

# K21 TYPE -40°C +85°C 15000H

RoHS Compliant

- Surge-proof capacitor in aluminium can with insulation sleeve.
- To be mounted with ring clips or with threaded stud.
- Design optimized for high ripple current applications.

## APPLICATIONS

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

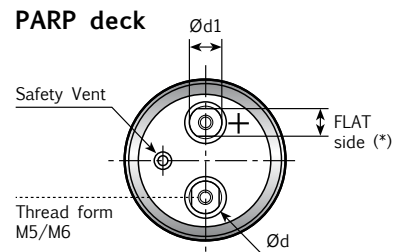
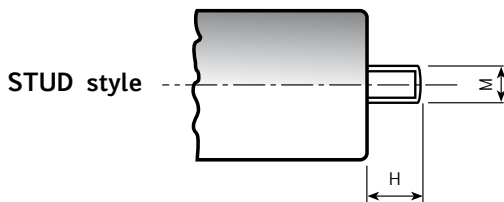
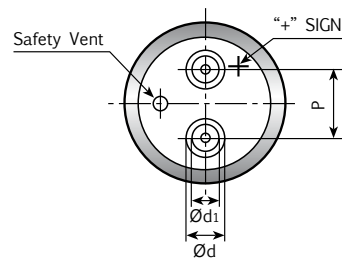
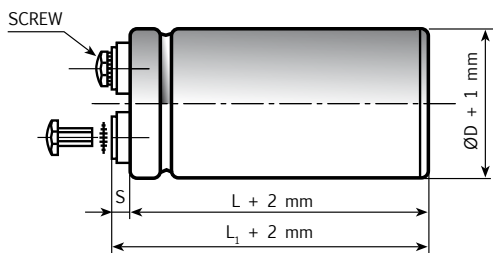


Diagram of dimensions (unit=mm)  
Insert and screw threads: Metric (mm), UNF (inches)

ØD	d	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
51	13	13 (10)*	22.7	M12	16	PARP M5	5MA x 9.5	6		7	K
63	15	15 (13)*	28.6	M12	16	PARP M5	5MA x 9.5	6		7	K
76	19	15 (13)*	31.8	M12	16	PARP M5	5MA x 9.5	6		7	K
76	19	15 (13)*	31.8	M12	16	PARP M6	6MA x 10	6		7	Q
90	19	15 (13)*	31.8	M12	16	PARP M6	6MA x 10	6		7	Q

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

## SPECIFICATIONS

<b>Temperature Range</b>	Operating: -40°C +85°C Storage : Preferably below +25°C, not exceeding +40°C	[Environmental classification 40/85/56 IEC-68]																																						
<b>Rated Voltage Range (V<sub>r</sub>)</b>	from 350V 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 1200 µF to 15000 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 At 85°C max I <sub>L</sub> = 0.04 C <sub>r</sub> V <sub>r</sub> µA	Kendeil product limit: I <sub>L</sub> = 0.003 C <sub>r</sub> V <sub>r</sub>																																						
<b>Ripple current (I<sub>r</sub>)</b>	Refer to table at 85°C and 100Hz: <table border="1" style="width: 100%; border-collapse: collapse;"> <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" style="width: 100%; border-collapse: collapse;"> <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> Maximum internal temperature 98°C  Due to the current load capability of the contact elements, the following limits must not be exceeded: <table border="1" style="width: 100%; border-collapse: collapse;"> <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	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	51mm	63mm	76mm	90mm	Maximum current	30A	40A	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																																	
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CAPACITOR DIAMETER	51mm	63mm	76mm	90mm																																				
Maximum current	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 Capacitor length ≤ 143 : max acceleration 10g for 3x2 h Capacitor length > 143 : max acceleration 5g for 3x0.5 h																																							
<b>Withstand voltage (between terminals bundled and plate)</b>	2500 VAC for 1 min																																							
<b>Life test</b>	After 2,000 hours application of rated voltage at 85°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 85°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 (V<sub>n</sub>, Temp rated I ripple applied)</b>	> 200000 h at 40°C > 15000 h at 85°C																																							
<b>Failure percentage Failure rate</b>	≤ 1% (during useful life) ≤ 33 fit (33 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																																							

