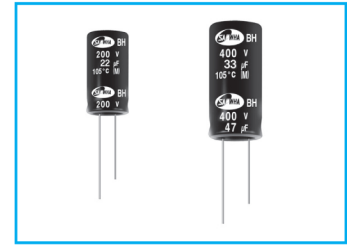


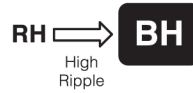
# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

**BH** For PSU, High Ripple Current Series

**LL**  
Long Life



- Higher ripple current compared with RH series
- Operating temperature range of -25 ~ +105°C
- High reliability withstanding 5000 hours load life at 105°C
- Complied to the RoHS directive



| Item   | Characteristics  |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
|--|--|-----------------|---------------------------|--------------------|------------------------------|------|-----------------------------------|-----|---------------|------|------|------|------|------|------|---------------|----|----|----|----|----|----|
| Operating temperature range                                | -40 ~ +105°C   |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Leakage current max.                                       | I = 0.04CV + 100µA (after 1 minute)<br>I = 0.02CV + 25µA (after 5 minutes)   |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Capacitance tolerance                                      | ±20% at 120Hz, 20°C  |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Dissipation factor max. (at 120Hz, 20°C)                   | <table border="1"> <thead> <tr> <th>WV</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> <th>500</th> </tr> </thead> <tbody> <tr> <td>tanδ</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> <td>0.24</td> <td>0.24</td> <td>0.24</td> </tr> </tbody> </table>  | WV              | 200                       | 250                | 350                          | 400  | 450                               | 500 | tanδ          | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 | 0.24 |               |    |    |    |    |    |    |
| WV   | 200  | 250             | 350                       | 400                | 450                          | 500  |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| tanδ   | 0.15   | 0.15            | 0.20                      | 0.24               | 0.24                         | 0.24 |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Low temperature characteristics (Impedance ratio at 120Hz) | <table border="1"> <thead> <tr> <th>WV</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> <th>500</th> </tr> </thead> <tbody> <tr> <td>Z-25°C/Z+20°C</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td>Z-40°C/Z+20°C</td> <td>11</td> <td>11</td> <td>11</td> <td>11</td> <td>11</td> <td>11</td> </tr> </tbody> </table>   | WV              | 200                       | 250                | 350                          | 400  | 450                               | 500 | Z-25°C/Z+20°C | 3    | 3    | 3    | 3    | 3    | 3    | Z-40°C/Z+20°C | 11 | 11 | 11 | 11 | 11 | 11 |
| WV   | 200  | 250             | 350                       | 400                | 450                          | 500  |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Z-25°C/Z+20°C  | 3  | 3               | 3                         | 3                  | 3                            | 3    |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Z-40°C/Z+20°C  | 11   | 11              | 11                        | 11                 | 11                           | 11   |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Load life  | <p>After an application of DC bias voltage plus the rated AC ripple current for 5000 hours at 105°C. The measurement shall meet the following limits. The DC voltage plus the peak AC voltage combined must not exceed the rated voltage.</p> <table border="1"> <tbody> <tr> <td>Leakage current</td> <td>Less than specified value</td> </tr> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tanδ</td> <td>Less than 200% of specified value</td> </tr> </tbody> </table> | Leakage current | Less than specified value | Capacitance change | Within ±20% of initial value | tanδ | Less than 200% of specified value |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Leakage current  | Less than specified value  |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Capacitance change   | Within ±20% of initial value   |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| tanδ   | Less than 200% of specified value  |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |
| Shelf life (at 105°C)                                      | After 1000 hours no load test, leakage current, capacitance and tanδ are same as load life value. The measurement shall be performed at 20°C by the KS C IEC 60384 - 4   |                 |                           |                    |                              |      |                                   |     |               |      |      |      |      |      |      |               |    |    |    |    |    |    |

● DRAWING (See page 91)

Unit : mm

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

| µF \ WV | 200       |      | 250       |      | 350       |      | 400       |     |
|---------|-----------|------|-----------|------|-----------|------|-----------|-----|
| 2.2     |           |      |           |      |           |      | 10 × 12.5 | 130 |
| 3.3     |           |      |           |      | 10 × 12.5 | 140  | 10 × 12.5 | 140 |
| 4.7     |           |      |           |      | 10 × 16   | 220  | 10 × 16   | 220 |
| 6.8     |           |      |           |      | 10 × 16   | 280  | 10 × 16   | 280 |
| 8.2     |           |      |           |      | 8 × 20    | 300  | 8 × 20    | 400 |
|         |           |      |           |      | 10 × 16   | 300  | 10 × 20   | 400 |
| 10      | 10 × 16   | 320  | 10 × 16   | 320  | 8 × 20    | 300  | 8 × 23    | 400 |
|         |           |      |           |      | 10 × 20   | 400  | 10 × 20   | 400 |
| 22      | 8 × 20    | 300  | 8 × 23    | 350  | 10 × 30   | 500  | 12.5 × 20 | 700 |
|         | 10 × 20   | 550  | 10 × 20   | 550  | 12.5 × 20 | 650  | 12.5 × 25 | 780 |
|         |           |      |           |      | 12.5 × 25 | 680  |           |     |
| 33      | 12.5 × 20 | 700  | 12.5 × 20 | 800  | 16 × 25   | 910  | 16 × 25   | 920 |
| 47      | 12.5 × 20 | 980  | 12.5 × 25 | 1040 | 12.5 × 30 | 1050 |           |     |
|         |           |      |           |      | 18 × 20   | 1150 |           |     |
| 68      | 12.5 × 20 | 1100 | 12.5 × 30 | 1300 | 16 × 31.5 | 1300 |           |     |
|         | 12.5 × 25 | 1300 | 16 × 25   | 1350 |           |      |           |     |
| 82      | 16 × 20   | 1450 | 12.5 × 30 | 1450 |           |      |           |     |
| 100     | 12.5 × 30 | 1550 |           |      |           |      |           |     |
|         | 16 × 25   | 1630 |           |      |           |      |           |     |

← Ripple current (mA rms) at 105°C, 100kHz  
 — Case size ØD×L (mm)

| WV  | Cap.(µF) | ØD×L(mm) | Rated ripple current (mA rms)105°C |      |       |       |         |
|-----|----------|----------|------------------------------------|------|-------|-------|---------|
|     |          |          | 120Hz                              | 1kHz | 10kHz | 50kHz | 100kHz≤ |
| 450 | 8.2      | 8×20     | 160                                | 280  | 360   | 380   | 400     |
|     | 4.7      | 8×20     | 75                                 | 130  | 180   | 220   | 250     |
| 500 | 5.6      | 8×20     | 120                                | 210  | 270   | 285   | 300     |

● FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

| µF \ Frequency | 120Hz | 1kHz | 10kHz | 50kHz | 100kHz≤ |
|----------------|-------|------|-------|-------|---------|
| ~ 4.7          | 0.40  | 0.60 | 0.80  | 0.90  | 1.00    |
| 6.8 ~ 10       | 0.40  | 0.70 | 0.90  | 0.95  | 1.00    |
| 22 ~           | 0.50  | 0.80 | 0.90  | 0.95  | 1.00    |