K11 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 parallel connection and high density of energy.

APPLICATIONS

Energy Storage, Bulk.

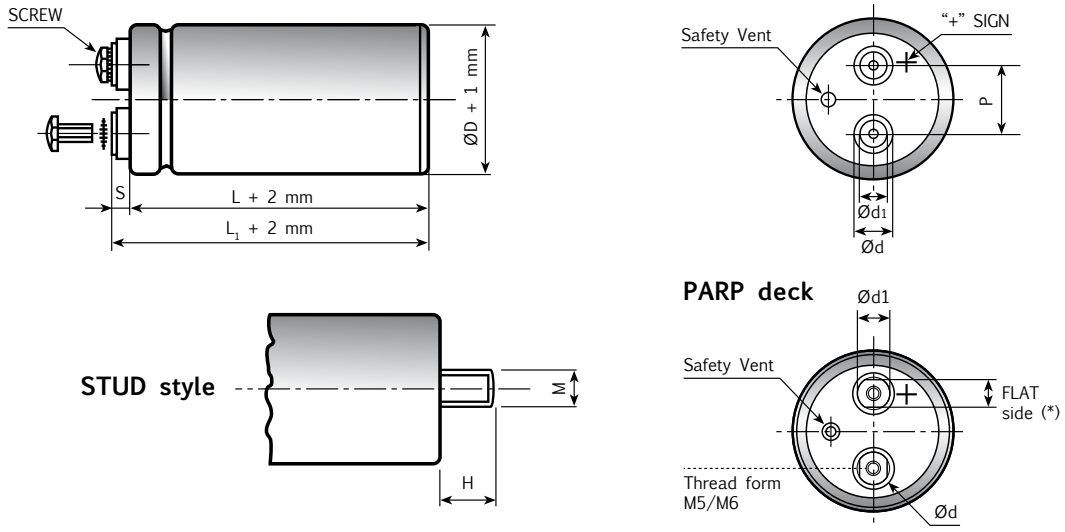


Diagram of dimensions (unit=mm)
Insert and screw threads: Metric (mm), UNF (inches)

ØD	d	d1	P	STUD		INSERT	SCREW	L_1 -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).

Temperature Range	Operating: -40°C +85°C Storage : Preferably below +25°C, not exceeding +40°C
Rated Voltage Range (V_r)	from 350V to 450V DC
Surge Voltage (V_p)	V_p = 1.10 V_r ($V_r \geq$ 250V DC)
Rated Capacitance Range	from 12000 µF to 34000 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_L) (mA, 5 min, 20°C)	max I_L= 0.006 C_r V_r + 4 µA Kendeil product limit: I_L= 0.003 C_r V_r At 85°C max I_L = 0.04 C_r V_r µA
Ripple current (I_r)	Refer to table at 85°C and 100Hz: 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 Due to the current load capability of the contact elements, the following limits must not be exceeded: 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
Withstand voltage (between terminals bundled and plate)	2500 VAC for 1 min
Life test	After 2,000 hours application of rated voltage at 85°C capacitors meet characteristics aside Cap change ≤ 10% tan δ ≤ 130% Leakage current (I_L) < initial limit Impedance (Z) ≤ 130%
Shelf life	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_L)< initial limit
Useful life (Vn, Temp rated I ripple applied)	> 15000 h at 85°C
Failure percentage **Failure rate**	≤ 1% (during useful life) ≤ 33 fit (33 10^{-9}/h)
Self inductance	Approx. 20 nH
Damp heat test (Vn applied, 2000 hours, 85% RH)	Stable electrical parameters in humidity ambient condition 85°C
Electrolyte	All the capacitors of this series have self-extinguishing electrolyte in accordance with IEC EN 60695-11-10
Reference standards	CECC 30.300 IEC 60384-4 LONG LIFE GRADE