## K21 TYPE STANDARD RATINGS

**RATED  
VOLTAGE  
VDC**

**350V**

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP mΩ 100 Hz 20°C	Z TYP mΩ 10 kHz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
1500	51x79	0.08	40	24	9.30	K21350152_M0G079
1500	51x105	0.08	40	24	10.10	K21350152_M0G105
2200	51x105	0.08	29	20	11.90	K21350222_M0G105
2200	63x105	0.08	29	20	14.50	K21350222_M0H105
2200	76x79	0.08	29	20	14.20	K21350222_M0J079
2200	76x98	0.08	29	20	15.30	K21350222_M0J098
3300	63x105	0.08	17	13	17.70	K21350332_M0H105
3300	76x79	0.08	21	16	16.00	K21350332_M0J079
3300	76x105	0.08	20	13	18.80	K21350332_M0J105
4700	76x105	0.09	13	10	22.10	K21350472_M0J105
4700	76x143	0.09	13	10	25.80	K21350472_M0J143
4700	90x98	0.09	14	11	22.50	K21350472_M0L098
5600	76x143	0.09	10	8	27.40	K21350562_M0J143
6800	76x143	0.09	9.5	7	30.00	K21350682_M0J143
6800	90x145	0.09	9.5	7	32.20	K21350682_M0L145
8200	90x145	0.09	8.5	6	35.30	K21350822_M0L145
10000	76x214	0.09	7	5	41.80	K21350103_M0J214
10000	90x145	0.10	7	5	36.70	K21350103_M0L145
12000	76x214	0.10	7	5	41.90	K21350123_M0J214
15000	90x220	0.10	5.5	4	52.50	K21350153_M0L220

**RATED  
VOLTAGE  
VDC**

**400V**

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP mΩ 100 Hz 20°C	Z TYP mΩ 10 kHz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
1500	51x79	0.08	40	24	9.30	K21400152_M0G079
1500	51x105	0.08	40	24	10.10	K21400152_M0G105
2200	51x105	0.08	29	20	11.90	K21400222_M0G105
2200	76x79	0.08	29	20	14.20	K21400222_M0J079
2200	76x98	0.08	29	20	15.30	K21400222_M0J098
3300	63x105	0.08	17	13	17.70	K21400332_M0H105
3300	76x79	0.08	21	16	16.00	K21400332_M0J079
3300	76x98	0.08	21	16	17.20	K21400332_M0J098
3300	76x105	0.08	20	13	18.80	K21400332_M0J105
3900	76x105	0.08	16	11	20.90	K21400392_M0J105
4400	90x98	0.08	14	11	22.20	K21400442_M0L098
4700	76x105	0.09	13	10	22.10	K21400472_M0J105
4700	76x143	0.09	13	10	25.80	K21400472_M0J143
4700	90x98	0.09	13	11	22.50	K21400472_M0L098
5600	76x143	0.09	10	8	27.40	K21400562_M0J143
6800	76x143	0.09	9.5	7	30.00	K21400682_M0J143
6800	90x145	0.09	9.5	7	32.20	K21400682_M0L145
8200	90x145	0.09	8.5	6	35.30	K21400822_M0L145
10000	76x214	0.09	7	5	41.80	K21400103_M0J214
10000	90x145	0.10	7	5	36.70	K21400103_M0L145
14000	90x220	0.10	6	5	50.10	K21400143_M0L220
15000	90x220	0.10	5.5	4	52.50	K21400153_M0L220

## K21 TYPE STANDARD RATINGS

**RATED  
VOLTAGE  
VDC**

**420V**

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP mΩ 100 Hz 20°C	Z TYP mΩ 10 kHz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
1500	51x79	0.08	40	24	9.30	K21420152_M0G079
1500	51x105	0.08	40	24	10.10	K21420152_M0G105
2200	51x105	0.08	29	20	11.90	K21420222_M0G105
2200	76x79	0.08	29	20	14.20	K21420222_M0J079
2200	76x98	0.08	29	20	15.30	K21420222_M0J098
3300	63x105	0.08	17	13	17.70	K21420332_M0H105
3300	76x79	0.08	21	16	16.00	K21420332_M0J079
3300	76x98	0.08	21	16	17.20	K21420332_M0J098
3300	76x105	0.08	20	13	18.80	K21420332_M0J105
3900	76x105	0.08	16	11	20.90	K21420392_M0J105
4400	90x98	0.08	16	12	22.20	K21420442_M0L098
4700	76x105	0.09	13	10	22.10	K21420472_M0J105
4700	76x143	0.09	13	10	25.80	K21420472_M0J143
4700	90x98	0.09	13	11	22.50	K21420472_M0L098
5600	76x143	0.09	10	8	27.40	K21420562_M0J143
6800	76x143	0.09	9.5	7	30.00	K21420682_M0J143
6800	90x145	0.09	9.5	7	32.20	K21420682_M0L145
8200	90x145	0.09	8.5	6	35.30	K21420822_M0L145
10000	76x214	0.09	7	5	41.80	K21420103_M0J214
10000	90x145	0.10	7	5	36.70	K21420103_M0L145
14000	90x220	0.10	6	5	50.10	K21420143_M0L220
15000	90x220	0.10	5.5	4	52.50	K21420153_M0L220

