

## Miniature Aluminum Electrolytic Capacitors

| Classification        | Series | Configuration  | Applications  | Category Temperature Range (°C) | Features      |                             |               |           |                       | Rated Voltage Range (V.D.C) | Rated Capacitance Range (µF) | Tolerance on Rated Capacitance (%) | Page |
|-----------------------|--------|--|---|---------------------------------|---------------|-----------------------------|---------------|-----------|-----------------------|-----------------------------|------------------------------|------------------------------------|------|
|                       |        |  |   |                                 | Standard type | Smaller-sized & low profile | Low impedance | Long life | Anti-cleaning solvent |                             |                              |                                    |      |
| Ultra-Miniature type  | MA     | 04   | 5mmL, Standard, For General Purposes                          | -40 to +85                      | ●             |                             |               |           | ●                     | 4 to 50                     | 0.1 to 470                   | ± 20                               | 119  |
|                       | MP     | 04   | 5mmL, Bi-Polarized  | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 47                    | ± 20                               | 120  |
|                       | MT     | 04   | 5mmL, Wide Temperature Range                                  | -55 to +105                     | ●             |                             |               |           | ●                     | 4 to 50                     | 0.1 to 100                   | ± 20                               | 121  |
|                       | MF     | 04   | 5mmL, Low Impedance   | -55 to +105                     |               |                             | ●             |           | ●                     | 6.3 to 35                   | 1 to 100                     | ± 20                               | 122  |
|                       | MV     | 04   | 5mmL, Long Life Assurance                                     | -40 to +105                     |               |                             |               | ●         |                       | 4 to 50                     | 0.1 to 100                   | ± 20                               | 123  |
|                       | SA     | 04   | 7mmL, For General Purposes                                    | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 220                   | ± 20                               | 124  |
|                       | SR     | 04   | 7mmL, High C / V  | -40 to +85                      |               | ●                           |               |           | ●                     | 4 to 50                     | 0.1 to 470                   | ± 20                               | 124  |
|                       | SP     | 04   | 7mmL, Bi-Polarized  | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 220                   | ± 20                               | 125  |
|                       | ST     | 04   | 7mmL, Wide Temperature Range                                  | -55 to +105                     | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 220                   | ± 20                               | 126  |
|                       | SV     | 04   | 7mmL, Long Life Assurance                                     | -40 to +105                     |               |                             |               | ●         |                       | 6.3 to 50                   | 0.1 to 220                   | ± 20                               | 127  |
|                       | SF     | 04   | 7mmL, Low Impedance   | -55 to +105                     |               |                             | ●             |           | ●                     | 6.3 to 35                   | 6.8 to 220                   | ± 20                               | 128  |
| Standard type         | VK     | 04   | Miniature Sized, Standard                                     | -40 (-25) to +85                |               | ●                           |               |           | ▲                     | 6.3 to 450                  | 0.1 to 68000                 | ± 20                               | 130  |
|                       | VR     | 04   | Standard  | -40 (-25) to +85                | ●             |                             |               |           | ▲                     | 6.3 to 450                  | 0.1 to 33000                 | ± 20                               | 132  |
|                       | VX     | 02   | Standard, For General Purposes                                | -40 (-25) to +85                | ●             |                             |               |           | ▲                     | 6.3 to 450                  | 0.47 to 10000                | ± 20                               | 134  |
|                       | VY     | 04   | Miniature Sized, Wide Temperature Range                       | -55 (-40, -25) to +105          |               | ●                           |               |           | ▲                     | 6.3 to 450                  | 0.1 to 68000                 | ± 20                               | 136  |
|                       | VZ     | 04   | Wide Temperature Range  | -55 (-40, -25) to +105          | ●             |                             |               |           | ▲                     | 6.3 to 450                  | 0.1 to 33000                 | ± 20                               | 138  |
|                       | RS     | 04   | Compact & Standard For General Purposes                       | -40 to +85                      |               | ●                           |               |           | ▲                     | 6.3 to 400                  | 0.1 to 10000                 | ± 20                               | 140  |
|                       | RZ     | 04   | Low-Profile Sized, Wide Temperature Range                     | -55 (-40) to +105               |               | ●                           |               |           | ▲                     | 6.3 to 400                  | 0.1 to 10000                 | ± 20                               | 142  |
|                       | RU     | 04   | 12.5mmL   | -40 (-25) to +85                |               | ●                           |               |           | ▲                     | 6.3 to 450                  | 6.8 to 6800                  | ± 20                               | 144  |
|                       | RY     | 04   | 12.5mmL Wide Temperature Range                                | -55 (-40, -25) to +105          |               | ●                           |               |           | ▲                     | 6.3 to 450                  | 6.8 to 4700                  | ± 20                               | 146  |
|                       | VP     | 04   | Bi-Polarized  | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 100                  | 0.47 to 6800                 | ± 20                               | 148  |
|                       | EP     | 04   | Bi-Polarized, Wide Temperature Range                          | -55 to +105                     | ●             |                             |               |           | ●                     | 6.3 to 100                  | 0.47 to 6800                 | ± 20                               | 129  |
