

# K94 TYPE -40°C +105°C 8000H

RoHS Compliant

- Design optimized for combining low equivalent series resistance with compact size.
- Surge-proof capacitor in aluminium can with insulation sleeve.
- To be mounted with ring clips or with threaded stud.

## APPLICATIONS

Designed for professional application.  
Switch mode power suppliers, high ripple current converters, motor drives.

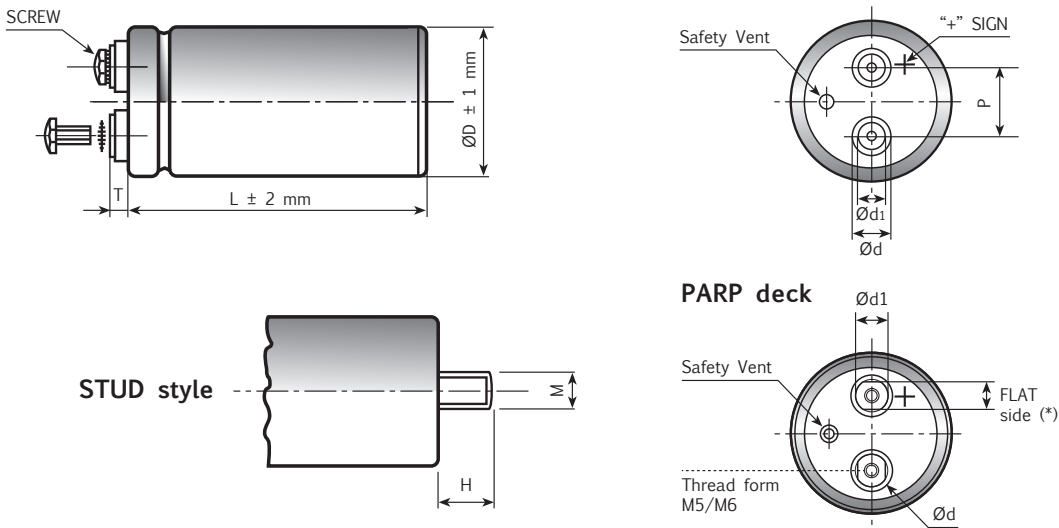


Diagram of dimensions (unit=mm) - Insert and screw threads: Metric (mm), UNF (inches)

ØD	d ±0.3	d1 ±0.3	P ±0.5	T ±2.0	STUD		INSERT	SCREW	INSERT STYLE CODE
					M	H			
35	11.6	7.9	12.7	6.5	M8	12	M5	5MA x 9.5	0
51	18.2	13	22.2	5	M12	16	M5	5MA x 9.5	H
63	18.2	13	28.5	5	M12	16	M5	5MA x 9.5	H
76	18.2	13	31.8	4.5	M12	16	M5	5MA x 9.5	H
76	18.2	13	31.8	6.5	M12	16	M5 long	5MA x 9.5	L
76	23.2	17.7	31.8	5	M12	16	M6	6MA x 10	6
90	23.2	17.7	31.8	5	M12	16	M6	6MA x 10	H
51	13	13(10)*	22.2	5	M12	16	PARP M5	5MA x 9.5	K
63	13	13(10)*	28.5	5	M12	16	PARP M5	5MA x 9.5	B
63	19	15(13)*	28.5	6	M12	16	PARP M5	5MA x 9.5	K
76	19	15(13)*	31.8	6	M12	16	PARP M5	5MA x 9.5	K
76	19	15(13)*	31.8	6	M12	16	PARP M6	6MA x 10	Q
90	19	15(13)*	31.8	6	M12	16	PARP M6	6MA x 10	Q
35	11.6	7.9	12.7	6.5	M12	16	UNF 10-32 High Post	10-32 x 3/8"	U
63	17.3	17.3	28.5	2.5	M12	16	UNF 1/4-28 Low Post	1/4-28 x 3/8"	W
63	17.3	17.3	28.5	6	M12	16	UNF 1/4-28 High Post	1/4-28 x 1/2"	R
63	7.9	7.9	28.5	2	M12	16	UNF 10-32 Low Post	10-32 x 1/4"	Z
63	12	7.9	28.5	6.5	M12	16	UNF 10-32 High Post	10-32 x 3/8"	U
76	17.3	17.3	31.8	2.5	M12	16	UNF 1/4-28 Low Post	1/4-28 x 3/8"	W
76	17.3	17.3	31.8	6	M12	16	UNF 1/4-28 High Post	1/4-28 x 1/2"	R
76	7.9	7.9	31.8	2	M12	16	UNF 10-32 Low Post	10-32 x 1/4"	Z
76	12	7.9	31.8	6.5	M12	16	UNF 10-32 High Post	10-32 x 3/8"	U

