

# K02 TYPE -40°C +105°C 5000H

RoHS Compliant

- Surge-proof capacitor in aluminium can with insulation sleeve.
- Poles brought out to heavy duty screw terminals.
- To be mounted with ring clips or with threaded stud
- Very high CV for unit volume with low ESR and impedance.
- High ripple current capability. Extended temperature range.
- High level reliability with outstanding high frequency characteristics.

## APPLICATIONS

High professional power supplies. Switch power supplies, power converters, filtering devices, motor drive.

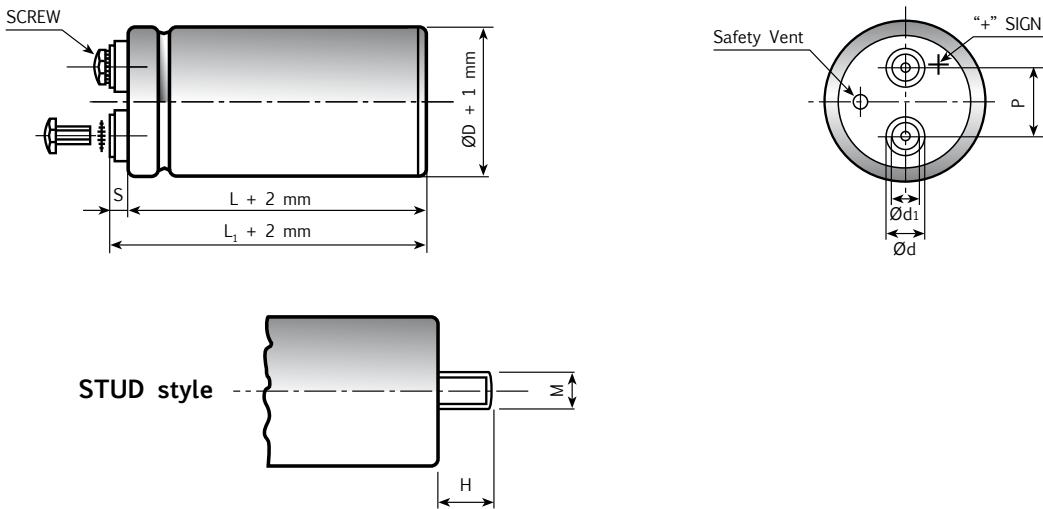


Diagram of dimensions (unit=mm)  
Insert and screw threads: Metric (mm), UNF (inches)

| ØD | d    | d1   | P    | STUD |    | INSERT               | SCREW         | L1  | -L[-1+3] | S[-1+1] | INSERT STYLE CODE |
|----|------|------|------|------|----|----------------------|---------------|-----|----------|---------|-------------------|
|    |      |      |      | M    | H  |                      |               |     |          |         |                   |
| 35 | 11   | 7.9  | 12.7 | M8   | 12 | M5                   | 5MA x 9.5     | 2.5 |          | 5       | 0                 |
| 51 | 18.5 | 13   | 22.7 | M12  | 16 | M5                   | 5MA x 9.5     | 2.5 |          | 5       | H                 |
| 63 | 18.5 | 13   | 28.6 | M12  | 16 | M5                   | 5MA x 9.5     | 2.5 |          | 5       | H                 |
| 63 | 17.3 | 17.3 | 28.6 | M12  | 16 | UNF 1/4-28 Low Post  | 1/4-28 x 3/8" | 3   |          | 4       | W                 |
| 63 | 17.3 | 17.3 | 28.6 | M12  | 16 | UNF 1/4-28 High Post | 1/4-28 x 1/2" | 6   |          | 7       | R                 |
| 63 | 7.9  | 7.9  | 28.6 | M12  | 16 | UNF 10-32 Low Post   | 10-32 x 1/4"  | 2   |          | 2.5     | Z                 |
| 63 | 12   | 7.9  | 28.6 | M12  | 16 | UNF 10-32 High Post  | 10-32 x 3/8"  | 6   |          | 7       | U                 |
| 76 | 18.5 | 13   | 31.8 | M12  | 16 | M5                   | 5MA x 9.5     | 2.5 |          | 5       | H                 |
| 76 | 18.5 | 13   | 31.8 | M12  | 16 | M5                   | 5MA x 9.5     | 2.5 |          | 7       | L                 |
| 76 | 23.2 | 17.7 | 31.8 | M12  | 16 | M6                   | 6MA x 10      | 4.5 |          | 7       | 6                 |
| 76 | 17.3 | 17.3 | 31.8 | M12  | 16 | UNF 1/4-28 Low Post  | 1/4-28 x 3/8" | 3   |          | 4       | W                 |
| 76 | 17.3 | 17.3 | 31.8 | M12  | 16 | UNF 1/4-28 High Post | 1/4-28 x 1/2" | 6   |          | 7       | R                 |
| 76 | 7.9  | 7.9  | 31.8 | M12  | 16 | UNF 10-32 Low Post   | 10-32 x 1/4"  | 2   |          | 2.5     | Z                 |
| 76 | 12   | 7.9  | 31.8 | M12  | 16 | UNF 10-32 High Post  | 10-32 x 3/8"  | 6   |          | 7       | U                 |
| 90 | 23.2 | 17.7 | 31.8 | M12  | 16 | M6                   | 6MA x 10      | 4.5 |          | 7       | H                 |