| High Reliability type | PM     | 04   | Extremely Low Impedance, High Reliability                     | -55 (-40, -25) to +105          |               |                             | ●             | ●         | ▲                     | 6.3 to 450                  | 0.47 to 15000                | ± 20                               | 150  |
|                       | PW     | 04   | Miniature Sized, Low Impedance, High Reliability              | -55 (-40, -25) to +105          |               | ●                           | ●             | ●         | ▲                     | 6.3 to 450                  | 0.47 to 15000                | ± 20                               | 157  |
|                       | TT     | 04   | Miniature Sized, Low Impedance, High Reliability              | -40 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 50                   | 1 to 470                     | ± 20                               | 162  |
|                       | PA     | 04   | Miniature Sized, Low Impedance, High Reliability              | -55 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 35                   | 180 to 10000                 | ± 20                               | 164  |
|                       | HV     | 04   | Extremely Low Impedance, High Reliability                     | -40 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 35                   | 47 to 8200                   | ± 20                               | 166  |
|                       | HD     | 04   | Extremely Low Impedance, High Reliability                     | -40 to +105                     |               | ●                           | ●             |           | ●                     | 6.3 to 50                   | 22 to 6800                   | ± 20                               | 168  |
|                       | HE     | 04   | Extremely Low Impedance, High Reliability                     | -40 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 100                  | 0.47 to 18000                | ± 20                               | 171  |
|                       | HM     | 04   | Extremely Low Impedance, High Reliability, For PC motherboard | -40 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 16                   | 330 to 12000                 | ± 20                               | 176  |
|                       | HN     | 04   | Extremely Low Impedance, High Reliability, For PC motherboard | -25 to +105                     |               | ●                           | ●             | ●         | ●                     | 6.3 to 16                   | 330 to 8200                  | ± 20                               | 177  |
|                       | HZ     | 04   | Extremely Low Impedance, For PC motherboard                   | -25 to +105                     |               | ●                           | ●             |           | ●                     | 6.3 to 16                   | 470 to 3300                  | ± 20                               | 178  |
|                       | PJ     | 04   | Low Impedance, For Switching Power Supplies                   | -55 (-40, -25) to +105          | ●             |                             | ●             | ●         | ▲                     | 6.3 to 450                  | 0.47 to 15000                | ± 20                               | 179  |
|                       | PS     | 04   | Miniature Sized, Low Impedance, For Switching Power Supplies  | -55 (-40, -25) to +105          |               | ●                           | ●             |           | ▲                     | 6.3 to 450                  | 0.47 to 15000                | ± 20                               | 186  |
|                       | TS     | 04   | Miniature Sized, For Switching Power Supplies                 | -40 to +105                     |               | ●                           |               | ●         | ●                     | 6.3 to 50                   | 0.1 to 470                   | ± 20                               | 188  |
|                       | PV     | 04   | Miniature Sized, Low Impedance, High Reliability              | -55 to +105                     |               |                             | ●             | ●         | ●                     | 6.3 to 50                   | 0.47 to 390                  | ± 20                               | 190  |
|                       | PT     | 04   | Miniature Sized, High Ripple Current, Long Life               | -25 to +105                     |               | ●                           |               | ●         |                       | 200 to 450                  | 15 to 820                    | ± 20                               | 192  |
|                       | PZ     | 04   | High voltage, Smaller-Sized                                   | -25 to +105                     |               | ●                           |               |           |                       | 200 to 450                  | 18 to 470                    | ± 20                               | 194  |
|                       | PB     | 04   | Miniature Sized, High Ripple Current, High Reliability        | -40 (-25) to +105               |               | ●                           |               | ●         | ▲                     | 10 to 450                   | 0.47 to 3300                 | ± 20                               | 196  |
|                       | CA     | 04   | Miniature Sized, High Ripple Current, Long Life               | -25 to +105                     |               | ●                           |               | ●         |                       | 160 to 450                  | 6.8 to 220                   | ± 20                               | 198  |
|                       | CS     | 04   | Miniature Sized, High Ripple Current, High Reliability        | -40 (-25) to +105               |               | ●                           |               | ●         |                       | 160 to 450                  | 6.8 to 330                   | ± 20                               | 200  |
|                       | CY     | 04   | Miniature Sized, High Ripple Current, High Reliability        | -40 to +105                     |               | ●                           |               | ●         |                       | 160 to 400                  | 6.8 to 560                   | ± 20                               | 202  |
| PX                    | 04     | Long Life Assurance, High Reliability                    | -55 to +105   |                                 |               | ●                           | ●             | ●         | 10 to 35              | 1 to 4700                   | ± 20                         | 204                                |      |
| BT                    | 04     | High Temperature Range, For Industrial equipment (125°C) | -40 (-25) to +125   |                                 |               |                             | ●             | ▲         | 10 to 450             | 1 to 4700                   | ± 20                         | 206                                |      |
| BW                    | 04     | High Temperature Range, For Industrial equipment (135°C) | -55 to +135   |                                 |               |                             | ●             | ●         | 10 to 100             | 1 to 4700                   | ± 20                         | 208                                |      |
| BX                    | 04     | High Temperature Range, For Automobile equipment (150°C) | -55 (-40, -25) to +150  |                                 |               |                             | ●             | ●         | 10 to 400             | 1 to 4700                   | ± 20                         | 210                                |      |

