

## 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

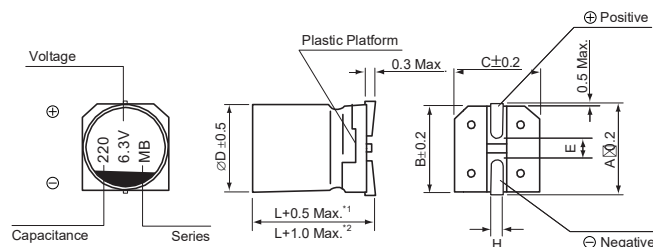
| Items                        | Characteristics   |   |       |
|------------------------------|---|---|-------|
| Operation Temperature Range  | -55 ~ +105°C  |   |       |
| Voltage Range                | 2.5 ~ 16V   |   |       |
| Capacitance Range            | 100~ 1000μF   |   |       |
| Capacitance 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  |   |       |
|                              | Impedance Ratio   | Z(+105°C)/Z(20°C)                       | ≤1.25 |
|                              | ZT/Z20 (max.)   | Z(-55°C)/Z(20°C)                        | ≤1.25 |
| 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. |   |       |
|                              | 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         |       |
| Endurance                    | After 2000 hours application of the rated voltage at 105°C, they meet the characteristics listed below.   |   |       |
|                              | 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         |       |
| Resistance to Soldering Heat | After reflow soldering and restored at room temperature, they meet the characteristics listed below.  |   |       |
|                              | 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         |       |
| 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)



\*1. Applicable to  $\varnothing 5$ ~ $\varnothing 8$   
 \*2. Applicable to  $\varnothing 10$  and above

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**

| Cap. (μF) |     | WV (V)                          |                      | 2.5                        |                      |                           |                                      |                      | 4                          |                      |                          |                                      |  |
|-----------|-----|---------------------------------|----------------------|----------------------------|----------------------|---------------------------|--------------------------------------|----------------------|----------------------------|----------------------|--------------------------|--------------------------------------|--|
|           |     | Parameter                       | Case size ∅D X L(mm) | Dissipation factor (tan δ) | Leakage current (μA) | ESR (mΩ) max. 20°C 100KHz | Ripple current (mA rms) 105°C 100KHz | Case size ∅D X L(mm) | Dissipation factor (tan δ) | Leakage current (μA) | ESR(mΩ) max. 20°C 100KHz | Ripple current (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                      |                                      |                      |                            |                      |                          |                                      |  |

| Cap. (μF) |     | WV (V)            |                      | 6.3                        |                      |                           |                       |                      | 10                         |                      |                          |                       |  |
|-----------|-----|-------------------|----------------------|----------------------------|----------------------|---------------------------|-----------------------|----------------------|----------------------------|----------------------|--------------------------|-----------------------|--|
|           |     | Parameter         | Case size ∅D X L(mm) | Dissipation factor (tan δ) | Leakage current (μA) | ESR (mΩ) max. 20°C 100KHz | (mA rms) 105°C 100KHz | Case size ∅D X L(mm) | Dissipation factor (tan δ) | Leakage current (μA) | ESR(mΩ) max. 20°C 100KHz | (mA rms) 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                      |                       |                      |                            |                      |                          |                       |  |

| Cap. (μF) |     | WV (V)              |                      | 16                         |                      |                           |                       |  |
|-----------|-----|---------------------|----------------------|----------------------------|----------------------|---------------------------|-----------------------|--|
|           |     | Parameter           | Case size ∅D X L(mm) | Dissipation factor (tan δ) | Leakage current (μA) | ESR (mΩ) max. 20°C 100KHz | (mA rms) 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><br>↓<br><u>Type</u> | <u>106</u><br>↓<br><u>Capacitance code</u>  | <u>M</u><br>↓<br><u>Tolerance</u> | <u>0006</u><br>↓<br><u>Rated Voltage</u>  | <u>0405</u><br>↓<br><u>Size Code</u>   | <u>R</u><br>↓<br><u>Package</u> | <u>-</u><br>↓<br><u>Additional characters may be added for special requirements</u> |
|--------------------------------|---|-----------------------------------|---|--|---------------------------------|---|
| HMB                            | pF Code: 1st two digits represent significant figures<br>3rd digit represents multiplier (number of zeros to follow)<br>106 = 10uF<br><br>107 = 100uF | M: +/-20%                         | Code 0006: 6.3VDC<br>For DC Voltage<br>0004: 4VDC<br>0010: 10VDC<br>0016: 16VDC | Code 0405: Size 4x5.5mm<br>Size for V-chip E-cap<br>0405: Size 4x5.5mm<br>0607: Size 6.3x7.7mm<br>1012: Size 10x12mm | R: Tape & Reel                  |   |

Note: Specification is subject to change without further notice. For more details and updates, please visit our website.