## SPECIFICATIONS

| <b>Temperature Range</b>  | Operating: -40°C +105°C<br>Storage : Preferably below +25°C, not exceeding +40°C   | [Environmental classification 40/105/56 IEC-68]   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
|---|--|---|-----------|--------|--------|--------|--------|--------|------------|-----|-----|-----|-----|-----|--------------|------|------|------|------|------|------|------|-------|-------|------------|-----|------|------|------|------|------|-----|-----|-----|--------------------|------|------|------|------|------|-----------------|-----|-----|-----|-----|-----|
| <b>Rated Voltage Range (V<sub>r</sub>)</b>                              | from 16V to 500V DC  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Surge Voltage (V<sub>p</sub>)</b>                                    | V <sub>p</sub> = 1.15 V <sub>r</sub> (V <sub>r</sub> ≤ 250V DC)<br>V <sub>p</sub> = 1.10 V <sub>r</sub> (V <sub>r</sub> > 250V DC)   |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Rated Capacitance Range</b>  | from 100 μF to 470,000 μF  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Capacitance Tolerance</b>  | ±20% at 100 Hz, 20°C [M class IEC-62] on request: -10% +30% at 100 Hz, 20°C [Q class IEC-62]   |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Leakage Current (I<sub>L</sub>)</b><br>(mA, 5 min, 20°C)             | max I <sub>L</sub> = 0.003 C <sub>r</sub> V <sub>r</sub> + 4 μA<br>At 85°C max I <sub>L</sub> = 0.02 C <sub>r</sub> V <sub>r</sub> μA  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Ripple current (I<sub>r</sub>)</b>                                   | Refer to table at 105°C and 100Hz. For different temperature and frequency multiplier must be used as follows:   |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
|   | <table border="1"> <thead> <tr> <th>FREQUENCY</th> <th>50Hz</th> <th>100Hz</th> <th>500 Hz</th> <th>1000Hz</th> <th>&gt;10kHz</th> </tr> </thead> <tbody> <tr> <td>MULTIPLIER</td> <td>0.8</td> <td>1.0</td> <td>1.2</td> <td>1.3</td> <td>1.5</td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th>AMBIENT TEMP</th> <th>35°C</th> <th>45°C</th> <th>55°C</th> <th>65°C</th> <th>75°C</th> <th>85°C</th> <th>95°C</th> <th>105°C</th> <th>110°C</th> </tr> </thead> <tbody> <tr> <td>MULTIPLIER</td> <td>3.0</td> <td>2.80</td> <td>2.60</td> <td>2.40</td> <td>2.20</td> <td>1.80</td> <td>1.5</td> <td>1.0</td> <td>0.5</td> </tr> </tbody> </table> <p>Maximum internal temperature 108°C</p> <p>Due to the current load capability of the contact elements, the following limits must not be exceeded:</p> <table border="1"> <thead> <tr> <th>CAPACITOR DIAMETER</th> <th>35mm</th> <th>51mm</th> <th>63mm</th> <th>76mm</th> <th>90mm</th> </tr> </thead> <tbody> <tr> <td>Maximum current</td> <td>20A</td> <td>30A</td> <td>40A</td> <td>50A</td> <td>70A</td> </tr> </tbody> </table> |   | FREQUENCY | 50Hz   | 100Hz  | 500 Hz | 1000Hz | >10kHz | MULTIPLIER | 0.8 | 1.0 | 1.2 | 1.3 | 1.5 | AMBIENT TEMP | 35°C | 45°C | 55°C | 65°C | 75°C | 85°C | 95°C | 105°C | 110°C | MULTIPLIER | 3.0 | 2.80 | 2.60 | 2.40 | 2.20 | 1.80 | 1.5 | 1.0 | 0.5 | CAPACITOR DIAMETER | 35mm | 51mm | 63mm | 76mm | 90mm | Maximum current | 20A | 30A | 40A | 50A | 70A |
| FREQUENCY   | 50Hz   | 100Hz   | 500 Hz    | 1000Hz | >10kHz |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| MULTIPLIER  | 0.8  | 1.0   | 1.2       | 1.3    | 1.5    |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| AMBIENT TEMP  | 35°C   | 45°C  | 55°C      | 65°C   | 75°C   | 85°C   | 95°C   | 105°C  | 110°C      |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| MULTIPLIER  | 3.0  | 2.80  | 2.60      | 2.40   | 2.20   | 1.80   | 1.5    | 1.0    | 0.5        |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| CAPACITOR DIAMETER  | 35mm   | 51mm  | 63mm      | 76mm   | 90mm   |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| Maximum current   | 20A  | 30A   | 40A       | 50A    | 70A    |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Insulation Resistance</b>  | At 100V DC for 1 min is >100 MΩ across insulating sleeve and terminals.  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Vibration Resistance</b>   | Frequency range: 10 Hz to 55 Hz, amplitude 0.75 mm<br>Capacitor length ≤ 143 : max acceleration 10g for 3x2 h<br>Capacitor length > 143 : max acceleration 5g for 3x0.5 h  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Life test</b>  | After 2,000 hours application of rated voltage at 105°C capacitors meet characteristics aside  | Cap change ≤ 10%<br>tan δ ≤ 130%<br>Leakage current (I <sub>L</sub> ) < initial limit<br>Impedance (Z) ≤ 130% |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Shelf life</b>   | After leaving capacitors under no load for 500 hours at 105°C when restored at 20°C meet specifications aside  | Cap change ≤ ±15%<br>tan δ ≤ 150%<br>Leakage current (I <sub>L</sub> ) < initial limit                        |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Useful life</b><br>(V <sub>n</sub> , Temp rated<br>I ripple applied) | 250000 h at 40°C<br>5000 h at 105°C  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Failure percentage</b><br><b>Failure rate</b>                        | ≤ 1% (during useful life)<br>≤ 30 fit (30 10 <sup>-9</sup> /h) (V <sub>r</sub> ≤ 160V DC)<br>≤ 40 fit (40 10 <sup>-9</sup> /h) (V <sub>r</sub> > 160V DC)  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Self inductance</b>  | Approx. 20 nH  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |
| <b>Reference standards</b>  | CECC 30.300 IEC 60384-4 LONG LIFE GRADE  |   |           |        |        |        |        |        |            |     |     |     |     |     |              |      |      |      |      |      |      |      |       |       |            |     |      |      |      |      |      |     |     |     |                    |      |      |      |      |      |                 |     |     |     |     |     |