Above description is a feature against AK-225AES.  
▲ : Applicable up to 100V ratings or less.

## Miniature Aluminum Electrolytic Capacitors

| Classification      | Series        | Configuration | Applications                                     | Category Temperature Range (°C) | Features      |                             |               |           |                       | Rated Voltage Range (V.D.C) | Rated Capacitance Range (μF) | Tolerance on Rated Capacitance (%) | Page                |
|---------------------|---------------|---------------|--|---------------------------------|---------------|-----------------------------|---------------|-----------|-----------------------|-----------------------------|------------------------------|------------------------------------|---------------------|
|                     |               |               |  |                                 | Standard type | Smaller-sized & low profile | Low impedance | Long life | Anti-cleaning solvent |                             |                              |                                    |                     |
| Special equipment   | <b>KL</b>     | 04            | Low Leakage Current                              | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 100                  | 0.1 to 10000                 | ±20, ±10                           | <a href="#">212</a> |
|                     | <b>TM</b>     | 04            | Timer Circuit Use                                | -40 to +85                      | ●             |                             |               |           | ●                     | 10 to 50                    | 1 to 470                     | ±20, ±10                           | <a href="#">214</a> |
|                     | <b>JB</b>     | 04            | Memory Back-Up Use                               | -25 to +85                      | ●             |                             |               |           | ●                     | 5.5                         | 2.2mF to 47mF                | -10 to +50                         | <a href="#">215</a> |
|                     | <b>AQ</b>     | 04            | For Permissible Abnormal Voltage                 | -40 to +105                     |               |                             |               |           |                       | 200 · 400                   | 10 to 220                    | ±20                                | <a href="#">216</a> |
|                     | <b>AS</b>     | 04            | Miniature Type, For Permissible Abnormal Voltage | -40 to +105                     |               | ●                           |               |           |                       | 200                         | 33 to 330                    | ±20                                | <a href="#">217</a> |
| For audio equipment | <b>KZ</b>     | 04            | Premium Grade Type, For Audio Equipment          | -40 to +85                      |               |                             |               |           | ●                     | 25 to 100                   | 10 to 1000                   | ±20                                | <a href="#">218</a> |
|                     | <b>FG</b>     | 04            | High Grade Type, For Audio Equipment             | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 100                  | 0.1 to 10000                 | ±20                                | <a href="#">220</a> |
|                     | <b>KW</b>     | 04            | Standard, For Audio Equipment                    | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 100                  | 0.1 to 33000                 | ±20                                | <a href="#">219</a> |
|                     | <b>FW</b>     | 04            | Standard, For Audio Equipment                    | -40 to +85                      |               | ●                           |               |           | ●                     | 6.3 to 100                  | 0.1 to 33000                 | ±20                                | <a href="#">222</a> |
|                     | <b>SW</b>     | 04            | 7mmL, For Audio Equipment                        | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 220                   | ±20                                | <a href="#">224</a> |
|                     | <b>MW</b>     | 04            | 5mmL, For General Audio Equipment                | -40 to +85                      | ●             |                             |               |           | ●                     | 4 to 50                     | 0.1 to 470                   | ±20                                | <a href="#">225</a> |
|                     | <b>UQ</b>     | 32            | 105°C Chip Type, For Audio Equipment             | -40 to +105                     |               |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 1000                  | ±20                                | <a href="#">226</a> |
|                     | <b>ES</b>     | 04            | Bi-Polarized, For Audio Equipment                | -40 to +85                      | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.47 to 1000                 | ±20                                | <a href="#">228</a> |
|                     | <b>DB, GB</b> | 04            | Bi-Polarized, For Speaker Network                | -40 to +85                      | ●             |                             |               |           | ●                     | 50                          | 1 to 68                      | ±20, ±10                           | <a href="#">229</a> |
|                     | <b>KT</b>     | 04            | 105°C Standard, For Audio Equipment              | -55 to +105                     | ●             |                             |               |           | ●                     | 6.3 to 50                   | 0.1 to 33000                 | ±20                                | <a href="#">230</a> |

Above description is a feature against AK-225AES.

▲ : Applicable up to 100V ratings or less. Please refer to page 15 for details of cleaning.