

## K02 TYPE -40°C +105°C 5000H

RoHS Compliant  
Directive 2002/95/EC

- 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.

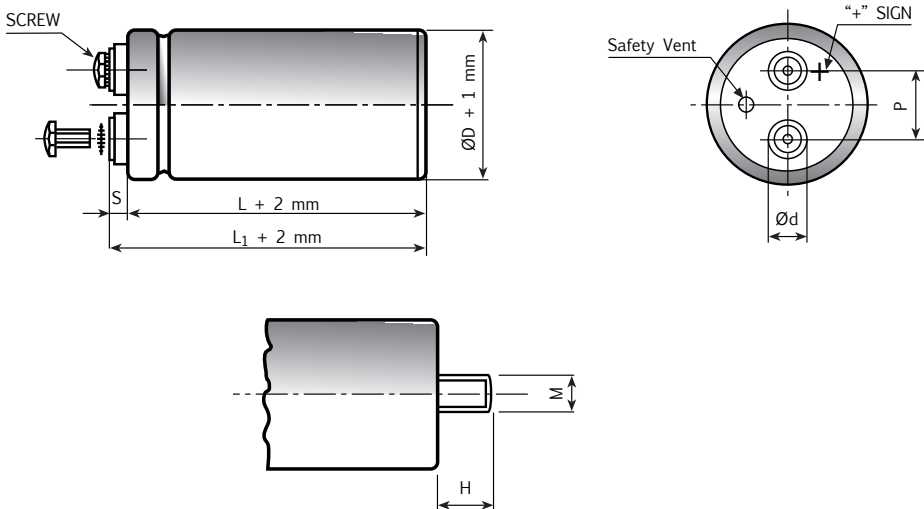


Diagram of dimensions (unit=mm)

ØD	d	P	M	H	SCREW
35	11	12.7	M 8	12	5MA x 9,5
51	18.5	22.7	M 12	16	5MA x 9,5
63	18.5	28.6	M 12	16	5MA x 9,5
76	18.5	31.8	M 12	16	5MA x 9,5
76	18.5	31.8	M 12	16	6MA x 10
90	18.5	31.8	M 12	16	6MA x 10
L <sub>1</sub>	L <sub>1</sub> = L + 2.5 mm L <sub>1</sub> toll. - 0+3 mm			L <sub>1</sub> = L + 4.5 mm L <sub>1</sub> toll. - 1+3 mm	
S	M5 = 5 - 0 + 1 mm From top of deck			M6 = 7 - 1 + 1 mm From top of deck	

## SPECIFICATIONS

<b>Temperature Range</b>	Operating: -40°C +105°C 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 450V 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) 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> (mA, 5 min, 20°C)	max I <sub>L</sub> = 0.003 C <sub>r</sub> V <sub>r</sub> + 4 µA 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 style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">FREQUENCY</td> <td>50Hz</td> <td>100Hz</td> <td>500 Hz</td> <td>1000Hz</td> <td>&gt;10kHz</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">MULTIPLIER</td> <td>0.8</td> <td>1.0</td> <td>1.2</td> <td>1.3</td> <td>1.5</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">AMBIENT TEMP</td> <td>35°C</td> <td>45°C</td> <td>55°C</td> <td>65°C</td> <td>75°C</td> <td>85°C</td> <td>95°C</td> <td>105°C</td> <td>110°C</td> <td></td> </tr> <tr> <td style="text-align: left;">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> <td></td> </tr> <tr> <td style="text-align: left;">Maximum internal temperature</td> <td colspan="10">108°C</td> </tr> <tr> <td colspan="11">Due to the current load capability of the contact elements, the following limits must not be exceeded:</td> </tr> <tr> <td style="text-align: left;">CAPACITOR DIAMETER</td> <td>35mm</td> <td>51mm</td> <td>63mm</td> <td>76mm</td> <td>90mm</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: left;">Maximum current</td> <td>20A</td> <td>30A</td> <td>40A</td> <td>50A</td> <td>70A</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </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		Maximum internal temperature	108°C										Due to the current load capability of the contact elements, the following limits must not be exceeded:											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																																																																																					
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<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 Capacitor length ≤ 143 : max acceleration 10g for 3x2 h 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 ≤ 20% tan δ ≤ 200% Leakage current (I <sub>L</sub> ) < initial limit Impedance (Z) ≤ 200%																																																																																								
<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% tan δ ≤ 150% Leakage current (I <sub>L</sub> ) < initial limit																																																																																								
<b>Useful life</b>	250000 h at 40°C 15000 h at 85°C 5000 h at 105°C																																																																																									
<b>Failure percentage</b> <b>Failure rate</b>	≤ 1% (during useful life) ≤ 40 fit (40 10 <sup>-9</sup> /h)																																																																																									
<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 μF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP m Ω 100 Hz 20°C	Z TYP m Ω 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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 μF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP m Ω 100 Hz 20°C	Z TYP m Ω 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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**

## K02 TYPE STANDARD RATINGS

Cap $\mu\text{F}$	$\varnothing \times L$ mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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

Cap $\mu\text{F}$	$\varnothing \times L$ mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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

## K02 TYPE STANDARD RATINGS

Cap $\mu\text{F}$	$\varnothing \times \text{L}$ mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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

