

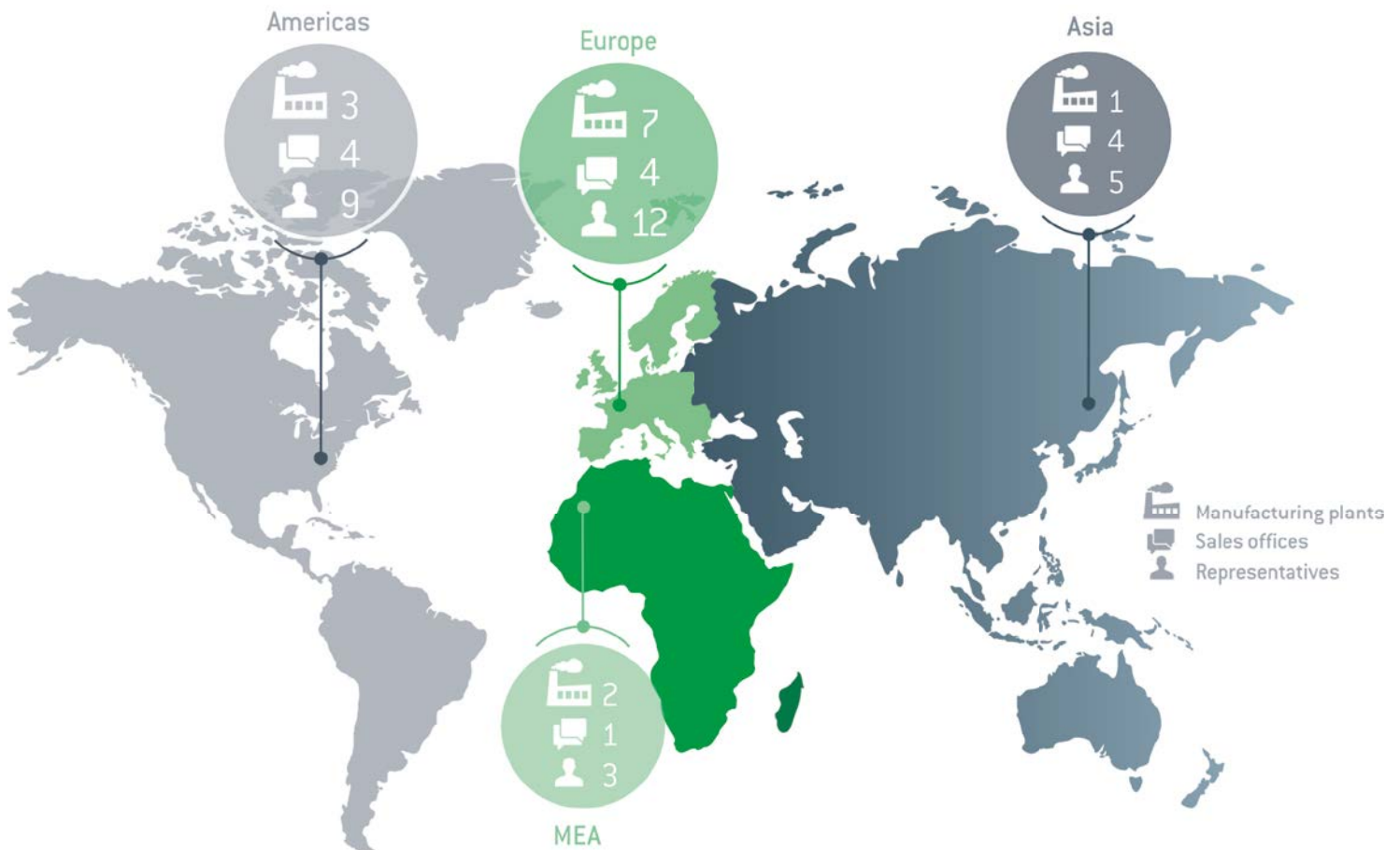
Electrolytic Aluminum Capacitors



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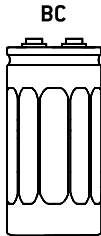
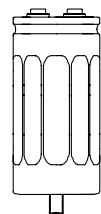
A Worldwide presence



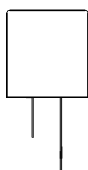

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Selection Guide

SCREW TERMINALS

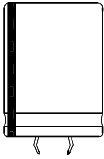
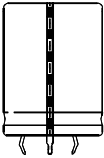
Reference	Capacitance (μ F)	Voltage (V)	Dimensions		Operating temperature	Main characteristics	Page	
			\emptyset (mm)	H (mm)				
 BC	FELSIC 125 FRS (BC) - CO 47 FELSIC 125 FRS (BD) - CO 46	220 to 150 000	16 to 350	36 to 90	53 to 145	-55°C + 125°C	Low ESR	16
	FELSIC 105 TFRS (BC - BD) - CO 45	470 to 68 000	10 to 100	36 to 77	47 to 144	-55°C + 105°C	Very low ESR	19
	FELSIC HV (BC - BD)	1 500 to 47 000	160 to 450	51 to 90	104 to 200	-55°C + 105°C	Extreme Long life; High ripple	22
	FELSIC 105 (BC - BD)	100 to 470 000	16 to 450	36 to 90	52 to 200	-55°C + 105°C	Extreme Long life	25
	FELSIC 105 LP (BC)	1 500 to 220 000	10 to 450	90	67	-55°C + 105°C	105 with Low Profile can	29
 BD	FELSIC CAPAX (BC - BD)	100 to 2 200 000	10 to 500	36 to 90	52 to 200	-55°C + 85°C	High energy density	31
	FELSIC 85 (BC) - CO 54 FELSIC 85 (BD) - CO 53	68 to 680 000	10 to 630	36 to 90	52 to 200	-55°C + 85°C	Standard 85°C	38
	FELSIC 85 M (BC) - CO 54 FELSIC 85 M (BD) - CO 53	68 to 330 000	10 to 630	36 to 90	52 to 200	-55°C + 85°C	Standard 85°C \pm 20% tolerance	43
	FELSIC 039 (BC) - CO 39 FELSIC 037 (BD) - CO 37	100 to 150 000	10 to 400	36 to 77	47 to 144	-55°C + 85°C	Standard C039 type (railway maintenance standard)	47

RADIAL LEADED

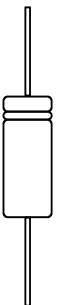
Reference	Capacitance (μ F)	Voltage (V)	Dimensions				Operating temperature	Main characteristics	Page
			l (mm)	L (mm)	\emptyset (mm)	H (mm)			
 CUBISIC	100 to 33 000	10 to 450	35	35 to 50	16	-55°C + 105°C	Non cylindrical case, Withstand 20g vibrations, High energy density	52	
	CUBISIC LP	120 to 68 000	10 to 400	45	12	35 to 75	-55°C + 105°C	Non cylindrical case, Withstand 20g vibrations, High energy density	55
 ALSIC	ALSIC 145 20g	220 to 3 300	12 to 115		20 25	18 22.5	-55°C + 145°C	High temperature range - Long life withstand 20g vibrations	58
	ALSIC 20g	100 to 80 000	10 to 250		20 25	18 to 35.5	-55°C + 105°C	Withstand 20g vibrations	60

Selection Guide

SNAP IN

Reference	Capacitance [μ F]	Voltage (V)	Dimensions		Operating temperature	Main characteristics	Page
			\emptyset (mm)	H (mm)			
 SNAPSIC 125	470 to 47 000	16 to 100	22 to 35	25 to 50	-55°C + 125°C	High temperature range - Long Life	64
SNAPSIC HV	47 to 2 200	16 to 500	22 to 35	25 to 50	-55°C + 105°C	Long Life; High ripple current	66
SNAPSIC 105	22 to 68 000	16 to 500	22 to 35	25 to 50	-55°C + 115°C	Standard 105°C type	68
SNAPSIC CAPAX	33 to 47 000	25 to 500	22 to 35	25 to 50	-55°C + 85°C	High energy density	72
SNAPSIC	22 to 47 000	16 to 500	22 to 35	30 to 50	-55°C + 85°C	Standard 85°C type	76
 SNAPSIC 105 4P	330 to 150 000	16 to 500	35 to 45	50 to 100	-55°C + 105°C	Standard 105°C type with 4Pins	80
SNAPSIC 105 LP	150 to 68 000	16 to 500	45	16 to 40	-55°C + 105°C	Low Profile 105°C with 4 Pins	83
SNAPSIC 4P	330 to 150 000	16 to 500	35 to 45	50 to 100	-55°C + 85°C	Standard 85°C type with 4Pins	86

AXIAL LEADED

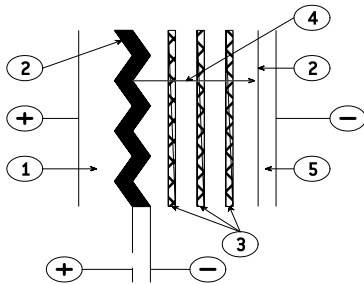
Reference	Capacitance [μ F]	Voltage (V)	Dimensions		Operating temperature	Main characteristics	Page
			\emptyset (mm)	H (mm)			
 PRORELSIC 145 CO 52	6,8 to 10 000	16 to 450	14 to 25	30 to 75	-55°C + 145°C	High temperature Long life	90
VACSIC 150	6,8 to 3 300	16 to 450	12 to 16	30	-55°C + 150°C	High temperature Long life Withstand 45g vibrations	94
PRORELSIC 125 CO 52	1 to 15 000	10 to 450	6,5 to 25	15 to 75	-55°C + 125°C	125°C Long life	96
SICAL SICAL CO 42	2,2 to 47 000	10 to 630	6,5 to 25	15 to 75	-55°C + 105°C	Standard 105°C type	102
VACSIC 105	15 to 4 700	10 to 350	12 to 16	30	-55°C + 105°C	Standard 105°C type Withstand 45g vibrations.	108

OLD RANGES	REPLACEMENT TYPES	OLD RANGES	REPLACEMENT TYPES	OLD RANGES	REPLACEMENT TYPES
FELSIC 125	FELSIC 125 FRS	CELLSIC	FELSIC CAPAX 10, 16 V	RELSIC TFRS (CO 43)	SICAL CO 42
FELSIC TFRS (CO 45)	FELSIC 105 TFRS (BC) (CO 45)	CMF FP - CMF	SICAL CO 42 - SICAL	SICAL 025 (CO 25)	SICAL CO 42
FELSIC HP	FELSIC 105 77 x 220	CMF FRS 12.3	SICAL CO 42	SICAL 041 (CO 41)	SICAL CO 42
FELSIC IND (BC - BD) 93.6, 94.6	FELSIC CAPAX FELSIC 85 (BC - BD)	PROMISIC 015 (CO 15)	PRORELSIC 125 (CO 52) PROMISIC 031		
FELSIC UPS	FELSIC CAPAX	PROMISIC 125 (CO 16)	PRORELSIC 125 (CO 52)		
FELSIC 018 (CO 18)	FELSIC 85 BC - FELSIC 039	PROMISIC FRS (CO 32)	SICAL CO 42		
FELSIC 019 (CO 19)	FELSIC 85 BC - FELSIC 039	PROMISIC TFRS (CO 28)	SICAL CO 42		
FELSIC DI	FELSIC 85 480 V - 500 V	PRORELSIC 105 TFRS (CO 48) (2)	PRORELSIC 125 (CO 52)		
FELSIC 036 (CO 36)	FELSIC 037 (CO 37)	RELSIC 026 (CO 26)	PRORELSIC 125 (CO 52) RELSIC 033		
FELSIC 038 (CO 38)	FELSIC 039 (CO 39)	RELSIC 125 (CO 44)	PRORELSIC 125 (CO 52)		

General technical data

1. BASIC CONSTRUCTION

Structure of an electrolytic aluminum capacitor is shown hereunder :



1. Anode : aluminum foil
2. Dielectric : aluminum oxide
3. Papers spacers impregnated with electrolyte
4. Ionic conduction assumed by electrolyte
5. Cathode : aluminum foil

The positive plate is an etched aluminum foil covered with alumina which is the dielectric of the capacitor.

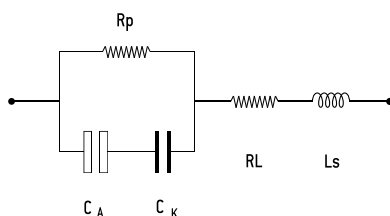
The negative plate is constituted by a second aluminum foil which serves as a current supply, and by electrolyte-impregnated papers layers.

The metal used for anode is a $\geq 99,98\%$ grade aluminum.

The dielectric has a thickness of $13 \text{ \AA} / \text{V}$.

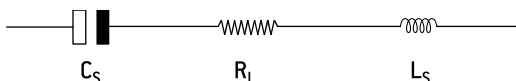
The aluminum used for the cathode is a $\geq 98\%$ grade aluminum covered with a dielectric layer with a thickness of about 40 \AA .

2. DIAGRAM OF THE EQUIVALENT CIRCUIT



- C_A = Capacitance of the anode
- C_K = Capacitance of the cathode
- R_p = Parallel resistance due to the aluminum oxide film.
- R_L = Series resistance of connections, plates and impregnated spacer.
- L_s = Inductance of winding and connections.

A standard simplified diagram is.



C_s is the series capacitance of both anode and cathode capacitances. Electrolytic aluminum capacitors are naturally polarized because of the insulating film on the anode. Given the very thin aluminum oxide layer, a reversed voltage should not exceed 1.5 V when there is energy supply.

Short duration reverse voltages can be absorbed by special construction, second anode replacing the former cathode.