K11 TYPE STANDARD RATINGS

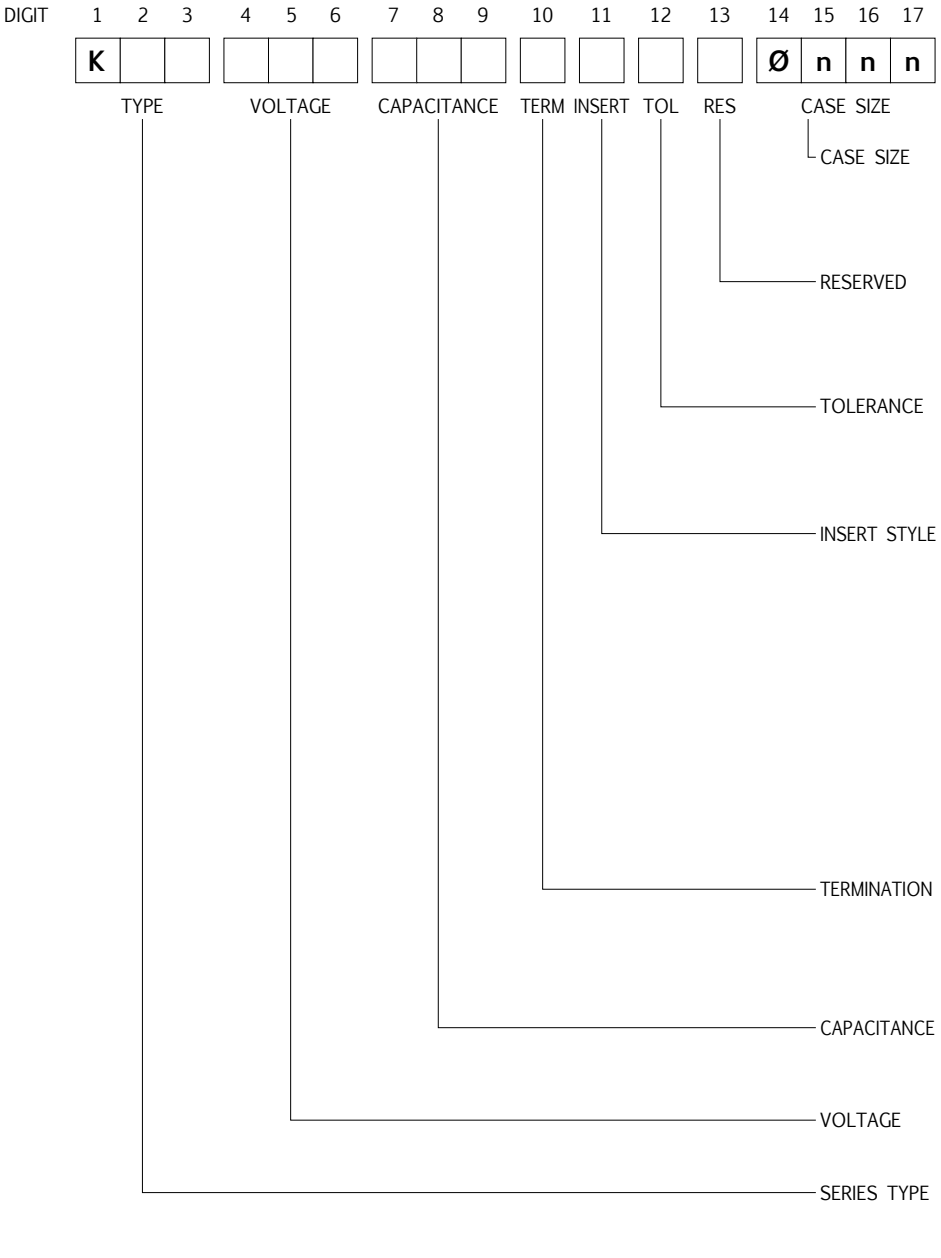
Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded	RATED VOLTAGE VDC
19000	76x214	0.25	18.0	K11350193__M0J214	350V
20000	76x240	0.25	18.0	K11350203__M0J240	
22000	76x214	0.25	18.4	K11350223__M0J214	
24000	76x240	0.25	18.5	K11350243__M0J240	
27000	90x220	0.25	21.0	K11350273__M0L220	
30000	90x220	0.25	21.4	K11350303__M0L220	
30000	90x240	0.25	22.0	K11350303__M0L240	
34000	90x240	0.25	22.5	K11350343__M0L240	

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded	RATED VOLTAGE VDC
15000	76x214	0.25	16.0	K11400153__M0J214	400V
16000	76x240	0.25	17.7	K11400163__M0J240	
18000	76x214	0.25	16.3	K11400183__M0J214	
20000	76x240	0.25	18.1	K11400203__M0J240	
21000	90x220	0.25	21.5	K11400213__M0L220	
23000	90x240	0.25	23.2	K11400233__M0L240	
25000	90x220	0.25	21.9	K11400253__M0L220	
29000	90x240	0.25	23.7	K11400293__M0L240	

Cap µF	Ø x L mm	Tan δ MAX 100 Hz 20°C	Ir a.c. A max 100 Hz 85°C	PART NUMBER stud and insert style excluded	RATED VOLTAGE VDC
12000	76x214	0.20	16.0	K11450123__M0J214	450V
13000	76x240	0.20	17.5	K11450133__M0J240	
15000	76x214	0.20	16.4	K11450153__M0J214	
16000	76x240	0.20	18.0	K11450163__M0J240	
17000	90x220	0.20	20.9	K11450173__M0L220	
18000	90x240	0.20	22.5	K11450183__M0L240	
20000	90x220	0.20	21.6	K11450203__M0L220	
23000	90x240	0.20	23.1	K11450233__M0L240	

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.



CASE SIZE: Ø=DIAMETER code: E=35 G=51 H=63 M=72 J=76 L=90; nnn=LENGTH (in mm)

RESERVED: 0 = standard ratings, 1= special, n= others
G = double sleeve
S = no end disk
W = special design charge/discharge welding apps

TOLERANCE: tolerance range as IEC62
M= ±20%, Q= -10% +30%, X= custom
T= -10% +50%
U= -10% +75%

INSERT STYLE: insert type on decks
0= diam 35 small diameter M5
C= M6 small diameter insert
H= STD High Ripple:
diam 51-63-76 (M5), diam.90 (M6)
I= small diameter M5
L= M5 long insert style (*)
6= M6 diam 76 ONLY
K= M5 PARP (Protection Against Reversal Polarity)
Q= M6 PARP (Protection Against Reversal Polarity)
U= thread size 10-32 UNF High Post
R= 1/4 28 UNF High Post
Z= thread size 10-32 UNF Low Post
W= 1/4 28 UNF Low Post

TERMINATION: terminal as follows:
0= no stud (flat bottom)
M= M8x12 stud ONLY diam 35 mm
S= M12x16 stud for diam 51-63-72-76-90 mm

CAPACITANCE: [µF] - 2 significant digits plus multiplying factor
1= x10, 2= x100, 3= x1000, 4= x10000

VOLTAGE: DC rated voltage [V]

SERIES TYPE: Kendeil Aluminium Electrolytic Capacitor Type:
K01, K02, K03, K04, K07, K11, K21, K22,
K41, K42, K61, K71, K72, K91, K92

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)