## K02 TYPE STANDARD RATINGS

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 10000                | 35x60                        | 0.25                                  | 25                                      | 24                                    | 3.3                                 | K02016103__M0E060                                |
| 15000                | 35x60                        | 0.30                                  | 16                                      | 16                                    | 3.5                                 | K02016153__M0E060                                |
| 22000                | 35x60                        | 0.35                                  | 12                                      | 12                                    | 4.4                                 | K02016223__M0E060                                |
| 33000                | 35x60                        | 0.40                                  | 12                                      | 12                                    | 4.6                                 | K02016333__M0E060                                |
| 47000                | 35x79                        | 0.55                                  | 9                                       | 10                                    | 7.5                                 | K02016473__M0E079                                |
| 68000                | 51x79                        | 0.60                                  | 8                                       | 8                                     | 11.9                                | K02016683__M0G079                                |
| 100000               | 51x105                       | 0.80                                  | 8                                       | 8                                     | 12.3                                | K02016104__M0G105                                |
| 150000               | 63x105                       | 1.10                                  | 7                                       | 7                                     | 15.4                                | K02016154__M0H105                                |
| 220000               | 76x105                       | 1.50                                  | 7                                       | 7                                     | 18.8                                | K02016224__M0J105                                |
| 330000               | 76x105                       | 1.90                                  | 7                                       | 7                                     | 19.7                                | K02016334__M0J105                                |
| 470000               | 76x143                       | 2.00                                  | 6                                       | 6                                     | 22.5                                | K02016474__M0J143                                |