3. CAPACITORS MARKING

3.1. ARTICLE CODE (ON EACH PACKAGING)

A followed by 6 figures number. First 3 positions are specific of the range. (Ex. A 745xxx for a FELSIC 85 BD)

140	FELSIC en batterie / in bank	741	FELSIC 125 FRS BD (ex 731)
701	PRORELSIC 125	742	PRORELSIC 105 TFRS
703	PRORELSIC 125	743	PRORELSIC 105 TFRS
704	SNAPSIC	744	FELSIC 85 BC / FELSIC 85 LP
705	SNAPSIC 105	745	FELSIC 85 BD
706	FELSIC HP BC - BD	746	FELSIC 85 M BC
708	PRORELSIC 145	747	FELSIC 85 M BD
710	CUBISIC	748	SICAL CO 42 - SICAL
711	PROMISIC 031	749	SICAL CO 42 - SICAL
712	CUBISIC LP	750	CUBISIC 125
713	SNAPSIC 105 LP	756	FELSIC 105 BC / FELSIC 105 LP
714	SNAPSIC 4P	757	FELSIC 105 BD
715	SNAPSIC 105 4P	760	FELSIC CAPAX BC
716	SNAPSIC HV	761	FELSIC CAPAX BD
717	SNAPSIC CAPAX	762	FELSIC 105 TFRS BC
718	SNAPSIC 125	763	FELSIC 105 TFRS BD
721	RELSIC 033	764	FELSIC HV BC
722	CI FRS	765	FELSIC HV BD
723	CI FRS	775	VACSIC
728	FELSIC 039 (ex 727) - FELSIC DI	774	VACSIC 150
738	FELSIC 037 (ex 737)	776	ALSIC 20G / ALSIC 145 20G
740	FELSIC 125 FRS BC (ex 731)		

In FELSIC ranges, article code without first letter A, is printed on each capacitor. a Figure 9 in fourth position shows a special product.

3.2. BATCH (ON EACH CAPACITOR).

3 figures or 6 figures

3.3. DATE (ON EACH CAPACITOR IF APPLICABLE)

4 figures (year-week)

4. ELECTRICAL CHARACTERISTICS

4.1. RATED CAPACITANCE C_R

The rated capacitance is defined at 100 Hz and at ambient temperature.

4.2. RATED VOLTAGE U_R

U_R is the maximum DC voltage which may be applied in continuous operation. When applying a superimposed alternating voltage, the peak value of the resulting waveform should not exceed the rated voltage.

4.3. PEAK VOLTAGE U_p

U_p is the maximum repetitive voltage which can be applied within short periods. Defined in CECC 30 300 and IEC 60 384-4 :

1000 cycles of 30 s charge followed by a no load period of 5 min. 30 s with upper category temperature.

$$U_p \geq 1,15 U_R \quad (U_R \leq 315 \text{ V})$$

$$U_p \geq 1,10 U_R \quad (U_R > 315 \text{ V})$$

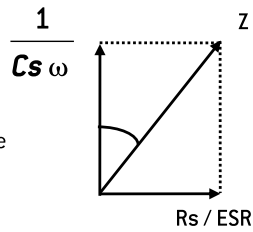
General technical data

4.4. DISSIPATION FACTOR TANδ

The dissipation or loss factor is defined by its tangent $\text{Tan}\delta$

$$\text{Tg}\delta = R_s C_s \omega$$

$$(\omega = 2\pi F)$$



ESR Capacitor Equivalent Series Resistance

Cs Capacitor capacitance

F Frequency [100 Hz]

Z Capacitor impedance

4.5. EQUIVALENT SERIES RESISTANCE ESR

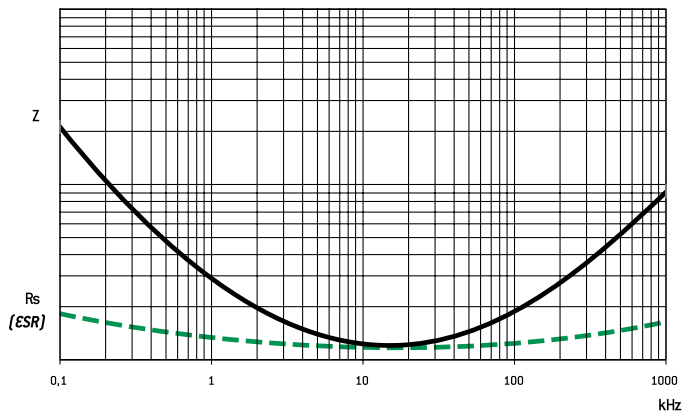
The relation between ESR and dissipation factor $\text{Tan}\delta$ is given in § 4.4.

4.6. IMPEDANCE Z - INDUCTANCE L

The impedance is given by :

$$Z = \sqrt{R^2 + \left(L\omega - \frac{1}{C\omega}\right)^2}$$

L inductance. Generally L = 5 to 20 nH



Z and ESR as function of frequency typically follows the chart :

4.7. PERMISSIBLE RIPPLE CURRENT (I r.m.s.) I~

The current is defined at the maximum climatic category and at 100 Hz. It is the root mean square value r.m.s. The value I_0 is the rated value for calculations of expected life up to 3 I_0 .

4.8. LEAKAGE CURRENT II

It is measured at 20°C after a 5 min. polarization under rated voltage.

For C_R in μF and U_R in V :

$$I \leq 0,01 C_R U_R \text{ or } 1 \mu\text{A}^*$$

when $C_R U_R \leq 1000 \mu\text{C}$

$$I \leq 0,006 C_R U_R + 4 \mu\text{A}$$

when $C_R U_R > 1000 \mu\text{C}$

For $U_R > 350 \text{ V}_{\text{DC}}$ it can be specified :

with $K = 4, 6 \text{ or } 8$

or

$$I \leq 0,3 (C_R U_R)^{0,7} + 4 \mu\text{A} \text{ (CECC 30 300)}$$

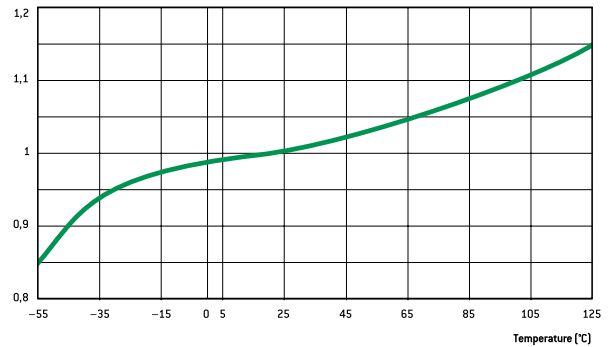
* Whichever is the greater

4.9. CHARACTERISTICS

Versus temperature (typical values).

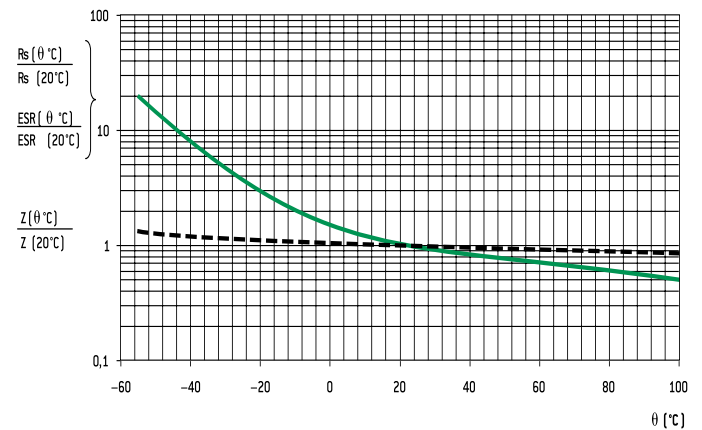
4.9.1. Capacitance drift

Versus temperature



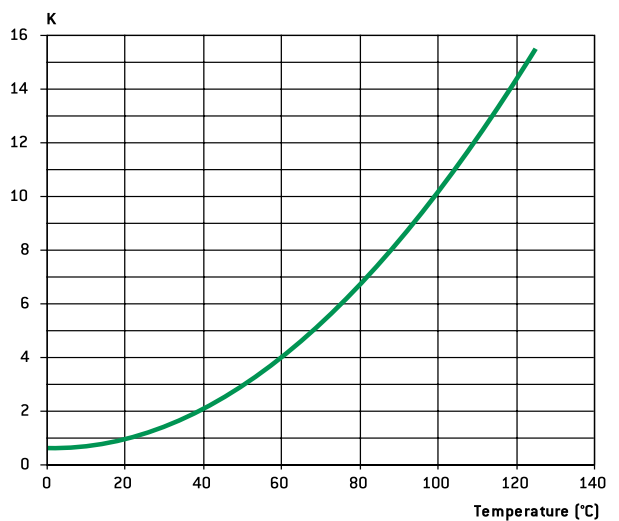
4.9.2. ESR and Z drifts at 100 Hz

Versus temperature



4.9.3 Leakage current drift

Versus temperature



General technical data

5. SPECIFICATION TO APPLY

Electrolytic aluminum capacitors are defined in :

- NF and UTE French national standard
- CECC European specifications
- IEC international specifications

Quality insurance procedures are described in these specifications.

	French	European	International
Generic specification Fixed capacitors	NF C 83 100	CECC 30 000 EN 130 000	IEC 60 384 -1 QC 300 000
Sectional specification Electrolytic aluminum capacitors	NF C 83 110	CECC 30 300	IEC 60 384 - 4 C 300 300
Blank deta II specification - Electrolytic aluminum capacitors with non solid electrolyte /	UTE 83 110	CECC 30 301	IEC 60 384 - 4 -1 QC 300 301
Blank deta II specifications	CECC 30 301- 017 to CECC 30 301- 062 CO 31 to CO 55	CECC 30 301- 017 to CECC 30 301- 062 CECC 30 301- 802 to CECC 30 301- 811	

6. ENDURANCE TESTS / LIFE TIME

6.1. STANDARD ENDURANCE TEST

at max category temperature :

Temperature	Endurance test			
	Grade I - Long life			Grade II - General purpose
	10 000 h	5 000 h	2 000 h	1 000 h
125°C			•	
105°C		•	•	•
85°C	•	•	•	•

Standard endurance tests do not exceed 2000 hours at 125°C. However, present EXXELIA^{SIC SAFCO} technologies concerning liquid electrolytes have led to endurance tests up to 5000 hours at 125°C (PRORELSIC 125 - FELSIC 125 RS) and even 20000 hours at 125°C (PRORELSIC 145 - ALSIC 145)

6.2. PERFORMANCE REQUIREMENTS ON STANDARD ENDURANCE TESTS.

Permissible capacitance drift $\Delta C/C$ (%)

Permissible increase factors on $\tan\delta$, ESR, Z and II initial values

U_R	Endurance test			
	Grade I			Grade II
	10 000 h	5 000 h	2 000 h	1 000 h
6,3 V			+15 -30	+25 -40
10 V - 35 V	+15 -20	± 15	± 15	± 30
40 V - 160 V	± 15	± 15	± 15	± 30
> 160 V	± 15	± 10	± 10	± 15

	Endurance test			
	Grade I			Grade II
	10 000 h	5 000 h	2 000 h	1 000 h
$\tan\delta$ or ESR (1)	1,5	1,3	1,3	1,5
Z (2)	3	2	2	3
II	Standard values			

(1) $\tan\delta$ or ESR : for initial value, take standard value.

(2) Z : for initial value, take specified value (see data sheet).

Specific requirements can be taken into consideration with regards to initial values of dissipation factor or equivalent series resistance and impedance.

6.3. FAILURE CRITERIA FOR ELECTROLYTIC CAPACITORS.

Failure criteria are defined in CECC 30 301

- Non measurable defaults leading to complete failure.
- Measurable defaults leading to adjustment losses of the load circuit (failure due to variations).

6.3.1. Non measurable defaults.

They might be summed up as :

- Open circuit
- Short circuit
- Operation of pressure relief device
- Severely damaged insulation
- Unusable terminations

6.3.2. Measurable defaults.

Variations exceeding the values given below characterize a default.

- Capacitance drift $\Delta C/C$ (%) : 3 times the limit for standard endurance testing or 50 % (whichever is the smallest).
- $\tan\delta$ or ESR : 3 times standard max initial values.
- Z : 3 times standard max initial values.
- II : initial limit (under load conditions).

Specific requirements can be taken into consideration with regards to lower drifts.

6.4. INFLUENCE OF MAIN PARAMETER ON OPERATIONAL LIFE.

6.4.1. Temperature.

The capacitors operational life is highly dependent upon its internal temperature Θ_i and therefore upon the ambient temperature and the ripple current.

Knowing ESR and dissipated power values (§ 6.4.3.) one can figure out, the internal temperature rise and then determine the capacitors expected life.

With present high boiling point electrolytes (§ 8.6)

$\Theta_i \text{ max} = 125 \text{ to } 185^\circ\text{C}$ depending on styles.

6.4.2. Ripple current.

The ripple current flowing through the capacitor increase the internal temperature through power dissipation.

Standards define the permissible current at 100 Hz and generally consider a temperature rise of 5 to 10°C of max category temperature.

Current waveforms and frequencies make it difficult to clearly determine the capacitors internal temperature rise, which defines the operationally life.

Experiments confirm following relationship :

$$\Theta_i = \Theta_a + (\Theta_c - \Theta_a) K$$

Where :

- Θ_i = Internal hot spot temperature
- Θ_a = Ambient temperature
- Θ_c = Case temperature
- K = Parameter depending upon case diameter and cooling
 - $\emptyset \geq 51 \text{ k} = 2^{\pm 0,5}$
 - $\emptyset < 51 \text{ k} = 1,5^{\pm 0,5}$ (air cooling - 0,2 m/s)

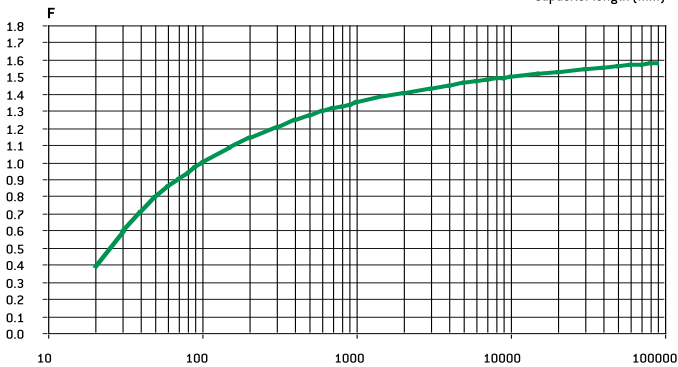
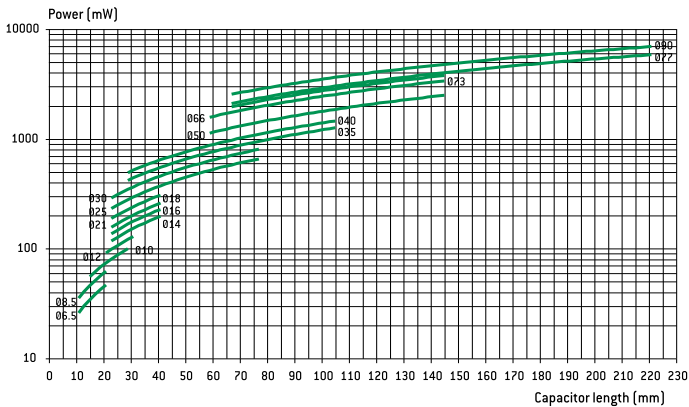
General technical data

r.m.s. value according to current waveform.