Cap $\mu\text{F}$	$\varnothing \times \text{L}$ mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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

## K02 TYPE STANDARD RATINGS

Cap μF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP m Ω 100 Hz 20°C	Z TYP m Ω 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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	30	28	8.7	K02200472__M0H105
6800	76X105	0.11	23	12	11.8	K02200682__M0J105
10000	76x105	0.13	21	14	14.5	K02200103__M0J105
10000	76x143	0.15	19	12	16.0	K02200103__M0J143
15000	76x143	0.20	19	12	17.3	K02200153__M0J143
22000	76x214	0.20	11	10	18.9	K02200223__M0J214

RATED  
VOLTAGE  
VDC

200V

Cap μF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP m Ω 100 Hz 20°C	Z TYP m Ω 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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	51	48	6.8	K02250222__M0G105
3300	63x105	0.11	35	30	8.2	K02250332__M0H105
4700	76x105	0.11	26	24	11.9	K02250472__M0J105
6800	76x143	0.15	23	21	14.3	K02250682__M0J143
10000	76x143	0.20	20	19	16.0	K02250103__M0J143
15000	76x214	0.20	18	15	17.4	K02250153__M0J214

RATED  
VOLTAGE  
VDC

250V

## K02 TYPE STANDARD RATINGS

Cap $\mu\text{F}$	$\varnothing$ x L mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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	31	27	10.2	K02350332__M0J105
4700	76x143	0.11	29	25	13.5	K02350472__M0J143
6800	76x143	0.15	23	21	15.1	K02350682__M0J143
10000	76x214	0.20	20	18	19.9	K02350103__M0J214

**RATED  
VOLTAGE  
VDC**

**350V**

Cap $\mu\text{F}$	$\varnothing$ x L mm	Tan $\delta$ MAX 100 Hz 20°C	ESR TYP m $\Omega$ 100 Hz 20°C	Z TYP m $\Omega$ 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style 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
6800	76x214	0.15	19	15	15.0	K02400682__M0J214
10000	90x220	0.20	16	14	29.7	K02400103__M0L220

**RATED  
VOLTAGE  
VDC**

**400V**

## K02 TYPE STANDARD RATINGS

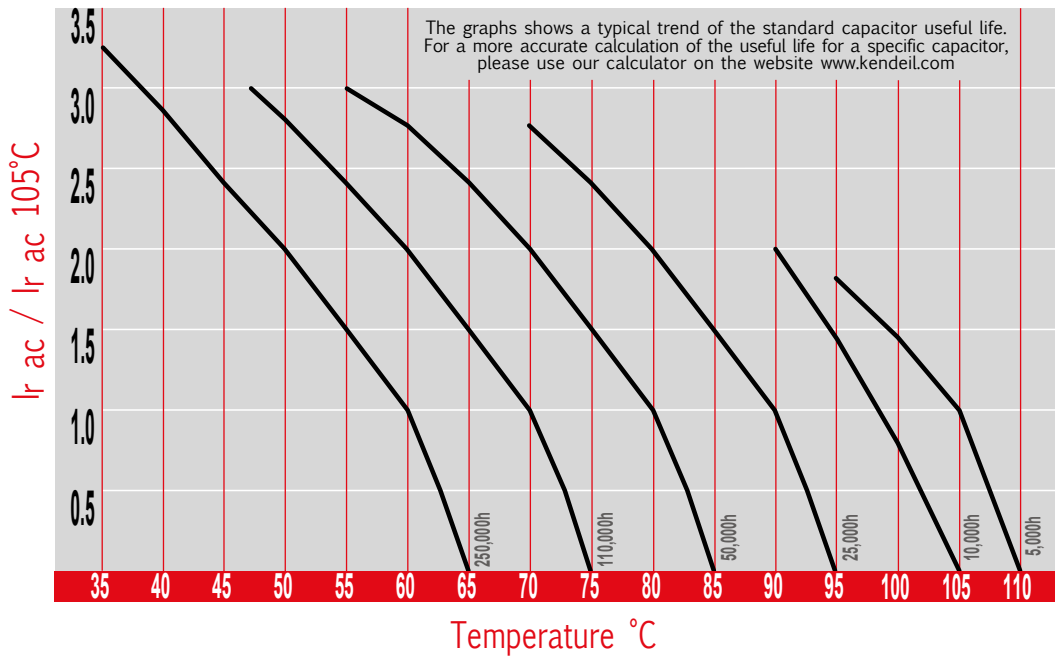
Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP m Ω 100 Hz 20°C	Z TYP m Ω 10 kHz 20°C	Ir a.c. A max 100 Hz 105°C	PART NUMBER stud and insert style excluded
100	35x60	0.11	800	650	1.2	K02450101__M0E060
150	35x60	0.11	550	490	1.6	K02450151__M0E060
220	35x60	0.11	370	310	1.8	K02450221__M0E060
330	35x79	0.11	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	70	63	5.7	K02450152__M0H105
1500	76x105	0.11	70	63	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
4700	76x214	0.15	28	25	12.8	K02450472__M0J214
6800	76x214	0.15	21	14	23.7	K02450682__M0J214
10000	90x220	0.20	16	14	29.4	K02450103__M0L220

**RATED  
VOLTAGE  
VDC**

**450V**



## 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.