**RATED  
VOLTAGE  
VDC**

**16V**

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 10000                | 35x60                        | 0.20                                  | 23                                      | 18                                    | 3.8                                 | K02025103__M0E060                                |
| 15000                | 35x60                        | 0.25                                  | 16                                      | 12                                    | 4.8                                 | K02025153__M0E060                                |
| 22000                | 35x60                        | 0.30                                  | 12                                      | 12                                    | 7.0                                 | K02025223__M0E060                                |
| 33000                | 51x79                        | 0.35                                  | 10                                      | 10                                    | 8.9                                 | K02025333__M0G079                                |
| 47000                | 51x79                        | 0.40                                  | 9                                       | 9                                     | 11.6                                | K02025473__M0G079                                |
| 68000                | 51x105                       | 0.50                                  | 8                                       | 8                                     | 13.0                                | K02025683__M0G105                                |
| 100000               | 63x105                       | 0.60                                  | 8                                       | 8                                     | 15.8                                | K02025104__M0H105                                |
| 150000               | 76x105                       | 0.90                                  | 7                                       | 7                                     | 18.3                                | K02025154__M0J105                                |
| 220000               | 76x143                       | 1.30                                  | 7                                       | 7                                     | 21.6                                | K02025224__M0J143                                |
| 330000               | 76x143                       | 2.00                                  | 7                                       | 7                                     | 23.8                                | K02025334__M0J143                                |

**RATED  
VOLTAGE  
VDC**

**25V**

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 4700                 | 35x60                        | 0.20                                  | 31                                      | 29                                    | 3.3                                 | K02040472__M0E060                                |
| 6800                 | 35x60                        | 0.20                                  | 23                                      | 20                                    | 3.9                                 | K02040682__M0E060                                |
| 10000                | 35x79                        | 0.20                                  | 16                                      | 12                                    | 4.8                                 | K02040103__M0E079                                |
| 15000                | 35x79                        | 0.20                                  | 12                                      | 10                                    | 5.4                                 | K02040153__M0E079                                |
| 22000                | 51x79                        | 0.25                                  | 10                                      | 10                                    | 8.9                                 | K02040223__M0G079                                |
| 33000                | 51x105                       | 0.35                                  | 10                                      | 10                                    | 11.2                                | K02040333__M0G105                                |
| 47000                | 51x105                       | 0.45                                  | 9                                       | 9                                     | 13.8                                | K02040473__M0G105                                |
| 47000                | 63x105                       | 0.45                                  | 9                                       | 9                                     | 14.5                                | K02040473__M0H105                                |
| 68000                | 63x105                       | 0.60                                  | 7                                       | 7                                     | 15.0                                | K02040683__M0H105                                |
| 68000                | 76x105                       | 0.60                                  | 7                                       | 7                                     | 15.9                                | K02040683__M0J105                                |
| 100000               | 76x105                       | 0.90                                  | 7                                       | 7                                     | 19.1                                | K02040104__M0J105                                |
| 100000               | 76x143                       | 0.90                                  | 7                                       | 7                                     | 21.0                                | K02040104__M0J143                                |
| 150000               | 76x143                       | 1.30                                  | 7                                       | 7                                     | 25.9                                | K02040154__M0J143                                |

**RATED  
VOLTAGE  
VDC**

**40V**

## K02 TYPE STANDARD RATINGS

| Cap<br>μF | Ø x L<br>mm | Tan δ<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m Ω<br>100 Hz<br>20°C | Z<br>TYP m Ω<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|-----------|-------------|--------------------------------|----------------------------------|--------------------------------|-------------------------------------|--|
| 2200      | 35x60       | 0.15                           | 72                               | 60                             | 2.5                                 | K02063222__M0E060                                |
| 3300      | 35x60       | 0.15                           | 48                               | 39                             | 3.5                                 | K02063332__M0E060                                |
| 4700      | 35x60       | 0.15                           | 33                               | 28                             | 4.2                                 | K02063472__M0E060                                |
| 6800      | 35x79       | 0.18                           | 18                               | 13                             | 6.3                                 | K02063682__M0E079                                |
| 10000     | 51x79       | 0.20                           | 15                               | 11                             | 8.2                                 | K02063103__M0G079                                |
| 15000     | 51x79       | 0.25                           | 15                               | 13                             | 8.9                                 | K02063153__M0G079                                |
| 15000     | 51x105      | 0.25                           | 13                               | 10                             | 18.0                                | K02063153__M0G105                                |
| 22000     | 51x105      | 0.30                           | 11                               | 10                             | 11.8                                | K02063223__M0G105                                |
| 22000     | 63x105      | 0.30                           | 11                               | 10                             | 13.5                                | K02063223__M0H105                                |
| 33000     | 63x105      | 0.35                           | 11                               | 10                             | 14.8                                | K02063333__M0H105                                |
| 33000     | 76x105      | 0.35                           | 11                               | 8                              | 16.6                                | K02063333__M0J105                                |
| 47000     | 76x105      | 0.45                           | 9                                | 8                              | 17.7                                | K02063473__M0J105                                |
| 47000     | 76x143      | 0.45                           | 9                                | 8                              | 19.0                                | K02063473__M0J143                                |
| 68000     | 76x105      | 0.45                           | 8                                | 8                              | 20.1                                | K02063683__M0J105                                |
| 68000     | 76x143      | 0.70                           | 8                                | 8                              | 22.8                                | K02063683__M0J143                                |
| 100000    | 76x143      | 0.70                           | 8                                | 8                              | 24.1                                | K02063104__M0J143                                |