Function	Mean value	R.m.s. value	Function	Mean value	R.m.s. value	Function	Mean value	R.m.s. value
	$A (t_0/T)$	$A \sqrt{t_0/T}$		$A/2$	$A \sqrt{3}$		$2A/\pi$	$A / \sqrt{2}$
	$A (t_1/T)$	$A \sqrt{2t_1/3T}$		$2A/\pi (t_0/T)$	$A \sqrt{t_0/2T}$		$A/2$	$A / \sqrt{3}$
	$A/2 (t_0/T)$	$A \sqrt{t_0/3T}$		$A/2 (t_0/T)$	$A \sqrt{t_0/3T}$		0	A

6.4.3. Dissipated power versus case dimension

For calculations of ripple currents, considering an internal temperature rise of 10°C



$P = ESR \cdot I^2$

P = Dissipated power (mW)

($\Theta_i - \Theta_a = 10^\circ\text{C}$)

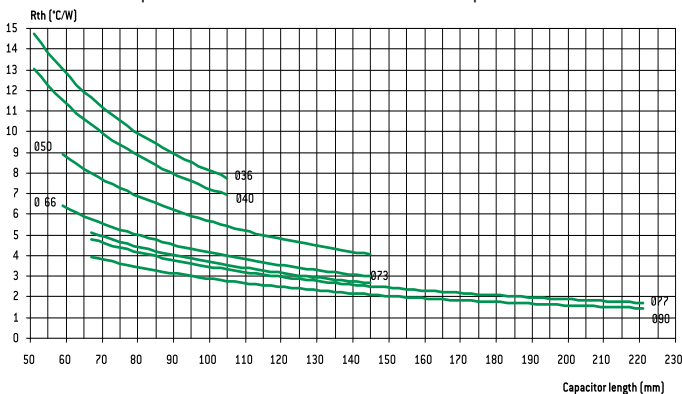
ESR : Equivalent series resistance (100 Hz 20°C)

I : Ripple current (r.m.s. value at 100 Hz)

For different frequencies from 100 Hz, I must be multiplied by the factor F, according to above chart. :

6.4.4. Thermal resistance Rth and air cooling

Rth is static thermal resistance (without cooling) between capacitor central hot spot and ambient temperature measured at a distance of one capacitor diameter



Forced or not cooling air can lead to a significant decrease of these values.

Consequently, r.m.s. ripple current can be increased as a function of air cooling speed :

\emptyset (mm)	$\leq 0,5$ m/s	1 m/s	2 m/s	3 m/s	≥ 4 m/s
66 - 90	1~	1,1 1~	1,2 1~	1,25 1~	1,3 1~
36 - 51	1~	1,2 1~	1,4 1~	1,45 1~	1,5 1~

This parameter shall be applied to one capacitor alone.

For capacitors in bank, ambient temperature must be strictly equal around all capacitors.

6.4.5. Quality guaranty

We guarantee products manufactured during 2 years from the data of shipment against defaults of material and assembly.

This guaranty can be involved by the buyer only if our products are used within normal conditions, always according to the state of the art and taking in account storage conditions.

The equipment design should take into consideration possible failures of our capacitors and related effects in order to avoid them.

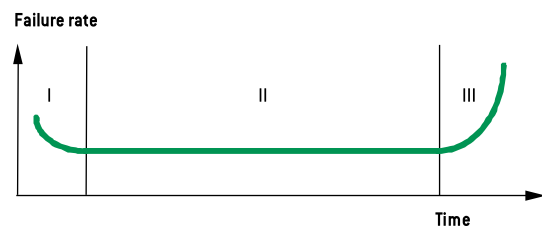
Guaranty is not applicable for damages occurred by surge voltage, irregular use, polarity inversion or maintenance default.

Guaranty is exclusively limited to the replacement of individual defective capacitors within the terms of delivery. This rule applied to all cases and particularly to any further consequence of failures.

6.4.6. Reliability

Failure rate :

$$FR = \frac{\text{Number of components tested} \times \text{test duration}}{\text{Number of failures}}$$



Failure rate is measured in FIT (failure in time = 10^{-9} / hour).

The failure rate is set up during the life time of the capacitor (phase II)

I. Early failure phase (generally excluded during ageing process).

II. Operational life time of the capacitors

III. End of life

General technical data

Mean time between failures MTBF = 1/FR measured in years

Range	Failure rate for a failure percentage not exceeding 1% with a confidence level of 60 %
FELCIS 85 >350 V FELCIS CAPAX > 350 V SNAPSIC - SNAPSIC CAPAX > 350 V SNAPSIC 4P > 350 V PROMISIC 031 Ø = 6,5 SICAL CO 42 - SICAL > 350 V	50 FIT - (MTBF = 2280)
FELCIS 037 - 039 FELCIS 85 ≤ 350 V FELCIS CAPAX ≤ 350 V CUBISIC CI FRS SNAPSIC 105 - SNAPSIC 105 4P SNAPSIC 105 LP - SNAPSIC HV SNAPSIC - SNAPSIC 4P ≤ 350 V SNAPSIC CAPAX ≤ 350 V ALSIC IR - ALSIC 145 - ALSIC HV - VACSIC 150 - VACSIC SICAL CO 42 - SICAL ≤ 350 V PRORELSIC 125 Ø = 6,5 RELSIC 033 PROMISIC 031 Ø > 6,5	25 FIT - (MTBF = 4560)
FELCIS 125 FRS - SNAPSIC 125 FELCIS HV - FELCIS 105	10 FIT - (MTBF = 11410)
PRORELSIC 125 Ø > 6,5 PRORELSIC 145	5 FIT - (MTBF = 22820)

Multiplying factor of FR with voltage and temperature

Factor	Temperature [°C]							
	≤ 40	50	60	70	85	105 (1)	125 (1)	145 (1)
Factor	1	1,5	2,3	3,4	6,3	14	32	72

(1) Only for permitted capacitors

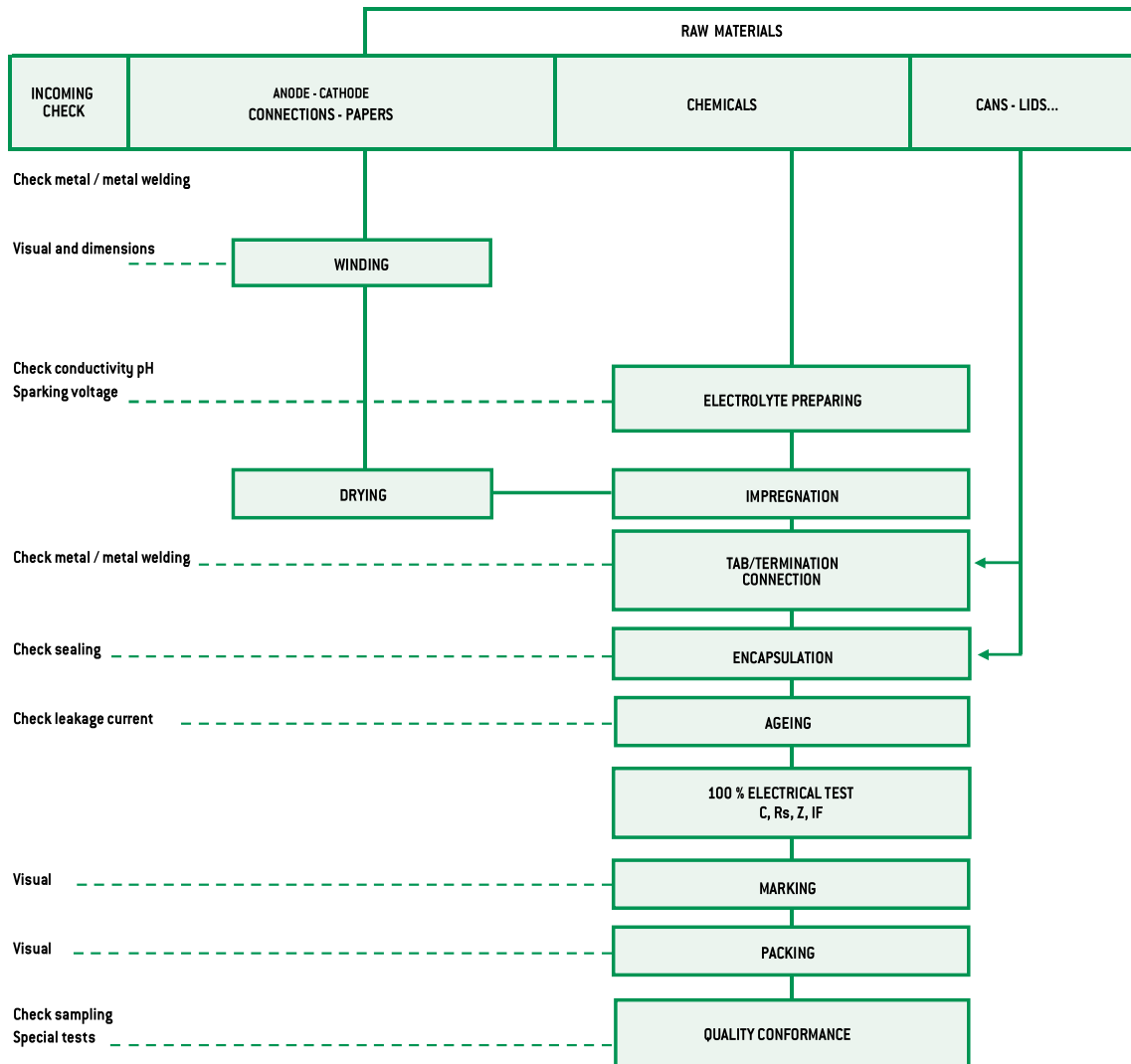
Factor	Percentage of rated voltage (2)		
	100 %	80 %	50 %
Factor	1	0,8	0,5

(2) This voltage has to be constant

Environment	Without vibration		Ground with vibrations or mob ile			
	Ground, fix Controlled air	Ground, fix	PRORELSIC SNAPSIC 20 g FELCIS 20 g	FELCIS 10 g PROMISIC SICAL Ø ≤14	CI FRS - SNAPSIC RELSIC SICAL Ø >14	ALSIC
Factor	1	2	2	4	6	12

7. MANUFACTURING FLOW CHART

Process controls



General technical data

8. INFORMATION ON APPLICATION

8.1. CLEANING SOLVENTS

Use aliphatic alcohols, such as denatured ethyl alcohol, isopropanol, or butylacetate, or else alkaline diluted solutions. Avoid incompatible solvents (halogenous for example).

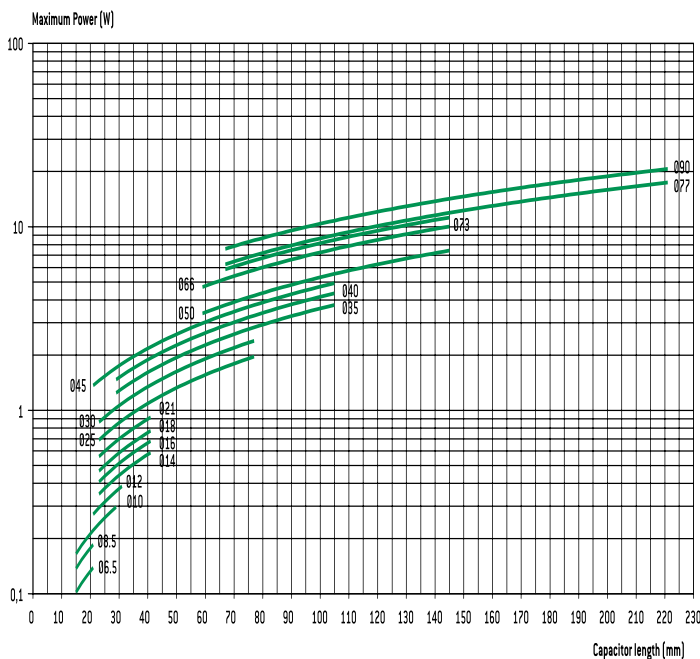
8.2. SHELF LIFE

There is no electrical characteristics variation for long periods of storage except leakage current which can increase.

It is caused by chemical reactions between the dielectric alumina and the electrolyte. These reactions are reversible when switched on. Capacitors can generally be stored at temperature between -5° and $+50^{\circ}\text{C}$ without reforming for the following periods of time :

- For $U_R \leq 100\text{ V}$, storage time : 5 years
(up to 10 years under specific conditions)
- For $100\text{ V} < U_R \leq 360\text{ V}$ storage time : 3 years
- For $360\text{ V} < U_R < 500\text{ V}$ storage time : 1 year
- For $U_R \leq 500\text{ V}$, storage time : 6 months

Generally when these periods are overstepped, one hour at rated voltage causes the decrease of leakage current under the specified limits. An other way to avoid this leakage current increase problem is to always limit available power through capacitor during first seconds or minutes after storage or transport, according to the following chart :



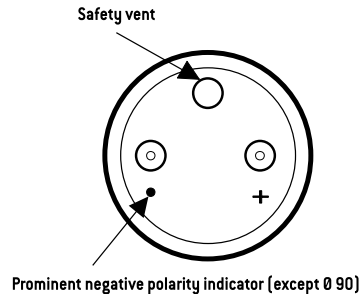
8.3. LOW PRESSURE RESISTANCE

EXXELIA ^{SIC SAFCO} capacitors can be used with ambient low pressure decreasing up to 10 mbar (altitude 28000 m – 92000 feet).