Note: (\*) quote on the PARP deck of the flat side (PARP = Protection Against Reverse Polarity).

## K94 TYPE SPECIFICATIONS

<b>Temperature Range</b>	Operating : -40°C +105°C [ Environmental classification 40/105/56 IEC-68 ] Storage : Preferably below +25°C, not exceeding +40°C																																											
<b>Rated Voltage Range (V<sub>r</sub>)</b>	from 400V to 450V DC																																											
<b>Surge Voltage (V<sub>p</sub>)</b>	V <sub>p</sub> = 1.10 V <sub>r</sub>																																											
<b>Rated Capacitance Range</b>	from 470 µF to 10000 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>) (mA, 5 min, 20°C)</b>	max I <sub>L</sub> = 0.006 C <sub>r</sub> V <sub>r</sub> + 4 µA																																											
<b>Ripple current (I<sub>r</sub>)</b>	<p>Refer to table at 105°C and 100Hz :</p> <table border="1"> <thead> <tr> <th>FREQUENCY</th> <th>50Hz</th> <th>100Hz</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> <th>105°C</th> <th>110°C</th> </tr> </thead> <tbody> <tr> <td>MULTIPLIER</td> <td>3.0</td> <td>2.8</td> <td>2.6</td> <td>2.4</td> <td>2.2</td> <td>1.8</td> <td>1.5</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>51mm</th> <th>63mm</th> <th>76mm</th> <th>90mm</th> </tr> </thead> <tbody> <tr> <td>Maximum current</td> <td>30A</td> <td>40A</td> <td>50A</td> <td>70A</td> </tr> </tbody> </table>		FREQUENCY	50Hz	100Hz	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	105°C	110°C	MULTIPLIER	3.0	2.8	2.6	2.4	2.2	1.8	1.5	1.0	0.5	CAPACITOR DIAMETER	51mm	63mm	76mm	90mm	Maximum current	30A	40A	50A	70A
FREQUENCY	50Hz	100Hz	500Hz	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 Capacitor length ≤ 143 : max acceleration 0.75mm or 10g for 3x2 h Capacitor length > 143 : max acceleration 0.35mm or 5g for 3x0.5 h																																											
<b>Withstand voltage (between terminals bundled and plate)</b>	2500 VAC for 1 min																																											
<b>Life test (105°C, V<sub>n</sub>, I<sub>r</sub> applied)</b>	After 2,000 hours application of rated voltage at 105°C capacitors meet characteristics aside	Cap change ≤ 10% tan δ ≤ 130% Leakage current (I <sub>L</sub> ) < initial limit 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% tan δ ≤ 150% Leakage current (I <sub>L</sub> ) < initial limit																																										
<b>Useful life (105°C, V<sub>n</sub>, I<sub>r</sub> applied)</b>	> 8.000 h at 105°C																																											
<b>Failure percentage Failure rate</b>	≤ 1% (during useful life) ≤ 40 fit (40 10 <sup>-9</sup> /h)																																											
<b>Self inductance</b>	Approx. 20 nH																																											
<b>Damp heat test (V<sub>n</sub> applied, 2000 hours, 85% RH)</b>	Stable electrical parameters in humidity ambient condition 85°C																																											
<b>Electrolyte</b>	All the capacitors of this series have self-extinguishing electrolyte in accordance with IEC EN 60695-11-10																																											
<b>Reference standards</b>	CECC 30.300 IEC 60384-4 LONG LIFE GRADE																																											

