

# K11 TYPE -40°C +85°C 12000H

RoHS Compliant  
Directive 2002/95/EC

- Surge-proof capacitor in aluminium can with insulation sleeve.
- To be mounted with ring clips or with threaded stud
- Design optimized for parallel connection and high density of energy

## APPLICATIONS

Energy Storage, Bulk.

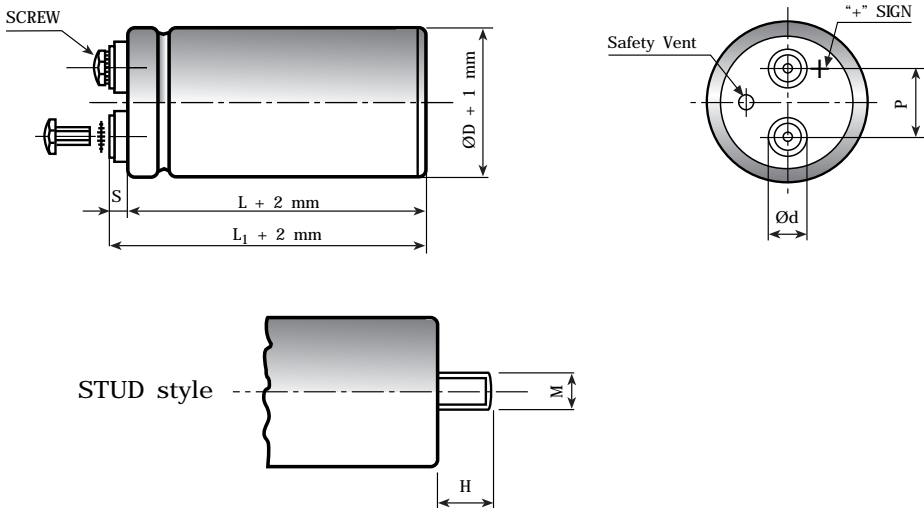


Diagram of dimensions (unit=mm)

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	23.2	31.8	M 12	16	6MA x 10
90	23.2	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

Temperature Range	Operating: -40°C +85°C Storage : Preferably below +25°C, not exceeding +40°C																																			
Rated Voltage Range (V <sub>r</sub> )	from 350V to 450V DC																																			
Surge Voltage (V <sub>p</sub> )	V <sub>p</sub> = 1.10 V <sub>r</sub> (V <sub>r</sub> ≤ 250V DC)																																			
Rated Capacitance Range	from 12000 μF to 30000 μF																																			
Capacitance Tolerance	±20% at 100 Hz, 20°C [M class IEC-62] on request: -10% +30% at 100 Hz, 20°C [Q class IEC-62]																																			
Leakage Current (I <sub>L</sub> ) (5 min, 20°C)	max I <sub>L</sub> = 0.006 C <sub>r</sub> V <sub>r</sub> + 4 μA																																			
Ripple current (I <sub>r</sub> )	<p>Refer to table at 85°C and 100Hz:</p> <table border="1"> <thead> <tr> <th>FREQUENCY</th> <th>50Hz</th> <th>100 Hz</th> <th>500Hz</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> <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> </tr> </thead> <tbody> <tr> <td>MULTIPLIER</td> <td>2.2</td> <td>2.1</td> <td>1.8</td> <td>1.6</td> <td>1.4</td> <td>1.0</td> <td>0.5</td> </tr> </tbody> </table> <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>76mm</th> <th>90mm</th> </tr> </thead> <tbody> <tr> <td>Maximum current</td> <td>50A</td> <td>70A</td> </tr> </tbody> </table>		FREQUENCY	50Hz	100 Hz	500Hz	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	MULTIPLIER	2.2	2.1	1.8	1.6	1.4	1.0	0.5	CAPACITOR DIAMETER	76mm	90mm	Maximum current	50A	70A
FREQUENCY	50Hz	100 Hz	500Hz	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																													
MULTIPLIER	2.2	2.1	1.8	1.6	1.4	1.0	0.5																													
CAPACITOR DIAMETER	76mm	90mm																																		
Maximum current	50A	70A																																		
Insulation Resistance	At 100V DC for 1 min is >100 MΩ across insulating sleeve and terminals.																																			
Vibration Resistance	Frequency range: 10 Hz to 55 Hz, amplitude 0.75 mm max acceleration 10G for 3x2 h																																			
Life test	After 2,000 hours application of rated voltage at 85°C capacitors meet characteristics aside	<table border="1"> <tr> <td>Cap change</td> <td>≤ ±20%</td> </tr> <tr> <td>tan δ</td> <td>≤ 200%</td> </tr> <tr> <td>Leakage current (I<sub>L</sub>)</td> <td>&lt; initial limit</td> </tr> <tr> <td>Impedance (Z)</td> <td>≤ 200%</td> </tr> </table>	Cap change	≤ ±20%	tan δ	≤ 200%	Leakage current (I <sub>L</sub> )	< initial limit	Impedance (Z)	≤ 200%																										
Cap change	≤ ±20%																																			
tan δ	≤ 200%																																			
Leakage current (I <sub>L</sub> )	< initial limit																																			
Impedance (Z)	≤ 200%																																			
Shelf life	After leaving capacitors under no load for 500 hours at 85°C when restored at 20°C meet specifications aside	<table border="1"> <tr> <td>Cap change</td> <td>≤ ±15%</td> </tr> <tr> <td>tan δ</td> <td>≤ 150%</td> </tr> <tr> <td>Leakage current (I<sub>L</sub>)</td> <td>&lt; initial limit</td> </tr> </table>	Cap change	≤ ±15%	tan δ	≤ 150%	Leakage current (I <sub>L</sub> )	< initial limit																												
Cap change	≤ ±15%																																			
tan δ	≤ 150%																																			
Leakage current (I <sub>L</sub> )	< initial limit																																			
Useful life	> 12000 h at 85°C																																			
Failure percentage Failure rate	≤ 1% (during useful life) ≤ 70 fit (70 10 <sup>-9</sup> /h)																																			
Self inductance	Approx. 20 nH																																			
Reference standards	CECC 30.300 IEC 60384-4 LONG LIFE GRADE																																			

## K11 TYPE STANDARD RATINGS

Cap $\mu\text{F}$	$\varnothing$ x L mm	Tan $\delta$ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
----------------------	-------------------------	---------------------------------------	------------------------------------	--

19000	76x214	0.25	18.0	K11350193__M0J214
20000	76x240	0.25	18.0	K11350203__M0J240
27000	90x220	0.25	21.0	K11350273__M0L220
30000	90x240	0.25	22.0	K11350303__M0L240

Cap $\mu\text{F}$	$\varnothing$ x L mm	Tan $\delta$ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
----------------------	-------------------------	---------------------------------------	------------------------------------	--

15000	76x214	0.25	16.0	K11400153__M0J214
16000	76x240	0.25	17.7	K11400163__M0J240
21000	90x220	0.25	21.5	K11400213__M0L220
23000	90x240	0.25	23.2	K11400233__M0L240

Cap $\mu\text{F}$	$\varnothing$ x L mm	Tan $\delta$ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
----------------------	-------------------------	---------------------------------------	------------------------------------	--

12000	76x214	0.20	16.0	K11450123__M0J214
13000	76x240	0.20	17.5	K11450133__M0J240
17000	90x220	0.20	20.9	K11450173__M0L220
18000	90x240	0.20	22.5	K11450183__M0L240

RATED  
VOLTAGE  
VDC

**350V**

RATED  
VOLTAGE  
VDC

**400V**

RATED  
VOLTAGE  
VDC

**450V**