

# SPECIFICATION FOR APPROVAL

Date : 2022/8/30

| <i>Conductive Polymer Aluminum Solid Capacitor</i>  |  | <b>GMR Series</b>         |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
|---|--|---------------------------|---|----------------------------------|---|---------------------------------|-----|---------------------------------|-----------------|--------------------------------|-----|------------|-----|-------|-----|-----|-----|------------|-----|---------|------|------|------|------------|-----|---|------------|---|---|---|---------|-----|-----|-----|-------|-----|-----|-----|---------|-----|-----|-----|
| Capacitance : 47 $\mu$ F  | Tolerance : $\pm 20\%$   | Type : SMD                |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Voltage : 35 V DC   | Dimension : 6.3x6.0  | Part No. : GMR-47M35V6306 |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Diagram of Dimension & Recommended land pattern (mm)  |  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
|   |  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| <table border="1"> <thead> <tr> <th><math>\phi</math> DxL</th> <th>W</th> <th>H</th> <th>C</th> <th>R</th> <th>P</th> </tr> </thead> <tbody> <tr> <td>6.3x6.0</td> <td>6.6</td> <td>6.6</td> <td>7.3</td> <td>0.5 to 0.8</td> <td>2.1</td> </tr> <tr> <td>8x9.7</td> <td>8.3</td> <td>8.3</td> <td>9.0</td> <td>0.8 to 1.1</td> <td>3.2</td> </tr> <tr> <td>10x12.6</td> <td>10.3</td> <td>10.3</td> <td>11.0</td> <td>0.8 to 1.1</td> <td>4.6</td> </tr> </tbody> </table> |  | $\phi$ DxL                | W                                       | H                                | C                                       | R                               | P   | 6.3x6.0                         | 6.6             | 6.6                            | 7.3 | 0.5 to 0.8 | 2.1 | 8x9.7 | 8.3 | 8.3 | 9.0 | 0.8 to 1.1 | 3.2 | 10x12.6 | 10.3 | 10.3 | 11.0 | 0.8 to 1.1 | 4.6 | <table border="1"> <thead> <tr> <th><math>\phi</math> DxL</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>6.3x6.0</td> <td>2.1</td> <td>3.5</td> <td>1.6</td> </tr> <tr> <td>8x9.7</td> <td>2.8</td> <td>4.1</td> <td>1.9</td> </tr> <tr> <td>10x12.6</td> <td>4.3</td> <td>4.4</td> <td>1.9</td> </tr> </tbody> </table> | $\phi$ DxL | a | b | c | 6.3x6.0 | 2.1 | 3.5 | 1.6 | 8x9.7 | 2.8 | 4.1 | 1.9 | 10x12.6 | 4.3 | 4.4 | 1.9 |
| $\phi$ DxL  | W  | H                         | C                                       | R                                | P                                       |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 6.3x6.0   | 6.6  | 6.6                       | 7.3                                     | 0.5 to 0.8                       | 2.1                                     |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 8x9.7   | 8.3  | 8.3                       | 9.0                                     | 0.8 to 1.1                       | 3.2                                     |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 10x12.6   | 10.3   | 10.3                      | 11.0                                    | 0.8 to 1.1                       | 4.6                                     |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| $\phi$ DxL  | a  | b                         | c                                       |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 6.3x6.0   | 2.1  | 3.5                       | 1.6                                     |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 8x9.7   | 2.8  | 4.1                       | 1.9                                     |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 10x12.6   | 4.3  | 4.4                       | 1.9                                     |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| <b>Specification</b>  |  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 1 Operating Temperature Range :   | - 55 To + 125 $^{\circ}$ C   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 2 Capacitance Tolerance :   | $\pm 20\%$ (20 $^{\circ}$ C, 120Hz)  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 3 Leakage Current :   | $I \leq 329 \mu$ A (after 2 minutes)   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 4 Surge Voltage DC :  | Rated voltage x 1.15 V   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 5 Dissipation Factor (Tan $\delta$ ) :  | 0.12 MAX (20 $^{\circ}$ C, 120Hz)  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 6 ESR :   | 24 m $\Omega$ MAX. (20 $^{\circ}$ C/100KHz to 300KHz)  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 7 Ripple Current :  | 500 mA/125 $^{\circ}$ C/100KHz (1500mA/105 $^{\circ}$ C/100KHz)  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 8 Temperature characteristic :<br>(Impedance ratio at 100 KHz)  | <table border="1"> <tbody> <tr> <td>Z(-25<math>^{\circ}</math>C)/Z(+20<math>^{\circ}</math>C)</td> <td><math>\leq 1.15</math></td> </tr> <tr> <td>Z(-55<math>^{\circ}</math>C)/Z(+20<math>^{\circ}</math>C)</td> <td><math>\leq 1.25</math></td> </tr> </tbody> </table>   |                           | Z(-25 $^{\circ}$ C)/Z(+20 $^{\circ}$ C) | $\leq 1.15$                      | Z(-55 $^{\circ}$ C)/Z(+20 $^{\circ}$ C) | $\leq 1.25$                     |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Z(-25 $^{\circ}$ C)/Z(+20 $^{\circ}$ C)   | $\leq 1.15$  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Z(-55 $^{\circ}$ C)/Z(+20 $^{\circ}$ C)   | $\leq 1.25$  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 9 Load Life Test : After 2000 hours at 125 $^{\circ}$ C, The capacitor shall meet with following limits :   | <table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td><math>\leq \pm 30\%</math> of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td><math>\leq 300\%</math> of specified value</td> </tr> <tr> <td>ESR</td> <td><math>\leq 300\%</math> of specified value</td> </tr> <tr> <td>Leakage Current</td> <td><math>\leq</math> initial specified value</td> </tr> </tbody> </table> |                           | Capacitance Change                      | $\leq \pm 30\%$ of initial value | Dissipation Factor                      | $\leq 300\%$ of specified value | ESR | $\leq 300\%$ of specified value | Leakage Current | $\leq$ initial specified value |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Capacitance Change  | $\leq \pm 30\%$ of initial value   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Dissipation Factor  | $\leq 300\%$ of specified value  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| ESR   | $\leq 300\%$ of specified value  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Leakage Current   | $\leq$ initial specified value   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| 10 Moisture Resistance : The following specifications shall be satisfied when the capacitors are restored to 20 $^{\circ}$ C after subjecting them at 60 $^{\circ}$ C, RH90~95% for 1000 hours.   | <table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td><math>\leq \pm 20\%</math> of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td><math>\leq 150\%</math> of specified value</td> </tr> <tr> <td>ESR</td> <td><math>\leq 150\%</math> of specified value</td> </tr> <tr> <td>Leakage Current</td> <td><math>\leq</math> initial specified value</td> </tr> </tbody> </table> |                           | Capacitance Change                      | $\leq \pm 20\%$ of initial value | Dissipation Factor                      | $\leq 150\%$ of specified value | ESR | $\leq 150\%$ of specified value | Leakage Current | $\leq$ initial specified value |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Capacitance Change  | $\leq \pm 20\%$ of initial value   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Dissipation Factor  | $\leq 150\%$ of specified value  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| ESR   | $\leq 150\%$ of specified value  |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |
| Leakage Current   | $\leq$ initial specified value   |                           |   |                                  |   |                                 |     |                                 |                 |                                |     |            |     |       |     |     |     |            |     |         |      |      |      |            |     |   |            |   |   |   |         |     |     |     |       |     |     |     |         |     |     |     |