## K94 TYPE STANDARD RATINGS

**RATED  
VOLTAGE  
VDC**

**400V**

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
680	51x105	0,06	95	57	3,79	K94400681_HM0G105
680	51x79	0,06	93	56	3,42	K94400681_HM0G079
1000	51x79	0,06	62	37	4,19	K94400102_HM0G079
1000	51x105	0,06	64	39	4,60	K94400102_HM0G105
1500	51x105	0,06	42	25	5,71	K94400152_HM0G105
2200	63x105	0,06	29	18	7,83	K94400222_HM0H105
2200	76x105	0,07	32	19	8,33	K94400222_HM0J105
3300	76x143	0,07	21	13	11,40	K94400332_HM0J143
4700	76x143	0,07	15	9	13,70	K94400472_HM0J143
5600	76x143	0,07	13	8	14,90	K94400562_HM0J143
6800	76x143	0,07	11	7	16,30	K94400682_HM0J143
8200	76x214	0,11	11	7	19,00	K94400822_HM0J214
10000	90x220	0,11	9	6	23,20	K94400103_HM0L220

**RATED  
VOLTAGE  
VDC**

**420V**

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
680	51x79	0,06	90	53	3,48	K94420681_HM0G079
1000	51x79	0,06	60	35	4,28	K94420102_HM0G079
1000	51x105	0,06	62	37	4,68	K94420102_HM0G105
1500	51x105	0,06	40	24	5,82	K94420152_HM0G105
2200	63x105	0,06	28	17	7,99	K94420222_HM0H105
2200	76x105	0,06	31	18	8,50	K94420222_HM0J105
3300	76x143	0,06	21	12	11,70	K94420332_HM0J143
4700	76x143	0,06	14	9	14,00	K94420472_HM0J143
5600	76x143	0,06	12	7	15,20	K94420562_HM0J143
6800	76x143	0,11	13	8	14,90	K94420682_HM0J143
8200	76x214	0,11	10	7	19,40	K94420822_HM0J214
10000	90x220	0,11	9	6	23,70	K94420103_HM0L220

## K94 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
470	51x79	0,06	131	73	2,88	K94450471_HM0G079
680	51x105	0,06	88	48	3,93	K94450681_HM0G105
1000	51x105	0,06	62	35	4,67	K94450102_HM0G105
1000	63x105	0,06	62	35	5,31	K94450102_HM0H105
1500	63x105	0,06	40	22	6,61	K94450152_HM0H105
1500	76x105	0,06	45	24	7,03	K94450152_HM0J105
2200	76x143	0,06	31	17	9,57	K94450222_HM0J143
3300	76x143	0,06	20	11	11,80	K94450332_HM0J143
4700	76x143	0,06	14	8	14,00	K94450472_HM0J143
5600	76x143	0,06	12	7	15,20	K94450562_HM0J143
6800	76x214	0,10	12	7	18,30	K94450682_HM0J214
8200	76x214	0,10	10	6	19,90	K94450822_HM0J214
10000	90x220	0,10	8	5	24,30	K94450103_HM0L220