**RATED  
VOLTAGE  
VDC**

**63V**

| Cap<br>μF | Ø x L<br>mm | Tan δ<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m Ω<br>100 Hz<br>20°C | Z<br>TYP m Ω<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|-----------|-------------|--------------------------------|----------------------------------|--------------------------------|-------------------------------------|--|
| 1000      | 35x60       | 0.15                           | 110                              | 100                            | 2.9                                 | K02100102__M0E060                                |
| 1500      | 35x60       | 0.15                           | 80                               | 73                             | 3.2                                 | K02100152__M0E060                                |
| 2200      | 35x60       | 0.15                           | 59                               | 53                             | 4.4                                 | K02100222__M0E060                                |
| 3300      | 35x79       | 0.15                           | 33                               | 31                             | 5.8                                 | K02100332__M0E079                                |
| 4700      | 51x79       | 0.15                           | 25                               | 22                             | 7.2                                 | K02100472__M0G079                                |
| 6800      | 51x79       | 0.15                           | 19                               | 17                             | 8.9                                 | K02100682__M0G079                                |
| 6800      | 51x105      | 0.15                           | 19                               | 17                             | 8.9                                 | K02100682__M0G105                                |
| 10000     | 51x105      | 0.15                           | 17                               | 15                             | 11.0                                | K02100103__M0G105                                |
| 10000     | 63x105      | 0.15                           | 17                               | 15                             | 12.5                                | K02100103__M0H105                                |
| 15000     | 63x105      | 0.15                           | 12                               | 12                             | 15.1                                | K02100153__M0H105                                |
| 22000     | 76x105      | 0.18                           | 10                               | 9                              | 16.5                                | K02100223__M0J105                                |
| 33000     | 76x143      | 0.22                           | 8                                | 8                              | 20.9                                | K02100333__M0J143                                |

**RATED  
VOLTAGE  
VDC**

**100V**

## K02 TYPE STANDARD RATINGS

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP $m \Omega$<br>100 Hz<br>20°C | Z<br>TYP $m \Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 1000                 | 35x79                        | 0.11                                  | 105                                     | 90                                    | 3.3                                 | K02160102__M0E079                                |
| 1500                 | 51x79                        | 0.11                                  | 65                                      | 60                                    | 4.1                                 | K02160152__M0G079                                |
| 2200                 | 51X105                       | 0.11                                  | 46                                      | 43                                    | 4.8                                 | K02160222__M0G105                                |
| 3300                 | 63x105                       | 0.11                                  | 32                                      | 30                                    | 6.8                                 | K02160332__M0H105                                |
| 4700                 | 63x105                       | 0.11                                  | 27                                      | 25                                    | 8.5                                 | K02160472__M0H105                                |
| 6800                 | 76x105                       | 0.13                                  | 23                                      | 20                                    | 11.3                                | K02160682__M0J105                                |
| 10000                | 76x105                       | 0.14                                  | 22                                      | 20                                    | 14.2                                | K02160103__M0J105                                |
| 10000                | 76x143                       | 0.15                                  | 17                                      | 16                                    | 14.9                                | K02160103__M0J143                                |
| 15000                | 76x143                       | 0.20                                  | 16                                      | 12                                    | 17.2                                | K02160153__M0J143                                |
| 22000                | 76X214                       | 0.20                                  | 11                                      | 10                                    | 19.0                                | K02160223__M0J214                                |

**RATED  
VOLTAGE  
VDC**

**160V**

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP $m \Omega$<br>100 Hz<br>20°C | Z<br>TYP $m \Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 680                  | 35X60                        | 0.11                                  | 133                                     | 98                                    | 2.5                                 | K02200681__M0E060                                |
| 1000                 | 51x79                        | 0.11                                  | 85                                      | 64                                    | 4.6                                 | K02200102__M0G079                                |
| 1500                 | 51x105                       | 0.11                                  | 65                                      | 58                                    | 5.1                                 | K02200152__M0G105                                |
| 2200                 | 51x105                       | 0.11                                  | 60                                      | 53                                    | 6.1                                 | K02200222__M0G105                                |
| 3300                 | 63x105                       | 0.11                                  | 40                                      | 35                                    | 7.9                                 | K02200332__M0H105                                |
| 4700                 | 63x105                       | 0.11                                  | 25                                      | 23                                    | 8.7                                 | K02200472__M0H105                                |
| 5600                 | 63x105                       | 0.11                                  | 22                                      | 20                                    | 9.8                                 | K02200562__M0H105                                |
| 6800                 | 76X105                       | 0.11                                  | 18                                      | 16                                    | 11.8                                | K02200682__M0J105                                |
| 8200                 | 76X105                       | 0.11                                  | 17                                      | 15                                    | 12.8                                | K02200822__M0J105                                |
| 10000                | 76x105                       | 0.13                                  | 15                                      | 13                                    | 14.5                                | K02200103__M0J105                                |
| 10000                | 76x143                       | 0.15                                  | 13                                      | 12                                    | 16.0                                | K02200103__M0J143                                |
| 15000                | 76x143                       | 0.20                                  | 12                                      | 11                                    | 17.3                                | K02200153__M0J143                                |
| 22000                | 76x214                       | 0.20                                  | 11                                      | 10                                    | 18.9                                | K02200223__M0J214                                |

