they meet the characteristics listed below. <table border="1"> <tr> <td>Capacitance Change</td> <td>Within±10% of initial value (*3)</td> </tr> <tr> <td>Dissipation Factor</td> <td>130% or less of initial specified value</td> </tr> <tr> <td>ESR (*2)</td> <td>130% or less of initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance Change	Within±10% of initial value (*3)	Dissipation Factor	130% or less of initial specified value	ESR (*2)	130% or less of initial specified value	Leakage Current	Initial specified value or less
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Dissipation Factor	130% or less of initial specified value								
ESR (*2)	130% or less of initial specified value								
Leakage Current	Initial specified value or less								
Marking	Red print on the case top.								

(\*1) If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C

(\*2) Should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.

(\*3) The value before test of examination of resistance to soldering.

### DRAWING (Unit: mm)



Dimension table in next page.



**DIMENSIONS**

(Unit: mm)

∅D X L	5 x 5.5/5.8	5 x 8/9	6.3 x 5/6	6 x 5.8/6.5	6.3 x 7/7.7	6.3 x 9	8 x 6.7/7.7	10 x 12
A	6.0	6.0	7.3	7.3	7.3	7.3	9.0	11.0
B	5.3	5.3	6.6	6.6	6.6	6.6	8.3	10.3
C	5.3	5.3	6.6	6.6	6.6	6.6	8.3	10.3
E	1.6	1.6	2.1	2.1	2.1	2.1	3.2	4.6
L	5.5/5.8	8.0/9.0	5.0/6.0	5.8/6.5	7.0/7.7	9.0	6.7/7.7	12.0
H	0.5-0.8	0.5-0.8	0.5-0.8	0.5-0.8	0.5-0.8	0.5-0.8	0.8-1.1	0.8-1.1

**DIMENSIONS & STANDARD RATINGS**

WV (V)		2.5					4				
Cap. (μF)	Parameter	Case size	Dissipation factor	Leakage current	ESR (mΩ)	Ripple current	Case size	Dissipation factor	Leakage current	ESR (mΩ)	Ripple current
		∅D X L (mm)	(tan δ)	(μA)	max. 20°C 100KHz	(mA rms) 105°C 100KHz	∅D X L (mm)	(tan δ)	(μA)	max. 20°C 100KHz	(mA rms) 105°C 100KHz
150	157						5 x 5.8	0.12	120	12	3500
220	227						5 x 5.8 (6.3 x 5.8)	0.12 (0.12)	176 (176)	12 (10)	3500 (3900)
270	277						6.3 x 7.7	0.12	216	9	4200
330	337	5 x 5.8	0.12	165	10	3900	6.3 x 7.7 (6.3 x 7)	0.12 (0.12)	264 (264)	9 (10)	4200 (4500)
390	397	5 x 5.8 (6.3 x 5.8)	0.12 (0.12)	195 (195)	10 (10)	3900 (3900)	6.3 x 7	0.12	312	10	4500
470	477	6.3 x 7.7	0.12	332.5	9	4200	8 x 7.7	0.12	376	9	4500
560	567	6.3 x 7.7 (6.3 x 7) (6.3 x 5.8)	0.12 (0.12) (0.12)	280 (280) (280)	9 (10) (10)	4200 (4500) (3900)	8 x 7.7	0.12	448	9	4500
680	687	6.3 x 7	0.12	340	10	4500					
1000	108	8 x 7.7	0.12	500	9	4500					

WV (V)		6.3					10				
Cap. (μF)	Parameter	Case size	Dissipation factor	Leakage current	ESR (mΩ)	(mA rms)	Case size	Dissipation factor	Leakage current	ESR (mΩ)	(mA rms)
		∅D X L (mm)	(tan δ)	(μA)	max. 20°C 100KHz	105°C 100KHz	∅D X L (mm)	(tan δ)	(μA)	max. 20°C 100KHz	105°C 100KHz
100	107	5 x 5.5	0.12	126	25	2200	6.3 x 5.5	0.12	200	25	2600
120	127						5 x 5.8	0.12	240	22	2600
150	157						6.3 x 6.5	0.12	300	20	2800
220	227	6.3 x 5 (6.3 x 6)	0.12 (0.12)	277 (277)	16 (16)	3400 (3400)	6.3 x 6.5	0.12	440	20	2900
270	277	5 x 8 (5 x 9)	0.12 (0.12)	340 (340)	16 (16)	3000 (3000)	6.3 x 5.8	0.12	540	20	2800
330	337	6.3 x 6.5	0.12	416	12	3950					
470	477	6.3 x 7.7	0.12	592	12	3950					
560	567	6.3 x 9	0.12	706	10	4500					

WV (V)		16				
Cap. (μF)	Parameter	Case size	Dissipation factor	Leakage current	ESR (mΩ)	(mA rms)
		∅D X L (mm)	(tan δ)	(μA)	max. 20°C 100KHz	105°C 100KHz
100	107	6.3 x 6 (6.3 x 6.5)	0.12 (0.12)	320 (320)	24 (24)	2500 (2500)
180	187	6.3 x 5.8	0.12	576	22	3300
220	227	6.3 x 7.7 (6.3 x 9)	0.12 (0.12)	704 (704)	22 (20)	3300 (3300)
270	277	8 x 6.7	0.12	864	22	3300
330	337	8 x 7.7	0.12	1050	21	3400
470	477	10 x 12	0.12	1504	11	5200

### ◆ How to order

<u>HMB</u>	<u>106</u>	<u>M</u>	<u>0006</u>	<u>0405</u>	<u>R</u>	<u>-</u>
<u>Type</u>	<u>Capacitance code</u>	<u>Tolerance</u>	<u>Rated Voltage</u>	<u>Size Code</u>	<u>Package</u>	<u>Additional characters may be added for special requirements</u>
HMB	pF Code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) 106 = 10uF 107 = 100uF	M: +/-20%	Code 0006: 6.3VDC For DC Voltage 0004: 4VDC 0010: 10VDC 0016: 16VDC	Code 0405: Size 4x5.5mm Size for V-chip E-cap 0405: Size 4x5.5mm 0607: Size 6.3x7.7mm 1012: Size 10x12mm	R: Tape & Reel	