8.4. MOUNTING SCREW TERMINALS CAPACITORS (FELSIC)

Capacitors may be used vertically (terminals on top) or horizontally. When used horizontally, the following position in relation to the safety vent, is recommended :

Mounting capacitors in series may be used for operating voltage exceeding U_R . See FELSIC in bank



8.5. MOUNTING SOLDER TYPE CAPACITORS.

They may be used in any position. During mounting, avoid applying excessive force to capacitor pins or wires. There is a risk of damaging internal connections. After soldering and for the same reasons, do not try to move the capacitor's body.

8.6. ELECTROLYTES : SAFETY RULES.

Electrolytes used in EXXELIA ^{SIC SAFCO} capacitors are manufactured by EXXELIA ^{SIC SAFCO}. Main solvents are generally γ butyrolactone and ethylene glycol, very stable high boiling point solvents. Ionic conductive salts in electrolyte induce a very weak acidity (pH 5 to 7).

8.7. ENVIRONMENT.

- There is no possibility to produce gaseous emissions of nitrogen oxides or liquid emissions of nitrites or nitrates during the manufacture process.
- There is no possibility to produce liquid emissions or salts coming from dangerous metals such as mercury, hexavalent chromium or cadmium and from poisons such as arsenic or cyanides.

Accessories not made in aluminum, ring, screw, are also plated in anticorrosion processes without cadmium.

EXXELIA ^{SIC SAFCO} is always involved in this security field particularly in using whenever it's possible chemicals for electrolyte, without well-known risks.

- Dimethylformamide (DMF) dangerous solvent forbidden in several uses is completely excluded by EXXELIA ^{SIC SAFCO}, since 1990.
- There is no halogen compound such as chlorofluorocarbon (CFC or FCKW in german) or polychlorobiphenyl (PCB-Pyralene) or pentabromodiphenylether or octabromodiphenylether.

There is neither benzene, toluene or phenyl compound nor explosive such as picric acid, nor asbestos in plastic covers.

All the capacitors made by EXXELIA ^{SIC SAFCO} since 1991, can be scrapped or used in raw materials recycling processes with-out special care.

EXXELIA ^{SIC SAFCO} aluminum capacitors with non solid electrolyte are particularly suitable for different kinds of environment taking in account severity increasing laws.

European directives 2003/11/EC, 2002/96/EC (WEEE) and 2002/95/EC (RoHS) applies to all EXXELIA ^{SIC SAFCO} capacitors including every solder type, manufactured with pure tin coated pins or wires, since at least January 2006.

EXXELIA ^{SIC SAFCO} capacitors do not contain any carcinogen, mutagen and substance toxic for reproduction in accordance with 1907/2006/EC (REACH) European directive target.

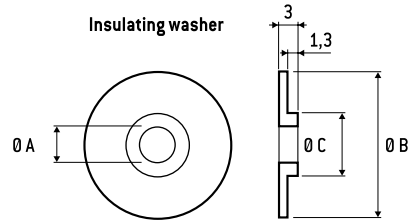
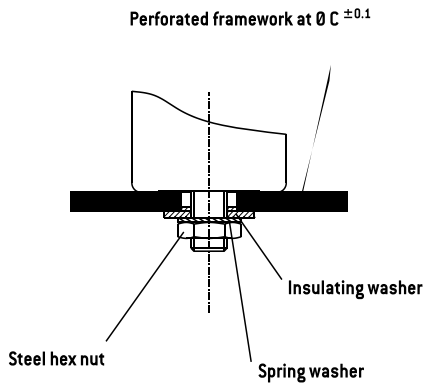
Mounting and insulating parts

STUD FIXING : FELSIC BD

Steel nut, spring washer and insulating washer are delivered loosely with the capacitor.

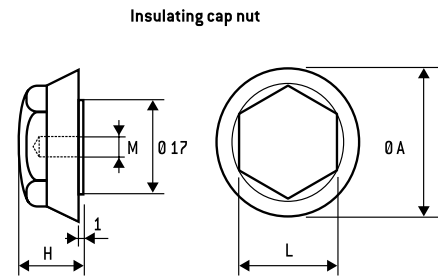
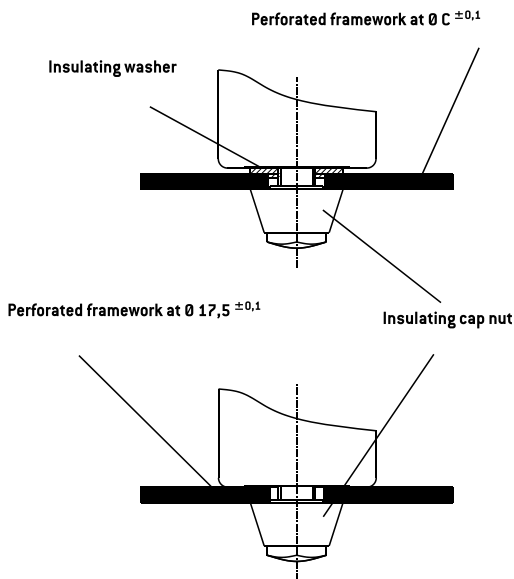
STANDARD MOUNTING WITH :

Insulating washer and steel nut



\varnothing Capacitor	Dimension (mm)				Code
	M	$\varnothing A$	$\varnothing B$	$\varnothing C$	
36	8	8,4	25	18,5	A 691060
51 - 77	12	12,5	30	21,5	A 691061
90	12	12,5	35	21,5	A 691062

Insulating plastic nut with or without insulating washer

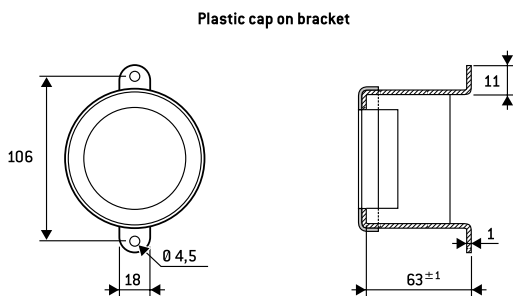


M	Dimension (mm)				Max. torque	Code
	$\varnothing A$	H	L			
8	25	15	17	3 Nm	A 691070	
12	30	20	19	7 Nm	A 691071	

Ring - clip mounting : FELSIC LP

Ring clips shall be ordered separately.

Tightening screws and nuts are supplied loosely.



FELSIC 85 LP FELSIC 105 LP	Code
Metal bracket	A691055
Plastic cap	A691065

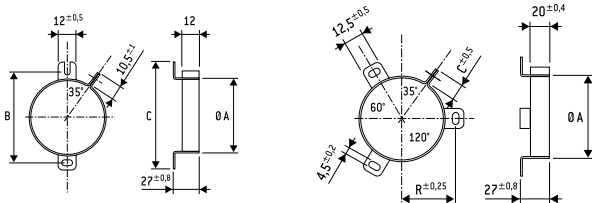
General technical data

Ring - clip mounting : FELSIC BC

Ring clips shall be ordered separately.

Tightening screws and nuts are supplied loosely.

FELSIC BC - Metal ring-clips



Ø A Cap.	B	C	Code	Ø A Cap.	B	C	Code
36	54	63	A 691901	51	33,5	11,8	A 691905
				66	39	10,5	A 691913
				73	44	10,5	A 691914
				77	44,5	10,5	A 691907
				90	53,3	11,8	A 691915

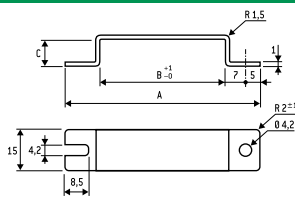
Stirrup mounting : CUBISIC LP

Stirrups shall be ordered separately.

Tightening screws and nuts are supplied loosely

Salt mist endurance of screws and mounting accessories :
minimum 96 h (IEC 600 68-2-11)

CUBISIC /CUBISIC LP - Metal bracket



Ø A Cap.	A	B	C	Code
45x12	69	45	10	A 691057
35x16	59	35	14	A 691059

PACKAGING

1. PACKAGING AND WEIGHT UNITS.

1.1. Capacitor with screw terminals

Case dimensions				Unit weight *
Ø	H			(g)
36	47	52	53	70
36	60			79
36	80	81		100
36	104	105		120
51	47			80
51	62	63		105
51	81	82		190
51	104	105		260
51	112			270
51	144			370
66	104	105		430
66	112			460
73	104	112		600
73	144			680
77	104	105		620
77	144	145		860
77	200			1300
77	220	221		1400
90	67			600
90	144	145		1400
90	200			1800

* Unit weight = typical values

Possible variations of = ± 25 % according to different voltage and capacitance.

1.2. Radial solder types

Case dimensions		ALSIC	SNAPSIC	Case dimensions		ALSIC	SNAPSIC
Ø (mm)	H (mm)	Weight* (g)	Weight* (g)	Ø (mm)	H (mm)	Weight* (g)	Weight* (g)
10	16	1,8		35	30		50
				35	40		50
12,5	21	4,5		35	45		52
12,5	24	5		35	50		60
				35	75		95
16	25	8,2		35	100		125
22	25		15	40	40		65
22	30		17	40	50		100
22	40		18	40	75		130
				40	100		170
25	25		17	45	21		50
25	30		20	45	25		60
25	35		22	45	30		73
25	40		25	45	35		85
25	45		28	45	45		110
25	50		30	45	75		180
				45	100		240
30	25		28				
30	30		30				
30	35		30				
30	40		40				
30	45		45				
30	50		50				

Case dimensions			CUBISIC
I	L	H	weight (g)
35	35	16	30
35	50	16	40
45	35	12	30
45	50	12	45
45	75	12	60

* Unit weight = typical values

Possible variations of = ± 25 % according to different voltage and capacitance.

1.3. Axial types

Case dimensions		PRORELSIC	PRORELSIC	SICAL CO 42
Ø (mm)	H (mm)	Unit weight * (g)	PROMISIC (g)	SICAL (g)
6,5	15		1,6	
6,5	19		1,8	1,8
8,5	19		2,3	2,3
10	19		2,8	2,8
10	25		3,5	3,5
10	28		3,8	
12	25		5	
12	30		5,4	5,4
14	30		6,9	6,9
14	41		9,5	
16	30	7,7		7,7
18	35	13,6		
18	40	15,3		15,3
21	40	19,5		19,5
25	40	28		28
25	50	35		35
25	75	56		56

* Unit weight = typical values

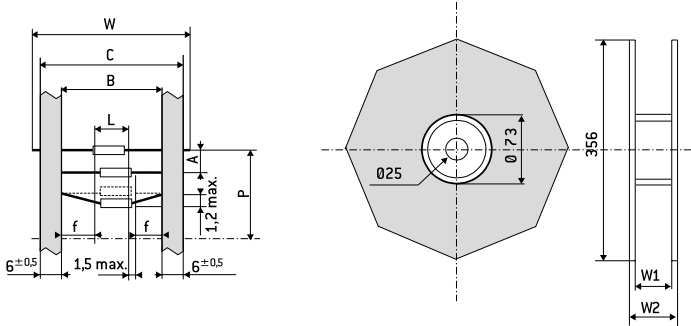
Possible variations of = ± 25 % according to different voltage and capacitance.

General technical data

2. PACKAGING ON TAPE

2.1. Axial types

Dimensions and tolerance (in mm) in accordance with IEC 60 286-1



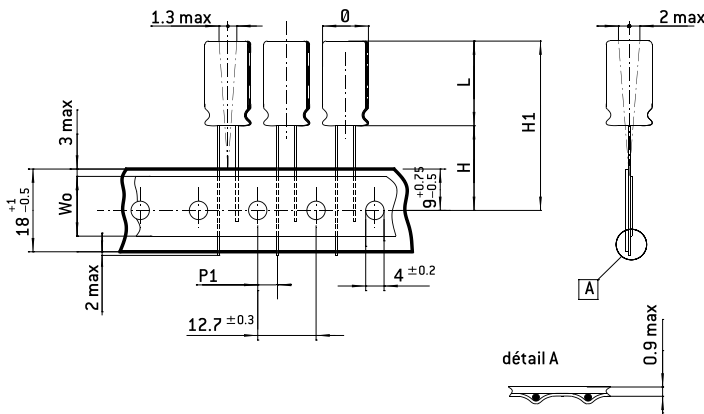
Dimensions									
D	L max.	B	A	P	C max.	W ₁	W ₂ max.	W	n ⁽²⁾
6,5	20	73±1,5	10±1,5	± 2	87,5	93	106	85±1,5	1000
8,5 ⁽¹⁾									750
10 ⁽¹⁾	32	73±1,5	15±1,5	± 3	87,5	93	106	85±1,5	400
12 ⁽¹⁾									400
14 ⁽¹⁾									200

- (1) On tape only on request
- (2) n = number of capacitors per reel.

White positive tape f : > 20 mm
P: 10 space

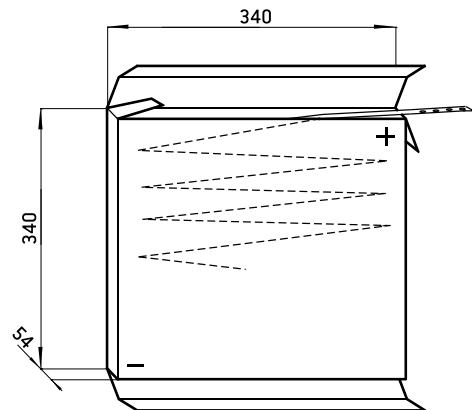
2.2. ALSIC IR - ALSIC 145

Dimensions and tolerance (in mm) in accordance with IEC 60 286-2.