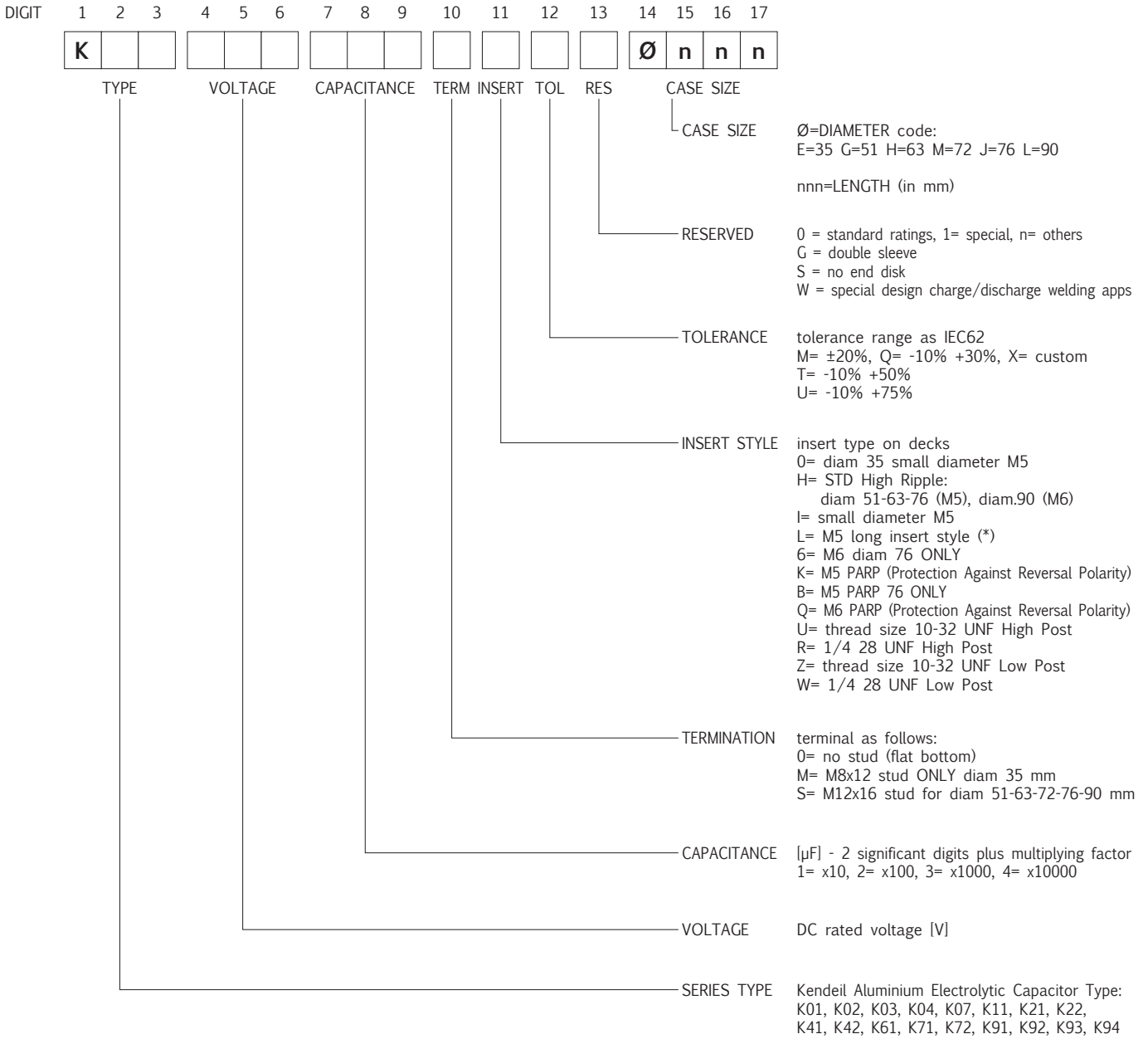
**RATED  
VOLTAGE  
VDC**

**450V**

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

# PART NUMBER SYSTEM FOR SCREW TYPE CAPACITORS

New PART-NUMBER CODE in use since Sep 2010. Total length is 17 digits.  
Please see examples below and have a reference code from the standard ratings capacitors pages.



### EXAMPLES

K	0	1	1	0	0	2	2	3	0	H	M	0	H	1	0	5	K01 100V 22000µF, Hi ripple, -20%+20%, 63x105
K	0	1	0	6	3	2	2	3	S	H	Q	0	G	1	0	5	K01 63V 22000µF, stud M12x16, Hi rip. -10%+30%, 51x105
K	0	2	0	4	0	1	0	4	0	H	M	0	J	1	4	3	K02 40V 100000µF, Hi ripple, -20%+20%, 76x143

Specifications subject to change without notice

(\*) Note for INSERT STYLE digit\_11

M5 long insert style dedicated to not insulated bus bar (+2 mm height versus STD High Ripple code)