**RATED  
VOLTAGE  
VDC**

**200V**

## K02 TYPE STANDARD RATINGS

| Cap<br>$\mu\text{F}$ | $\varnothing$ x L<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|-------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 470                  | 35x60                   | 0.11                                  | 211                                     | 193                                   | 2.0                                 | K02250471__M0E060                                |
| 680                  | 35x79                   | 0.11                                  | 130                                     | 98                                    | 2.2                                 | K02250681__M0E079                                |
| 1000                 | 51x79                   | 0.11                                  | 110                                     | 85                                    | 4.1                                 | K02250102__M0G079                                |
| 1500                 | 51x105                  | 0.11                                  | 74                                      | 65                                    | 5.4                                 | K02250152__M0G105                                |
| 2200                 | 51x105                  | 0.11                                  | 41                                      | 39                                    | 6.8                                 | K02250222__M0G105                                |
| 3300                 | 63x105                  | 0.11                                  | 30                                      | 26                                    | 8.2                                 | K02250332__M0H105                                |
| 4700                 | 76x105                  | 0.11                                  | 18                                      | 17                                    | 11.9                                | K02250472__M0J105                                |
| 5600                 | 76x105                  | 0.11                                  | 17                                      | 16                                    | 13.2                                | K02250562__M0J105                                |
| 6800                 | 76x143                  | 0.15                                  | 15                                      | 14                                    | 14.3                                | K02250682__M0J143                                |
| 8200                 | 76x143                  | 0.15                                  | 14                                      | 14                                    | 15.2                                | K02250822__M0J143                                |
| 10000                | 76x143                  | 0.20                                  | 14                                      | 13                                    | 16.0                                | K02250103__M0J143                                |
| 15000                | 76x214                  | 0.20                                  | 12                                      | 10                                    | 17.4                                | K02250153__M0J214                                |

**RATED  
VOLTAGE  
VDC**

**250V**

| Cap<br>$\mu\text{F}$ | $\varnothing$ x L<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|-------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 330                  | 35x60                   | 0.11                                  | 255                                     | 196                                   | 1.8                                 | K02350331__M0E060                                |
| 470                  | 35x79                   | 0.11                                  | 170                                     | 141                                   | 2.1                                 | K02350471__M0E079                                |
| 680                  | 51x79                   | 0.11                                  | 128                                     | 96                                    | 3.8                                 | K02350681__M0G079                                |
| 1000                 | 51x105                  | 0.11                                  | 85                                      | 68                                    | 5.0                                 | K02350102__M0G105                                |
| 1500                 | 63x105                  | 0.11                                  | 59                                      | 52                                    | 6.4                                 | K02350152__M0H105                                |
| 2200                 | 76x105                  | 0.11                                  | 44                                      | 40                                    | 8.1                                 | K02350222__M0J105                                |
| 3300                 | 76x105                  | 0.11                                  | 26                                      | 23                                    | 10.2                                | K02350332__M0J105                                |
| 4700                 | 76x143                  | 0.11                                  | 18                                      | 16                                    | 13.5                                | K02350472__M0J143                                |
| 5600                 | 76x143                  | 0.12                                  | 18                                      | 17                                    | 14.3                                | K02350562__M0J143                                |
| 6800                 | 76x143                  | 0.15                                  | 16                                      | 15                                    | 15.1                                | K02350682__M0J143                                |
| 8200                 | 76x143                  | 0.15                                  | 16                                      | 15                                    | 17.8                                | K02350822__M0J143                                |
| 10000                | 76x214                  | 0.20                                  | 15                                      | 14                                    | 19.9                                | K02350103__M0J214                                |