Dimensions (mm)					
Ø	L	H ₁ max.	W ₀	P ₁	H
10	16	46,5	13	3,85	19±1

Fan fold packaging (Ammopack)
Number of capacitors : 1000



SCREW TERMINALS

SCREW TERMINALS



FELSIC 125 FRS

CO 46 - CO 47

3 500 h / 125°C

16 V ... 350 V	220 µF ... 150 000 µF	Ø 36 mm ... Ø 90 mm	- 55°C + 125°C	Long Life Time
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APPLICATIONS

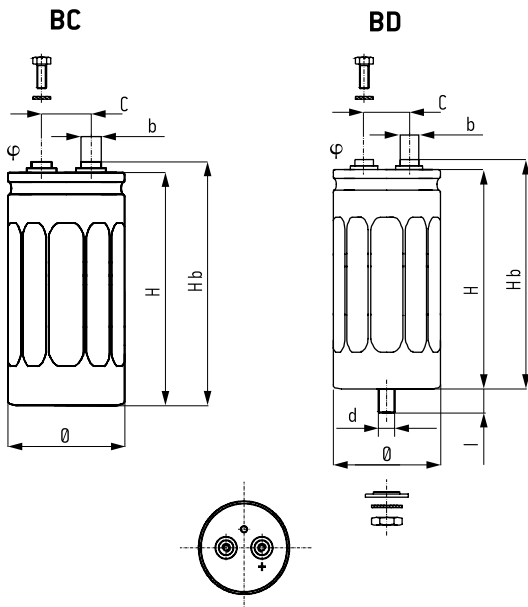
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Fixing : Clip or stud fixing

Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : -10 +30 %

Operating temperature : - 55°C +125°C



More compact cases on request

DIMENSIONS

Ø ±1	H ±2	Hb ±2	C ±0,5	φ	b	BC
36	53	58	12,7	M5	8	Insulated aluminum case
36	81	86	12,7	M5	8	Hexagonal screws
36	105	110	12,7	M5	8	Spring washers
51	82	87	22,2	M5	13	Fixing clip must be ordered separately
51	105	110	22,2	M5	13	
66	105	110	28,5	M5	13	
77	105	110	31,7	M5	13	
77	145	150	31,7	M5	13	
90	145	151	31,7	M6	13	

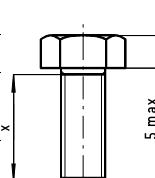
BD	
Aluminum case with sleeve	
Hexagonal screws	
Spring washers	
Stud fixing delivered with capacitor	
(steel hex nut, spring washer)	

Ø	d	l	Max. nut torque
36	M8	12 ±1	4 Nm
≥ 51	M12	16 ±1,5	10 Nm

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque : M5 : 3 Nm (x min 8 mm)
M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	≤150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Models CO 46, CO 47 - Long life
DIN 41 240 - Climatic category FKD - 55°C + 125°C / 56 days
CECC 30301-804 Issue 2
IEC 60 384.4 long life
Standard endurance test at U_R : 2000 h / 125°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 MΩ
Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 3500 V
Fire resistance : self extinguish 30 s (IEC 60 695-2-2) without PVC

FELSIC 125 FRS

CO 46 - CO 47

3 500 h / 125°C

Capacitance [μ F]	Case		ESR		Z 10 kHz +20°C max. [m Ω]	II +20°C 5 min. max. [mA]	I~ 100 Hz			Code	
	\emptyset [mm]	H [mm]	Typic [m Ω]	100 Hz +20°C [m Ω]			+40°C max. [A]	+85°C [A]	+125°C [A]	CO 47 [BC]	CO 46 [BD]
Rated voltage 16 V											
10000	36	53	22	32	20	0,32	22	13	5,6	A 740200	A 741200
15000	36	81	18	26	16	0,48	22	17	7,5	A 740201	A 741201
22000	36	105	14	21	15	0,70	22	22	9,6	A 740202	A 741202
33000	51	82	12	18	12	1,05	25	25	11	A 740203	A 741203
47000	51	105	11	15	10	1,50	25	25	13	A 740204	A 741204
68000	66	105	10	14	10	2,18	50	35	15	A 740205	A 741205
100000	77	105	8	11	10	3,20	55	35	16	A 740206	A 741206
150000	77	145	7	10	9	4,80	55	41	20	A 740207	A 741207
Rated voltage 25 V											
4700	36	53	22	50	25	0,23	22	13	5,6	A 740220	A 741220
10000	36	81	18	28	20	0,50	22	17	7,5	A 740221	A 741221
15000	36	105	17	25	20	0,75	22	20	8,7	A 740222	A 741222
22000	51	82	13	20	15	1,10	25	25	10	A 740223	A 741223
33000	51	105	11	16	12	1,65	25	25	13	A 740224	A 741224
47000	66	105	10	14	12	2,35	50	37	15	A 740225	A 741225
68000	77	105	7	10	8	3,40	55	37	17	A 740226	A 741226
100000	77	145	7	10	8	5,00	55	41	20	A 740227	A 741227
Rated voltage 40 V											
4700	36	81	18	28	20	0,38	22	17	7,5	A 740241	A 741241
10000	36	105	17	25	17	0,80	22	20	8,7	A 740242	A 741242
15000	51	82	15	23	15	1,20	25	23	10	A 740243	A 741243
22000	51	105	11	17	12	1,76	25	25	13	A 740244	A 741244
33000	66	105	10	16	12	2,64	50	37	15	A 740245	A 741245
47000	77	105	7	10	10	3,76	55	37	17	A 740246	A 741246
68000	77	145	7	10	8	5,44	55	41	20	A 740247	A 741247
Rated voltage 63 V											
2200	36	53	36	54	40	0,27	20	10	4,4	A 740260	A 741260
3300	36	81	25	38	25	0,41	22	15	6,4	A 740261	A 741261
4700	36	105	22	32	22	0,59	22	18	7,6	A 740262	A 741262
6800	51	82	15	22	16	0,86	25	23	10	A 740263	A 741263
10000	51	105	11	16	11	1,26	25	25	13	A 740264	A 741264
15000	66	105	10	15	10	1,89	50	37	15	A 740265	A 741265
22000	77	105	7	11	8	2,77	55	37	16	A 740266	A 741266
33000	77	145	6	10	8	4,16	55	44	18	A 740267	A 741267
100000	90	145	4	10	8	10,00	80	65	24	A 740268	A 741268
Rated voltage 100 V											
1000	36	53	70	115	75	0,20	14	7,3	3,1	A 740280	A 741280
2200	36	81	40	60	40	0,44	22	12	5	A 740281	A 741281
3300	51	82	30	45	30	0,66	25	16	7,1	A 740283	A 741283
4700	51	105	27	40	24	0,94	25	19	8,4	A 740284	A 741284
6800	66	105	21	27	20	1,36	50	25	11	A 740285	A 741285
10000	77	105	14	21	15	2,00	55	29	13	A 740286	A 741286
15000	77	145	10	15	12	3,00	55	35	17	A 740287	A 741287
47000	90	145	4	10	8	9,00	80	65	24	A 740288	A 741288
Rated voltage 160 V											
470	36	53	120	180	100	0,15	9	5,2	2,1	A 740300	A 741300
680	36	81	70	105	50	0,21	14	8,3	3,3	A 740301	A 741301
1000	36	105	50	75	35	0,32	19	11	4,4	A 740302	A 741302
1500	51	82	45	65	30	0,48	23	12	5	A 740303	A 741303
2200	51	105	30	45	27	0,70	25	17	6,9	A 740304	A 741304
3300	66	105	25	35	21	1,05	42	21	8,7	A 740305	A 741305
4700	77	105	16	24	18	1,50	53	29	11	A 740306	A 741306
6800	77	145	12	18	12	2,18	55	39	15	A 740307	A 741307
22000	90	145	4	10	8	7,00	80	65	24	A 740308	A 741308

FELSIK 125 FRS

CO 46 - CO 47

3 500 h / 125°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C (m Ω)	I _{II} +20°C 5 min max. (mA)	I _~ 100 Hz			Code	
	\emptyset (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			+40°C max. (A)	+85°C (A)	+125°C (A)	CO 47 (BC)	CO 46 (BD)
Rated voltage 250 V											
220	36	53	150	230	135	0,11	5,6	4,8	1,9	A 740320	A 741320
330	36	81	95	140	85	0,16	9,2	7	2,8	A 740321	A 741321
470	36	105	70	105	62	0,23	11	9,3	3,7	A 740322	A 741322
680	51	82	60	90	60	0,34	17	11	4,3	A 740323	A 741323
1500	51	105	30	50	30	0,75	25	17	6,9	A 740324	A 741324
2200	66	105	30	45	24	1,13	37	20	7,9	A 740325	A 741325
3300	77	105	15	23	15	1,65	55	30	12	A 740326	A 741326
4700	77	145	10	15	11	2,35	55	34	14	A 740327	A 741327
10000	90	145	8	12	10	4,50	80	41	17	A 740328	A 741328
Rated voltage 350 V											
220	36	81	400	600	400	0,16	7	3,3	1,1	A 740340	A 741340
330	36	105	300	450	280	0,24	9	4,5	1,5	A 740341	A 741341
470	51	82	150	230	150	0,33	14	6,6	2,2	A 740342	A 741342
680	51	105	130	200	130	0,48	15	8,1	2,7	A 740343	A 741343
1000	51	105	80	120	80	0,70	19	10	3,4	A 740344	A 741344
1500	66	105	70	100	70	1,05	26	13	4,2	A 740345	A 741345
2200	77	105	40	60	40	1,50	37	18	6,1	A 740346	A 741346
3300	77	145	30	45	30	2,30	50	24	8,1	A 740347	A 741347
4700	90	145	15	25	20	3,30	78	39	13	A 740348	A 741348
6800	90	145	12	20	18	4,20	80	42	14	A 740349	A 741349

PEAK VOLTAGE (V)

1000 cycles, without ripple current

U_p : Repetitive standard peak voltage (30 s)

U_s : Repetitive surge voltage (0,1 s)

U _R	16 V	25 V	40 V	63 V	100 V	160 V	250 V	350 V
U _p	18	29	46	72	115	184	288	385
U _s						235	340	495

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

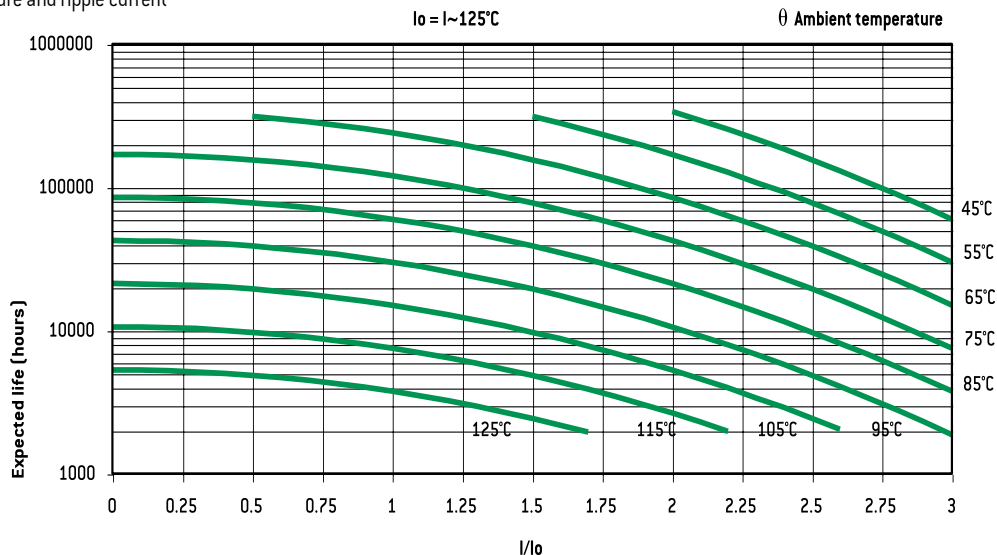
f [Hz]	50	100	300	600	1 000	10 000	50 000
I	0,8 x I _~	I _~	1,2 x I _~	1,3 x I _~	1,35 x I _~	1,5 x I _~	1,6 x I _~

CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series.

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

Dimensions		I _p	I _~ max.
\emptyset	H	(A)	(A)
36	53	400	22
36	81	600	22
36	105	700	22
51	82	800	25
51	105	1100	25
66	105	1900	50
77	105	3100	55
77	145	4200	55
90	145	5700	80

FELSIC 105 TFRS**CO 45 BC - BD****8 000 h / 105°C****Very low serie resistance**

10 V ... 100 V	470 μ F ... 68 000 μ F	\varnothing 36 mm ... \varnothing 77 mm	- 55°C + 105°C	Long Life Time
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**APPLICATIONS**

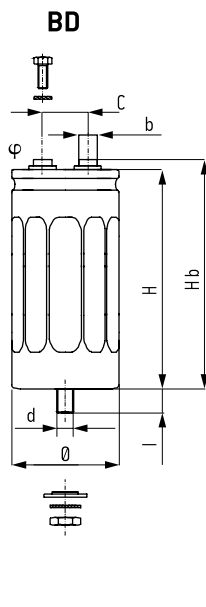
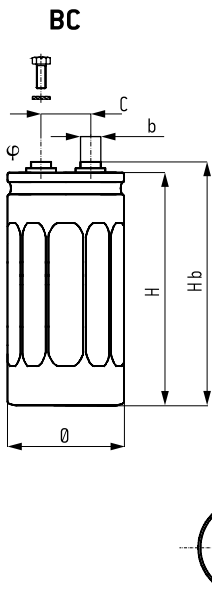
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Fixing : Clip or stud fixing

Screw terminals : M4 or M5

Tolerance on capacitance at 20°C : -10 +50 %

Operating temperature : - 55°C + 105°C

**DIMENSIONS**

$\varnothing \pm 1$	H ± 2	Hb ± 2	C $\pm 0,5$	φ	b
36	47	53	12,7	M4	8
36	60	66	12,7	M4	8
36	80	86	12,7	M4	8
51	81	87	22,2	M5	13
51	104	110	22,2	M5	13
66	104	110	28,5	M5	13
73	104	110	31,7	M5	13
77	144	140	31,7	M5	13

\varnothing	d	l	Max. nut torque
36	M8	12 ± 1	4 Nm
≥ 51	M12	16 $\pm 1,5$	10 Nm

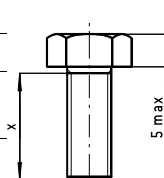
BC
Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately

BD
Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor (steel hex nut, spring washer)

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque : M4 : 2 Nm (x min 8 mm)
M5 : 3 Nm (x min 8 mm)

**RESISTANCE TO VIBRATIONS**

Hb (mm)	>150	<150
[Hz]	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - CO 45

DIN 40 040 - Climatic category FMD - 55°C + 105°C / 56 days

CECC 30301-040

IEC 60 384.4 long life

Standard endurance test at U_R :

2000 h / 105°C

5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVEInsulation resistance at 20°C between terminals and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2).