**RATED  
VOLTAGE  
VDC**

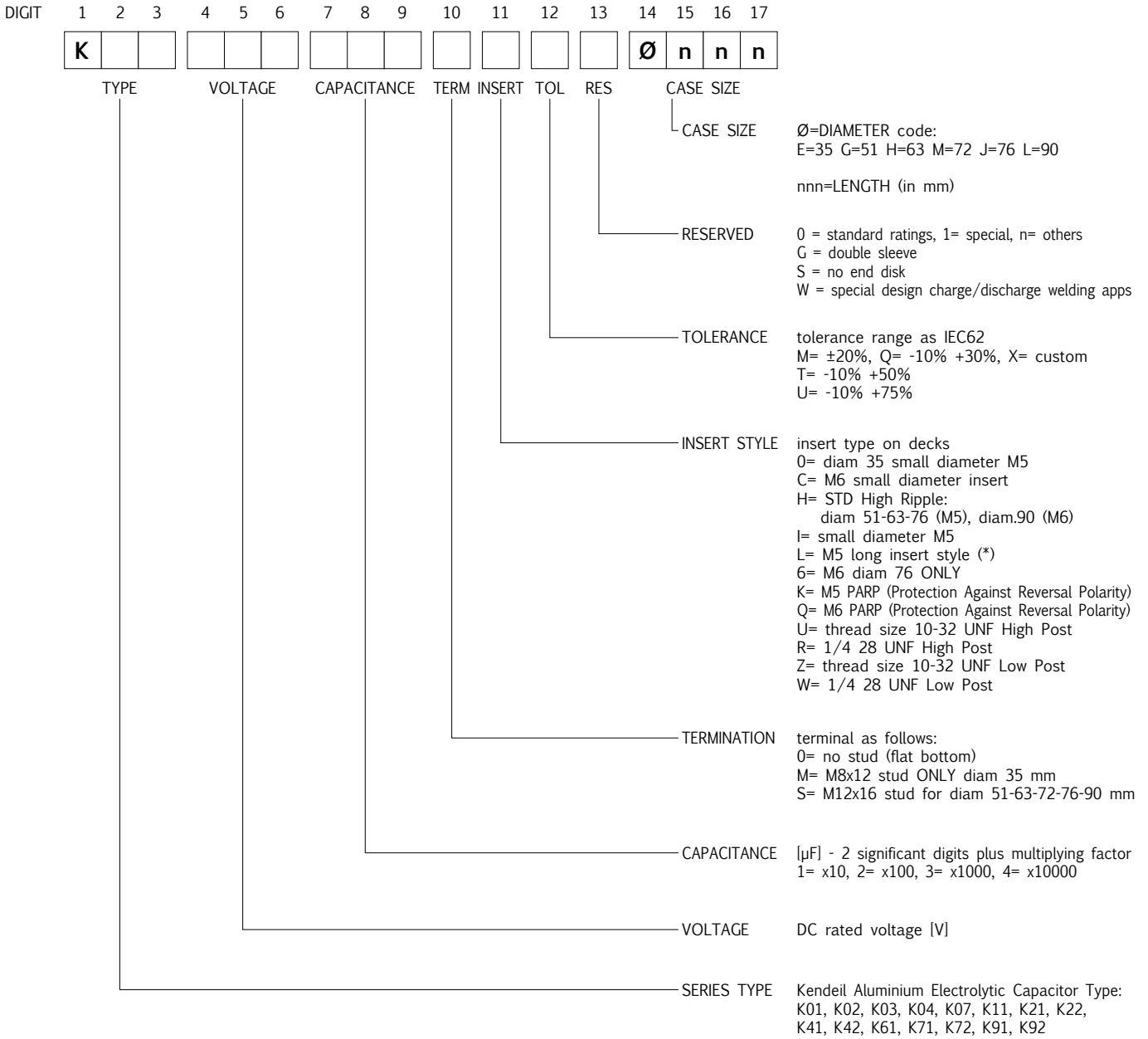
**450V**

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	ESR TYP mΩ 100 Hz 20°C	Z TYP mΩ 10 kHz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded
1200	51x79	0.08	60	36	8.90	K21450122_M0G079
1200	51x105	0.08	60	36	9.49	K21450122_M0G105
1500	51x105	0.08	49	29	10.70	K21450152_M0G105
2200	63x105	0.08	30	17	15.40	K21450222_M0H105
2200	76x79	0.08	32	20	14.30	K21450222_M0J079
2200	76x98	0.08	32	20	15.40	K21450222_M0J098
3300	76x105	0.08	26	16	18.80	K21450332_M0J105
3300	90x98	0.08	26	16	20.50	K21450332_M0L098
3900	76x105	0.08	21	13	21.10	K21450392_M0J105
4700	76x143	0.09	17	10	26.00	K21450472_M0J143
4700	90x98	0.09	19	13	22.10	K21450472_M0L098
5600	76x143	0.09	15	10	28.30	K21450562_M0J143
6800	76x214	0.09	11	8	37.20	K21450682_M0J214
6800	90x145	0.09	13	10	31.90	K21450682_M0L145
8200	90x145	0.09	11	8	34.90	K21450822_M0L145
10000	90x220	0.10	9	6	46.50	K21450103_M0L220
12000	90x220	0.10	8	6	49.80	K21450123_M0L220

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)