**RATED  
VOLTAGE  
VDC**

**350V**

## K02 TYPE STANDARD RATINGS

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 220                  | 35x60                        | 0.11                                  | 350                                     | 280                                   | 1.4                                 | K02400221__M0E060                                |
| 330                  | 35x60                        | 0.11                                  | 250                                     | 210                                   | 2.2                                 | K02400331__M0E060                                |
| 470                  | 51x79                        | 0.11                                  | 170                                     | 150                                   | 2.8                                 | K02400471__M0G079                                |
| 680                  | 51x79                        | 0.11                                  | 110                                     | 100                                   | 3.2                                 | K02400681__M0G079                                |
| 1000                 | 51x105                       | 0.11                                  | 95                                      | 82                                    | 4.1                                 | K02400102__M0G105                                |
| 1500                 | 63x105                       | 0.11                                  | 64                                      | 53                                    | 5.8                                 | K02400152__M0H105                                |
| 2200                 | 63x105                       | 0.11                                  | 45                                      | 53                                    | 6.0                                 | K02400222__M0H105                                |
| 2200                 | 76x105                       | 0.11                                  | 45                                      | 39                                    | 7.3                                 | K02400222__M0J105                                |
| 3300                 | 76x143                       | 0.11                                  | 28                                      | 25                                    | 11.1                                | K02400332__M0J143                                |
| 4700                 | 76x143                       | 0.11                                  | 24                                      | 23                                    | 12.8                                | K02400472__M0J143                                |
| 5600                 | 76x143                       | 0.12                                  | 21                                      | 17                                    | 12.9                                | K02400562__M0J143                                |
| 6800                 | 76x214                       | 0.15                                  | 19                                      | 15                                    | 15.5                                | K02400682__M0J214                                |
| 8200                 | 76x214                       | 0.15                                  | 18                                      | 16                                    | 18.0                                | K02400822__M0J214                                |
| 10000                | 90x220                       | 0.20                                  | 16                                      | 14                                    | 22.5                                | K02400103__M0L220                                |

**RATED  
VOLTAGE  
VDC**

**400V**

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | Ir a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>stud and insert style<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|-------------------------------------|--|
| 100                  | 35x60                        | 0.11                                  | 800                                     | 650                                   | 1.2                                 | K02450101__M0E060                                |
| 150                  | 35x60                        | 0.11                                  | 550                                     | 490                                   | 1.6                                 | K02450151__M0E060                                |
| 220                  | 35x60                        | 0.11                                  | 370                                     | 310                                   | 1.8                                 | K02450221__M0E060                                |
| 330                  | 35x79                        | 0.11                                  | 240                                     | 210                                   | 2.4                                 | K02450331__M0E079                                |
| 470                  | 51x79                        | 0.11                                  | 200                                     | 179                                   | 3.0                                 | K02450471__M0G079                                |
| 680                  | 51x105                       | 0.11                                  | 140                                     | 128                                   | 4.2                                 | K02450681__M0G105                                |
| 1000                 | 51x105                       | 0.11                                  | 100                                     | 88                                    | 4.4                                 | K02450102__M0G105                                |
| 1000                 | 63x105                       | 0.11                                  | 100                                     | 88                                    | 5.3                                 | K02450102__M0H105                                |
| 1500                 | 63x105                       | 0.11                                  | 63                                      | 57                                    | 5.7                                 | K02450152__M0H105                                |
| 1500                 | 76x105                       | 0.11                                  | 63                                      | 57                                    | 6.6                                 | K02450152__M0J105                                |
| 2200                 | 76x143                       | 0.11                                  | 60                                      | 47                                    | 8.8                                 | K02450222__M0J143                                |
| 3300                 | 76x143                       | 0.15                                  | 35                                      | 30                                    | 10.4                                | K02450332__M0J143                                |
| 4700                 | 76x143                       | 0.15                                  | 28                                      | 25                                    | 10.9                                | K02450472__M0J143                                |
| 5600                 | 76x143                       | 0.15                                  | 21                                      | 17                                    | 11.2                                | K0245056 2__M0J143                               |
| 6800                 | 76x214                       | 0.15                                  | 21                                      | 16                                    | 15.5                                | K02450682__M0J214                                |
| 8200                 | 76x214                       | 0.15                                  | 18                                      | 16                                    | 19.2                                | K02450822__M0J214                                |
| 10000                | 90x220                       | 0.20                                  | 16                                      | 14                                    | 22.5                                | K02450103__M0L220                                |