FELSIK 105 TFRS

CO 45 BC - BD

8 000 h / 105°C

Capacitance (μF)	Case		ESR		Z +20°C 10 kHz max. ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	T _{ypic} ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			+40°C max. (A)	+105°C (A)	BC	BD
Rated voltage 10 V										
4700	36	47	15	23	15	0,09	22	7,7	A 762020	A 763020
6800	36	60	11	16	11	0,14	22	10,3	A 762021	A 763021
10000	36	80	10	13	9	0,20	22	12,3	A 762022	A 763022
15000	51	81	9	11	8	0,30	25	13	A 762023	A 763023
22000	51	104	7	9	7	0,44	25	16	A 762024	A 763024
33000	66	104	4	6	5	0,66	50	25	A 762025	A 763025
47000	73	104	3	4	2	0,94	55	31	A 762026	A 763026
68000	77	144	2	3	2	1,40	55	44	A 762027	A 763027
Rated voltage 16 V										
3300	36	47	19	28	16	0,10	22	6,9	A 762040	A 763040
4700	36	60	13	20	13	0,15	22	9,5	A 762041	A 763041
6800	36	80	11	15	12	0,21	22	11,7	A 762042	A 763042
10000	51	81	10	13	8	0,32	25	13	A 762043	A 763043
15000	51	104	7	10	8	0,48	25	16	A 762044	A 763044
22000	66	104	5	7	7	0,70	50	22	A 762045	A 763045
33000	73	104	3	5	3	1,05	55	31	A 762046	A 763046
47000	77	144	3	4	2	1,50	55	36	A 762047	A 763047
Rated voltage 25 V										
2200	36	47	22	33	18	0,11	22	6,4	A 762060	A 763060
3300	36	60	15	23	14	0,16	22	8,8	A 762061	A 763061
4700	36	80	12	18	13	0,23	22	10,1	A 762062	A 763062
6800	51	81	11	15	9	0,34	25	12	A 762063	A 763063
10000	51	104	9	12	9	0,50	25	14	A 762064	A 763064
15000	66	104	7	9	7	0,75	50	19	A 762065	A 763065
22000	73	104	3	5	3	1,10	55	31	A 762066	A 763066
33000	77	144	3	5	3	1,65	55	36	A 762067	A 763067
Rated voltage 40 V										
1500	36	47	27	40	20	0,12	22	5,8	A 762080	A 763080
2200	36	60	19	28	16	0,17	22	7,8	A 762081	A 763081
3300	36	80	14	21	15	0,26	22	10,4	A 762082	A 763082
4700	51	81	12	18	10	0,37	25	11	A 762083	A 763083
6800	51	104	10	14	10	0,54	25	14	A 762084	A 763084
10000	66	104	7	10	8	0,80	50	19	A 762085	A 763085
15000	73	104	5	8	3	1,20	55	24	A 762086	A 763086
22000	77	144	3	5	3	1,80	55	36	A 762087	A 763087
Rated voltage 63 V										
680	36	47	31	47	28	0,09	20	5,4	A 762100	A 763100
1000	36	60	22	32	20	0,12	22	7,3	A 762101	A 763101
1500	36	80	18	25	18	0,19	22	9,2	A 762102	A 763102
2200	51	81	16	21	13	0,28	25	9,7	A 762103	A 763103
3300	51	104	12	16	12	0,41	25	12	A 762104	A 763104
4700	66	104	9	12	10	0,59	50	17	A 762105	A 763105
6800	73	104	5	7	4	0,86	55	24	A 762106	A 763106
10000	77	144	4	6	4	1,30	55	31	A 762107	A 763107
Rated voltage 100 V										
470	36	47	39	59	40	0,10	18	4,8	A 762120	A 763120
680	36	60	27	40	28	0,14	22	6,6	A 762121	A 763121
1000	36	80	22	31	20	0,20	22	8,3	A 762122	A 763122
1500	51	81	20	26	15	0,30	25	8,7	A 762123	A 763123
2200	51	104	15	19	13	0,44	25	11	A 762124	A 763124
3300	66	104	12	15	10	0,66	50	14	A 762125	A 763125
4700	73	104	6	8	5	0,94	55	22	A 762126	A 763126
6800	77	144	5	7	5	1,40	55	24	A 762127	A 763127

FELSIC 105 TFRS

CO 45 BC - BD

8 000 h / 105°C

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

Dimensions (mm)		I_p (A)		$I \sim \text{max.}$
\emptyset	H	40°C	105°C	(A)
36	47	400	200	22
36	60	450	220	22
36	80	600	300	22
51	81	800	400	25
51	104	1100	500	25
66	104	1900	800	50
73	104	3100	1200	55
77	104	4200	1800	55

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

$I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

PEAK VOLTAGE (V)

1000 cycles, without ripple current

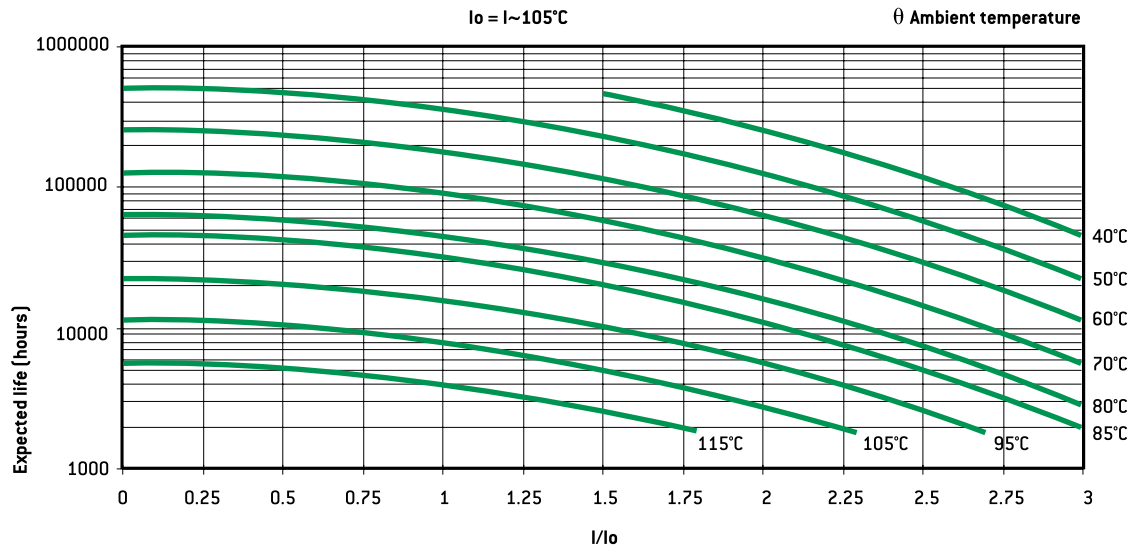
U_p : Repetitive standard peak Voltage (30 s)

Do note overstep this value without damage

U_R	10 V	16 V	25 V	40 V	63 V	100 V
U_p	11,5	18	29	46	72	115

EXPECTED LIFE

as a function of temperature and ripple current



FELCIC HV

BC - BD

8 000 h / 105°C

160 V ... 450 V	1000 µF ... 47 000 µF	Ø 51 mm ... Ø 90 mm	- 55°C + 105°C	Long Life Time
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APPLICATIONS

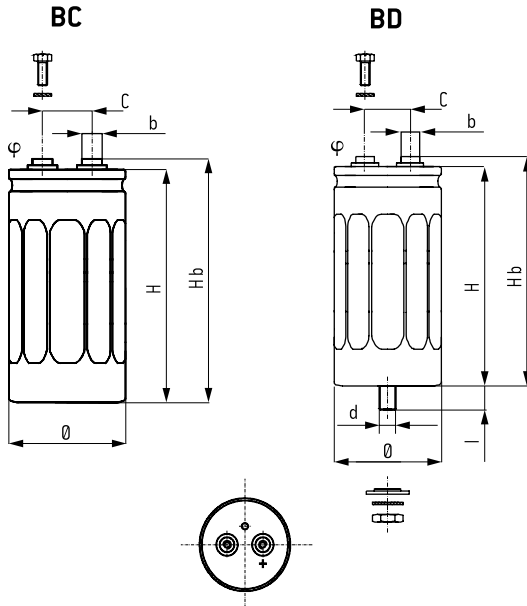
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Fixing : Clip or stud fixing

Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : ± 20 %

Operating temperature : - 55°C +105°C



DIMENSIONS (mm)

Ø ±1	H ±2	Hb ±2	C ±0,5	φ	b
51	81	87	22,2	M5	13
51	104	110	22,2	M5	13
51	144	150	22,2	M5	13
66	104	111	28,5	M5	13
77	104	111	31,7	M6	13
77	144	151	31,7	M6	13
77	220	227	31,7	M6	13
90	144	151	31,7	M6	13
90	200	207	31,7	M6	13

BC
Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately

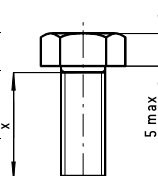
BD
Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor
(steel hex nut, spring washer)

d	l	Max. nut torque
M12	16 ± 1,5	10 Nm

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque : M5 : 3 Nm (x min 8 mm)
M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	≤150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110

DIN 40 040 - Climatic category FMD - 55°C + 105°C / 56 days

IEC 60 384.4 long life

Standard endurance test at U_R : 5000 h / 105°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 MΩ

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2).

8 000 h / 105°C

Capacitance [μ F]	Case		ESR		Z +20°C 10 kHz max. [m Ω]	I +20°C 5 min. max. [mA]	I ~		Code	
	\emptyset [mm]	H [mm]	Typic [m Ω]	100 Hz +20°C [m Ω]			+40°C max. [A]	+105°C [A]	BC	BD
Rated voltage 160 V										
4700	51	104	20	30	28	1,50	25	12	A 764080	A 765080
6800	66	104	18	26	18	2,18	50	14	A 764082	A 765082
10000	77	104	12	18	16	3,20	60	19	A 764084	A 765084
15000	77	144	10	14	13	4,80	60	24	A 764085	A 765085
22000	77	144	9	13	12	7,00	60	26	A 764086	A 765086
33000	77	220	8	12	11	10,00	60	33	A 764087	A 765087
47000	90	200	6	9	8	15,00	80	40	A 764088	A 765088
Rated voltage 250 V										
3300	51	104	28	45	30	1,65	25	10	A 764100	A 765100
4700	66	104	20	30	20	2,35	50	14	A 764102	A 765102
6800	77	104	16	24	16	3,40	60	17	A 764104	A 765104
10000	77	144	14	21	14	4,50	60	21	A 764105	A 765105
22000	90	200	10	15	10	10,00	80	31	A 764108	A 765108
Rated voltage 350 V										
1500	51	104	45	68	50	1,05	25	8	A 764020	A 765020
2200	51	144	25	38	23	1,50	25	12	A 764021	A 765021
3300	51	144	23	35	22	2,30	25	13	A 764023	A 765023
3300	66	104	25	38	28	2,30	45	12	A 764022	A 765022
4700	77	104	20	30	25	3,30	56	15	A 764024	A 765024
5600	77	104	18	27	22	3,90	59	16	A 764027	A 765027
6800	77	144	16	25	20	4,50	60	19	A 764025	A 765025
10000	77	220	10	16	14	5,00	60	29	A 764026	A 765026
15000	90	200	8	12	10	8,00	80	34	A 764028	A 765028
Rated voltage 400 V										
1000	51	81	75	100	70	0,80	21	6	A 764049	A 765049
1500	51	104	65	85	60	1,20	25	7	A 764040	A 765040
2200	51	144	56	80	65	1,80	25	8	A 764041	A 765041
2200	66	104	42	63	45	1,80	35	9	A 764042	A 765042
3300	66	104	37	56	42	2,70	38	10	A 764043	A 765043
4700	77	104	25	38	30	3,80	50	13	A 764044	A 765044
4700	77	144	13	21	17	3,80	60	21	A 764048	A 765048
6800	77	144	12	20	16	5,50	60	22	A 764045	A 765045
8200	77	220	15	23	18	6,60	60	24	A 764046	A 765046
10000	77	220	14	21	17	8,00	60	25	A 764050	A 765050
10000	90	144	12	19	15	8,00	80	24	A 764047	A 765047
15000	90	200	11	19	14	13,00	80	29	A 764051	A 765051
Rated voltage 450 V										
1500	51	104	75	120	85	4,00	23	6	A 764060	A 765060
2200	66	104	50	75	60	5,90	32	9	A 764062	A 765062
3300	77	104	35	52	42	7,30	42	11	A 764064	A 765064
4700	77	144	24	36	29	8,70	59	16	A 764065	A 765065
6800	77	220	20	30	24	10,00	60	21	A 764066	A 765066
8200	90	200	16	24	19	11,00	80	24	A 764068	A 765068
10000	90	200	14	21	17	12,70	80	26	A 764069	A 765069
12000	90	200	12	20	15	15,00	80	28	A 764070	A 765070

FELSIHV

BC - BD

8 000 h / 105°C

PEAK VOLTAGE (V)

1000 cycles, without ripple current

Up : Repetitive standard peak voltage (30 s)

Us : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

U _R	160 V	250 V	350 V	400 V	450 V
Up	184	288	385	440	495
Us	235	340	450	495	540

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f

I_~ : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I _~	0,8 x I _~	I _~	1,2 x I _~	1,3 x I _~	1,35 x I _~	1,5 x I _~	1,6 x I _~

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

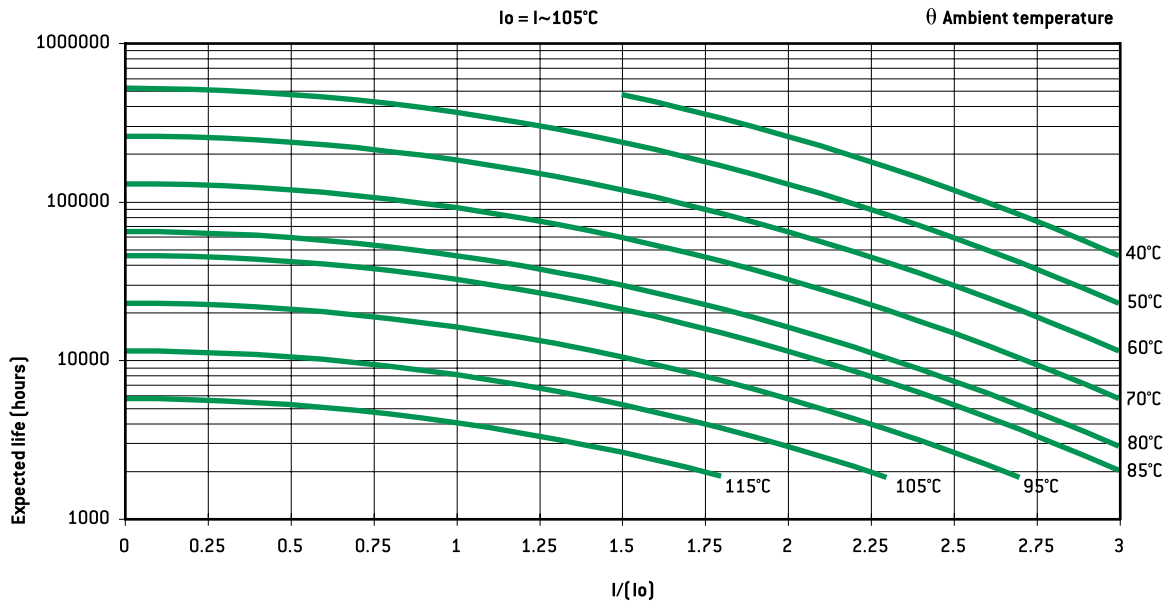
Dimensions (mm)		I _p (A)		I _~ max.
Ø	H	40°C	105°C	(A)
51	81	800	400	25
51	104	1100	500	25
51	144	1300	600	25
66	104	1900	800	50
77	104	3100	1200	60
77	144	4200	1800	60
77	220	5700	2400	60
90	144	5700	2400	80
90	200	7700	3200	80

EXPECTED LIFE

as a function of temperature and ripple current

CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series (see FELSIHV in bank).