**RATED  
VOLTAGE  
VDC**

**450V**

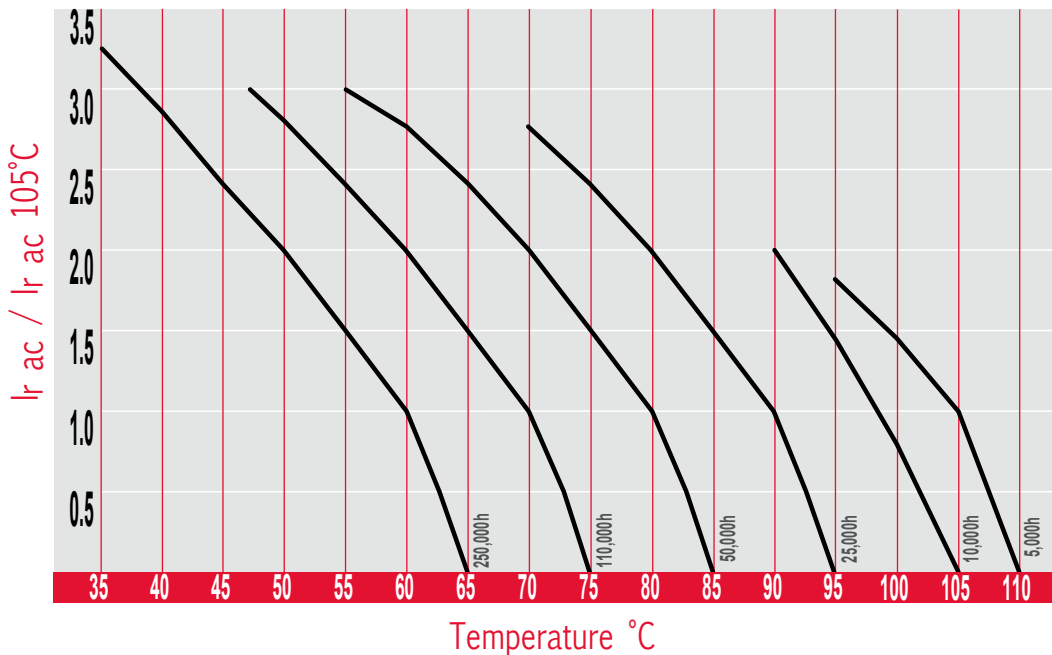
## K02 TYPE STANDARD RATINGS

| Cap<br>$\mu\text{F}$ | $\varnothing \times L$<br>mm | Tan $\delta$<br>MAX<br>100 Hz<br>20°C | ESR<br>TYP m $\Omega$<br>100 Hz<br>20°C | Z<br>TYP m $\Omega$<br>10 kHz<br>20°C | I <sub>r</sub> a.c.<br>A max<br>100 Hz<br>105°C | PART NUMBER<br>termination digit<br>excluded |
|----------------------|------------------------------|---------------------------------------|---|---------------------------------------|---|--|
| 1000                 | 51x105                       | 0.11                                  | 100                                     | 88                                    | 4.0   | K02500102__HMOG105                           |
| 1500                 | 63x105                       | 0.11                                  | 64                                      | 58                                    | 5.4   | K02500152__HMOH105                           |
| 1800                 | 63x105                       | 0.11                                  | 61                                      | 53                                    | 5.7   | K02500182__HMOH105                           |
| 2200                 | 76x105                       | 0.11                                  | 60                                      | 47                                    | 6.9   | K02500222__HMOJ105                           |
| 2700                 | 76x143                       | 0.13                                  | 40                                      | 32                                    | 8.7   | K02500272__HMOJ143                           |
| 3300                 | 76x143                       | 0.15                                  | 37                                      | 31                                    | 9.4   | K02500332__HMOJ143                           |
| 3900                 | 76x143                       | 0.15                                  | 31                                      | 28                                    | 10.1  | K02500392__HMOJ143                           |
| 4700                 | 76x143                       | 0.15                                  | 29                                      | 26                                    | 10.3  | K02500472__HMOJ143                           |
| 5600                 | 76x214                       | 0.15                                  | 23                                      | 19                                    | 14.3  | K02500562__HMOJ214                           |
| 6800                 | 76x214                       | 0.15                                  | 21                                      | 16                                    | 14.8  | K02500682__HMOJ214                           |
| 6800                 | 90x145                       | 0.15                                  | 21                                      | 16                                    | 13.3  | K02500682__HMO145                            |
| 8200                 | 90x220                       | 0.15                                  | 19                                      | 15                                    | 18.6  | K02500822__HMO1220                           |
| 10000                | 90x220                       | 0.20                                  | 17                                      | 15                                    | 20.0  | K02500103__HMO1220                           |

**RATED  
VOLTAGE  
VDC**

**500V**

## USEFUL LIFE K02



The graphs shows a typical trend of the standard capacitor load life. For a more accurate calculation of the load life for a specific capacitor, please use our calculator on the website [www.kendeil.com](http://www.kendeil.com) or enquiry our technical service.

**PLEASE TO CONTACT OUR TECHNICAL SERVICE FOR MORE INFORMATION OR SPEC-IN ANALYSIS.**