FELSIC 105

BC - BD

8 000 h / 105°C

16 V ... 450 V	100 μ F ... 470 000 μ F	\varnothing 36 mm ... \varnothing 90 mm	- 55°C + 105°C	Long Life Time
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APPLICATIONS

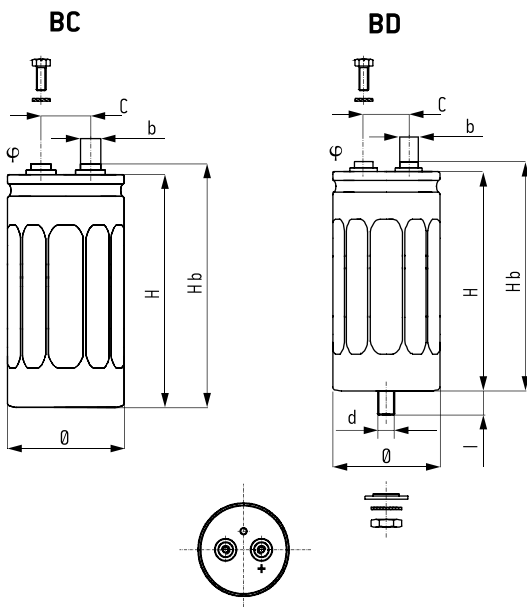
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Fixing : Clip or stud fixing

Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : -10 +30 %

Operating temperature : - 55°C + 105°C



DIMENSIONS (mm)

$\varnothing \pm 1$	H ± 2	Hb ± 2	C $\pm 0,5$	\varnothing	b
36	52	58	12,7	M5	8
36	60	66	12,7	M5	8
36	80	86	12,7	M5	8
36	104	110	12,7	M5	8
51	81	87	22,2	M5	13
51	104	110	22,2	M6	13
66	104	110	28,5	M5	13
77	104	110	31,7	M5	13
77	144	150	31,7	M5	13
77	220	226	31,7	M5	13
90	144	151	31,7	M6	13
90	200	207	31,7	M6	13

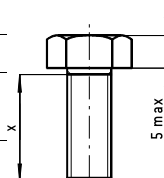
\varnothing	d	l	Max. nut torque
36	M8	12 \pm 1	4 Nm
\geq 51	M12	16 \pm 1,5	10 Nm

BC
Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately
BD
Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor (steel hex nut, spring washer)

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque : M5 : 3 Nm (x min 8 mm)
M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	\leq 150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110

DIN 40 040 - Climatic category FMD - 55°C + 105°C / 56 days

CECC 30301-803 Issue 2 - European standard

IEC 60 384.4 - Long life

Standard endurance test at U_R :

- 2000 h / 105°C

- 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals
and mounting hardware : 100 M Ω Test voltage at 50 Hz 1 min. between terminals
and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIK 105

BC - BD

8 000 h / 105°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C max. (m Ω)	II +20°C 5 min max. (mA)	I ~			Code	
	Ø (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			100 Hz			BC	BD
							+40°C (A)	+85°C (A)	+105°C (A)		
Rated voltage 16 V											
10000	36	52	22	32	20	0,32	22	13	6,9	A 756040	A 757040
15000	36	80	18	26	16	0,48	22	17	9	A 756042	A 757042
22000	36	104	14	21	15	0,70	22	22	11,7	A 756044	A 757044
33000	51	81	12	18	12	1,05	25	25	13,7	A 756046	A 757046
47000	51	104	11	15	10	1,50	25	25	16	A 756047	A 757047
68000	66	104	10	14	10	2,18	50	35	18,5	A 756049	A 757049
100000	77	104	8	11	10	3,20	55	35	19,4	A 756050	A 757050
150000	77	144	7	10	9	4,80	55	41	23,8	A 756052	A 757052
Rated voltage 25 V											
4700	36	52	22	50	25	0,23	22	13	6,9	A 756080	A 757080
6800	36	52	20	30	22	0,36	22	14	7,2	A 756081	A 757081
10000	36	80	18	28	20	0,50	22	17	9	A 756083	A 757083
15000	36	104	17	25	20	0,75	22	20	10,6	A 756085	A 757085
22000	51	81	13	20	15	1,10	25	25	13,2	A 756087	A 757087
33000	51	104	11	16	12	1,65	25	25	16	A 756089	A 757089
47000	66	104	10	14	12	2,35	50	37	19,4	A 756091	A 757091
68000	77	104	7	10	8	3,40	55	37	20,6	A 756093	A 757093
100000	77	144	7	10	8	5,00	55	41	23,8	A 756095	A 757095
220000	77	220	7	10	8	6,00	55	50	28,7	A 756097	A 757097
470000	90	144	4	10	8	8,00	80	65	34	A 756098	A 757098
Rated voltage 40 V											
3300	36	52	22	50	25	0,27	22	13	6,9	A 756120	A 757120
4700	36	80	18	28	20	0,38	22	17	9	A 756121	A 757121
10000	36	80	16	24	16	0,80	22	18	9,7	A 756123	A 757123
15000	51	81	12	18	13	1,20	25	25	13,7	A 756126	A 757126
22000	51	104	11	17	12	1,76	25	25	16	A 756128	A 757128
33000	66	104	10	16	12	2,64	50	37	19,4	A 756130	A 757130
47000	77	104	7	10	10	3,76	55	37	20,6	A 756132	A 757132
68000	77	144	7	10	8	5,44	55	41	23	A 756134	A 757134
100000	77	144	5	10	8	8,00	55	48	27	A 756135	A 757135
150000	90	144	4	10	8	10,00	80	65	34	A 756137	A 757137
Rated voltage 63 V											
2200	36	52	36	54	40	0,27	20	10	5,4	A 756160	A 757160
3300	36	80	25	38	25	0,41	22	15	7,8	A 756162	A 757162
4700	36	104	22	32	22	0,59	22	18	9,3	A 756164	A 757164
6800	51	81	15	22	16	0,86	25	23	12,2	A 756166	A 757166
10000	51	104	11	16	11	1,26	25	25	16	A 756168	A 757168
15000	66	104	10	15	10	1,89	50	37	19,4	A 756170	A 757170
22000	77	104	7	11	8	2,77	55	37	20,6	A 756172	A 757172
33000	77	144	6	10	8	4,16	55	44	25,7	A 756174	A 757174
47000	77	144	6	10	8	5,92	55	44	25,7	A 756175	A 757175
68000	77	220	5	10	8	8,56	55	55	33	A 756176	A 757176
100000	90	144	4	10	8	10,00	80	65	34	A 756179	A 757179
Rated voltage 100 V											
1000	36	52	85	130	75	0,20	13	6,6	3,5	A 756200	A 757200
2200	36	80	40	60	40	0,44	22	12	6,2	A 756202	A 757202
3300	51	81	30	45	30	0,66	25	16	8,7	A 756204	A 757204
4700	51	104	27	40	24	0,94	25	19	10,2	A 756206	A 757206
6800	66	104	21	27	20	1,36	50	25	13,4	A 756208	A 757208
10000	66	104	16	23	15	2,00	50	29	15,3	A 756209	A 757209
15000	77	144	10	15	12	3,00	55	35	20	A 756211	A 757211
22000	77	144	8	12	10	4,40	55	40	23	A 756212	A 757212
33000	77	220	5	10	8	6,60	55	55	33	A 756213	A 757213
47000	90	144	4	10	8	9,00	80	65	34	A 756216	A 757216
Rated voltage 160 V											
470	36	52	120	180	100	0,15	9	4,1	2,4	A 756240	A 757240
680	36	80	70	105	60	0,21	14	6,6	3,8	A 756241	A 757241
1000	36	104	50	75	50	0,32	19	8,8	5,1	A 756242	A 757242
1500	51	81	42	63	40	0,48	23	10	6	A 756243	A 757243
2200	51	104	30	45	30	0,70	25	14	7,9	A 756245	A 757245
3300	66	104	20	30	20	1,05	42	19	11,2	A 756246	A 757246
4700	77	104	15	23	15	1,50	53	24	14,1	A 756248	A 757248
6800	77	144	10	15	11	2,18	55	38	22	A 756250	A 757250
10000	77	144	8	12	10	3,20	55	40	23	A 756251	A 757251
15000	77	220	6	10	8	4,80	55	52	30	A 756252	A 757252
15000	90	144	6	10	8	4,80	80	52	30	A 756253	A 757253

8 000 h / 105°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. ($\text{m}\Omega$)	I +20°C 5 min max. (mA)	I~			Code	
	\varnothing (mm)	H (mm)	Typic ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			100 Hz			BC	BD
							+40°C (A)	+85°C (A)	+105°C (A)		
Rated voltage 250 V											
470	36	80	105	160	90	0,23	12	5,4	3,1	A 756281	A 757281
680	51	81	60	90	55	0,34	19	8,7	5	A 756283	A 757283
1000	51	81	45	68	42	0,50	22	10	5,8	A 756284	A 757284
1500	51	104	34	51	34	0,75	25	13	7,4	A 756286	A 757286
2200	66	104	26	39	26	1,13	37	17	9,8	A 756287	A 757287
3300	77	104	19	29	20	1,65	47	22	12,5	A 756289	A 757289
4700	77	144	10	15	11	2,35	55	34	20	A 756291	A 757291
6800	77	144	9	14	10	3,40	55	38	22	A 756292	A 757292
10000	77	220	8	12	10	4,50	55	45	26	A 756293	A 757293
15000	90	144	5	10	8	7,00	80	54	31	A 756296	A 757296
Rated voltage 350 V											
220	36	80	290	380	280	0,16	7	3,2	1,9	A 756321	A 757321
330	36	104	220	290	200	0,24	9	4,1	2,4	A 756323	A 757323
470	51	81	95	145	90	0,33	15	6,8	4	A 756325	A 757325
680	51	104	75	115	70	0,48	19	8,6	5	A 756327	A 757327
1000	51	104	65	95	65	0,70	20	9,2	5,4	A 756328	A 757328
1500	66	104	60	80	55	1,05	26	12,1	7	A 756329	A 757329
2200	77	104	30	46	34	1,50	38	17	10	A 756330	A 757330
3300	77	104	23	34	27	2,30	43	20	11,4	A 756338	A 757338
3300	77	144	20	30	25	2,30	53	24,0	14	A 756331	A 757331
4700	77	144	18	27	21	3,30	55	26,0	15	A 756332	A 757332
6000	77	220	12	20	20	4,20	55	29	17	A 756333	A 757333
6000	90	144	12	20	15	4,20	75	35	20	A 756334	A 757334
10000	90	200	10	15	12	5,00	80	43	25	A 756337	A 757337
Rated voltage 400 V											
150	36	60	380	500	400	0,12	5	2,4	1,4	A 756361	A 757361
220	36	80	260	400	350	0,18	7,5	3,5	2	A 756362	A 757362
330	36	104	195	300	250	0,27	10	4,5	2,6	A 756363	A 757363
470	51	81	140	220	150	0,38	12	5,7	3,3	A 756364	A 757364
680	51	104	100	150	100	0,55	16	7,4	4,3	A 756366	A 757366
1000	51	104	90	140	90	0,80	17	8	4,6	A 756367	A 757367
1500	51	104	65	85	60	1,20	20	9,5	5,4	A 756375	A 757375
1500	66	104	65	85	60	1,20	23	11	6,2	A 756368	A 757368
2200	77	104	40	60	45	1,80	32	15	8,6	A 756369	A 757369
3300	77	144	25	38	25	2,70	47	22,9	12,6	A 756370	A 757370
4700	77	220	20	30	20	3,80	55	28	16	A 756371	A 757371
6800	90	200	15	25	15	5,50	75	35	20	A 756374	A 757374
Rated voltage 450 V											
100	36	52	600	900	600	0,27	5	2,1	1,2	A 756400	A 757400
150	36	60	480	720	500	0,40	5	2,2	1,3	A 756401	A 757401
220	36	80	410	600	450	0,59	6	2,7	1,6	A 756402	A 757402
330	36	104	340	500	380	0,89	7	3,4	1,9	A 756403	A 757403
470	51	81	170	260	170	1,26	11	5,2	3	A 756404	A 757404
680	51	104	160	240	160	1,83	13	5,9	3,4	A 756405	A 757405
1000	66	104	70	105	70	2,70	22	10	6	A 756406	A 757406
1500	77	104	45	68	45	4,00	31	14	8,1	A 756407	A 757407
2200	77	144	30	45	30	5,90	43	20	11,5	A 756408	A 757408
3300	77	220	25	38	25	8,90	55	26	15	A 756409	A 757409
4700	77	220	20	30	23	10,00	55	29	17	A 756411	A 757411
6800	90	200	15	25	16	12,00	75	35	20	A 756413	A 757413

FELSIK 105

BC - BD

8 000 h / 105°C

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows

Dimensions (mm)		I_p (A)		I_{\sim} max. (A)
\emptyset	H	40°C	105°C	
36	52	400	200	22
36	60	450	220	22
36	80	600	300	22
36	104	700	400	22
51	81	800	400	25
51	104	1100	500	25
66	104	1900	800	50
77	104	3100	1200	55
77	144	4200	1800	55
77	220	5700	2400	55
90	144	5700	2400	80
90	200	7700	3200	80

PEAK VOLTAGE (V)

1000 cycles, without ripple current

U_p : Repetitive standard peak voltage (30 s)

U_s : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

U_R	16 V	25 V	40 V	63 V	100 V	160 V	250 V	350 V	400 V	450 V	
U_p	18	29	46	72	115	184	288	385	440	495	
U_s							235	340	450	495	540

CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series (see FELSIK in bank).

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

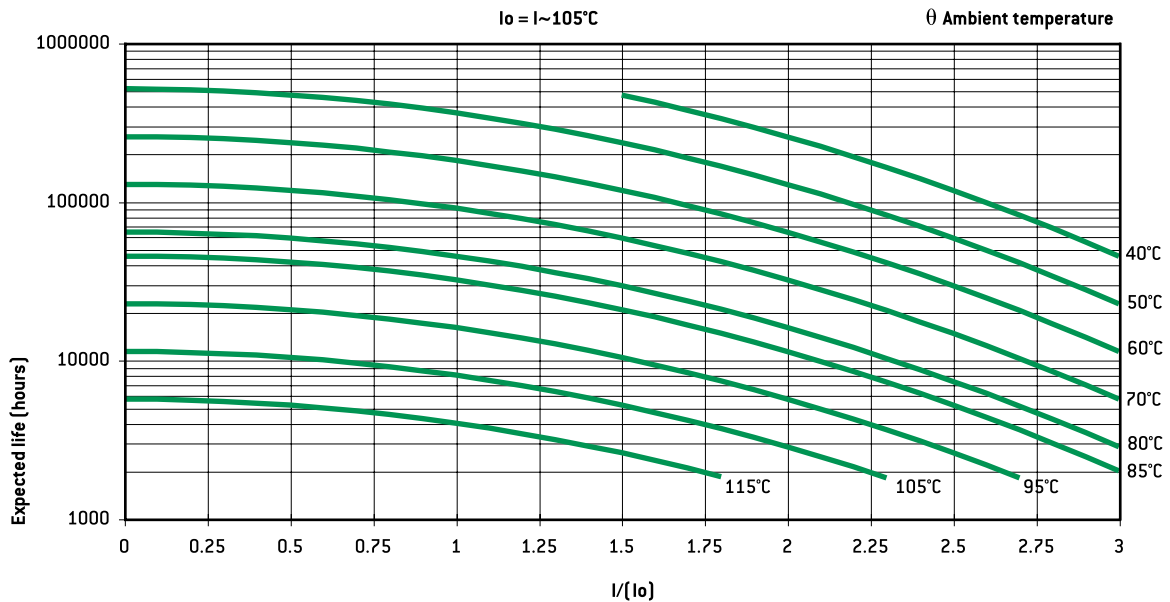
versus frequency f :

I_{\sim} : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I_{\sim}	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$

EXPECTED LIFE

as a function of temperature and ripple current



$U_R \leq 350 V : \theta \text{ max } 115^{\circ}C$

$U_R > 350 V : \theta \text{ max } 105^{\circ}C$

8 000 h / 105°C

10 V ... 450 V	1500 μ F ... 220 000 μ F	\varnothing 90 mm ... H 67 mm	- 55°C + 105°C	Long Life Time
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APPLICATIONS

- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

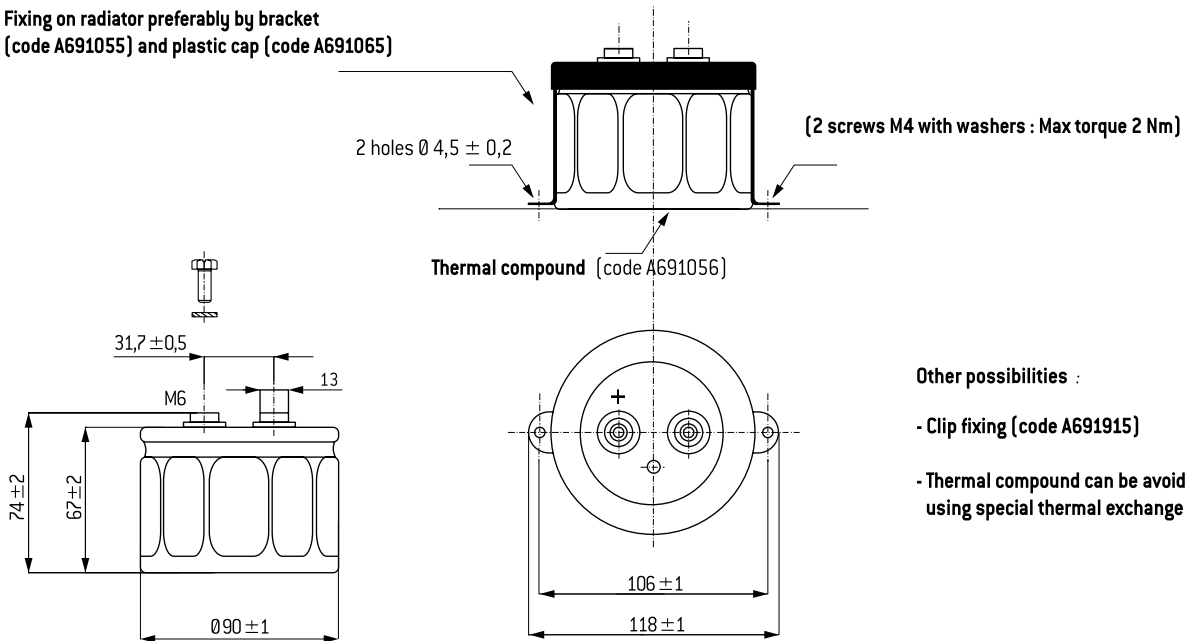
Fixing : Clip or stud fixing

Screw terminals : M6

Tolerance on capacitance at 20°C : -10 +30 %

Operating temperature : - 55°C + 105°C

Fixing on radiator preferably by bracket
(code A691055) and plastic cap (code A691065)



Other possibilities :

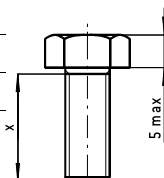
- Clip fixing (code A691915)

- Thermal compound can be avoided by using special thermal exchange disk

HEXAGONAL SCREWS

Screwing height between screws and terminals : 2 mm max

Max. screw torque : M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	
[Hz]	10 - 55 Hz
Amplitude	0,75 mm
Acceleration	10 g - 98 m/s ²
t (h)	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

DIN 40 040 - Climatic category FMD - 55°C + 105°C / 56 days

CECC 30 300 - Long life

IEC 60 384.4 - Long life

Standard endurance test at U_R :

- 2000 h / 105°C

- 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals
and mounting hardware : 100 M Ω Test voltage at 50 Hz 1 min. between terminals
and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIK 105 LP

BC

8 000 h / 105°C

Rated voltage (V)	Capacitance (μF)	Case		ESR		Z +20°C 10 kHz max.	II +20°C 5 min. max.	I~		Code
		∅ (mm)	H (mm)	Typic (mΩ)	100 Hz +20°C (mΩ)	(mΩ)	(mA)	+40°C max. (A)	+105°C (A)	BC
10	220000	90	67	4	5	5	5	150	61	A 756032
16	150000	90	67	5	8	8	5	150	55	A 756057
25	100000	90	67	6	9	9	5	150	50	A 756099
40	68000	90	67	7	11	11	6	150	46	A 756138
63	33000	90	67	10	15	13	6	146	39	A 756178
63	47000	90	67	7	11	9	6	150	46	A 756180
100	15000	90	67	12	20	16	6	131	35	A 756215
160	6800	90	67	14	21	18	6	100	27	A 756254
250	3300	90	67	19	29	23	6	86	23	A 756295
350	2200	90	67	30	45	35	6	68	18	A 756336
350	3300	90	67	25	38	30	6	75	20	A 756339
400	2200	90	67	40	60	45	6	60	16	A 756373
450	1500	90	67	45	68	48	6	56	15	A 756412
450	2000	90	67	40	60	50	6	60	16	A 756415
450	2200	90	67	30	44	35	6	68	18	A 756416

PEAK VOLTAGE (V)

1000 cycles, without ripple current

Up : Repetitive standard peak voltage (30 s)

Us : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

Ur	10 V	16 V	25 V	40 V	63 V	100 V	160 V	250 V	350 V	400 V	450 V
Up	11,5	18	29	46	72	115	184	288	385	440	495
Us							235	340	450	495	540

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I~ : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I	0,8 x I~	I~	1,2 x I~	1,3 x I~	1,35 x I~	1,5 x I~	1,6 x I~

MAXIMUM PERMISSIBLE RIPPLE CURRENT 150 A

For r.m.s. current above 80 A, standard cover with ∅ 13 aluminum terminals can be replaced by special cover with ∅ 18 aluminum terminals, on request.

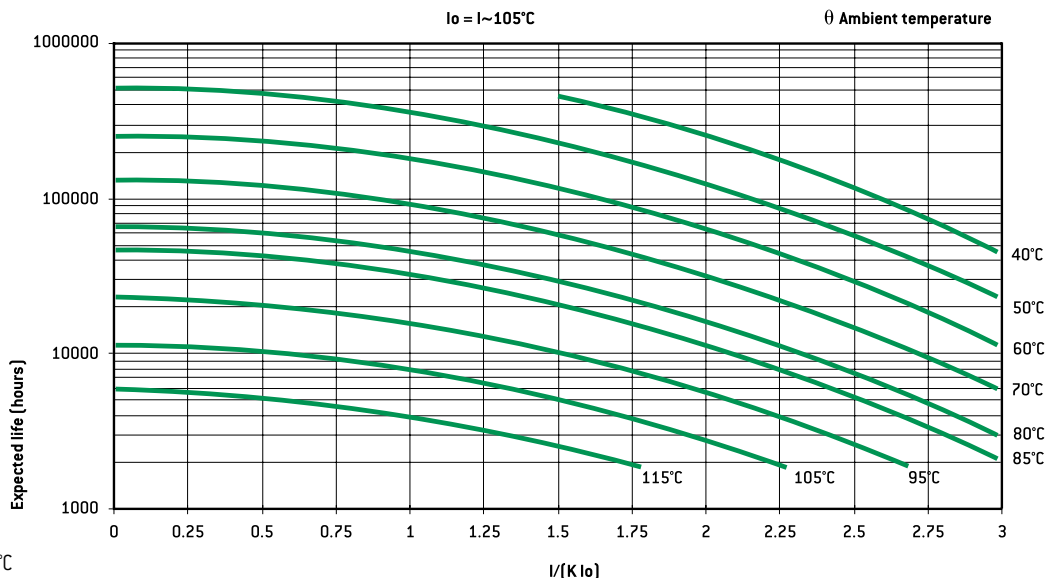
PERMISSIBLE REPETITIVE PEAK CURRENT Ip :

If given permissible ripple currents are not exceeded, and with a maximum ambient temperature of 40°C
Ip = 5700 A

	Without cooling without radiator	Air cooling without radiator 0,2 - 0,5 m/s	With radiator and thermal compound and without water cooling	With radiator thermal compound and water cooling
K	0,5	0,6	1	1,3
Thermal resistance °C/W	4	2,5	1	0,6

EXPECTED LIFE

as a function of temperature and ripple current



FELSIK CAPAX

BC - BD

15 000 h / 85°C

10 V ... 500 V	100 μ F ... 2 200 000 μ F	\varnothing 36 mm ... \varnothing 90 mm	- 55°C + 85°C	Long Life Time
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APPLICATIONS

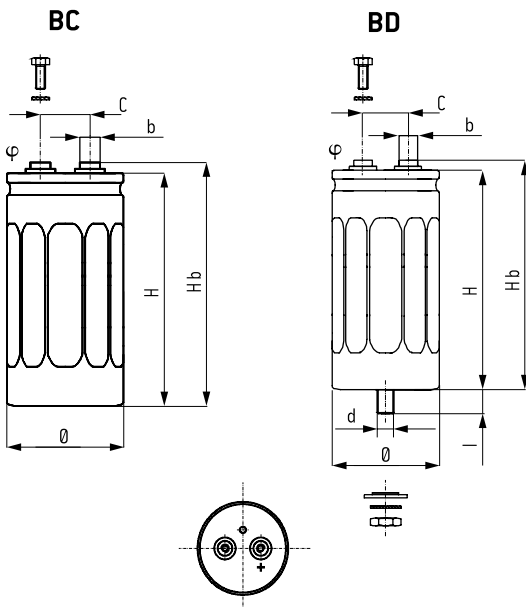
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Rated voltages 260 V, 305 V, 360 V, 410 V, 460 V are designed for energy storage with repetitive fast discharges working : 1 to 5 discharges per minutes. (X-ray equipment, radar, laser...)

Fixing : Clip or stud fixing

Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 85°C



DIMENSIONS (mm)

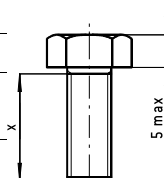
$\varnothing \pm 1$	H ± 2	Hb ± 2	C $\pm 0,5$	\varnothing	b
36	44	50	12,7	M5	8
36	52	58	12,7	M5	8
36	60	66	12,7	M5	8
36	80	86	12,7	M5	8
36	104	110	12,7	M5	8
51	62	68	22,2	M5	13
51	81	87	22,2	M5	13
51	104	110	22,2	M5	13
51	144	150	22,2	M5	13
66	104	110	28,5	M5	13
73	104	110	31,7	M5	13
73	144	150	31,7	M5	13
77	104	110	31,7	M5	13
77	144	150	31,7	M5	13
77	220	226	31,7	M5	13
90	144	151	31,7	M6	13
90	200	207	31,7	M6	13

BC			
Insulated aluminum case			
Hexagonal screws			
Spring washers			
Fixing clip must be ordered separately			
BD			
Aluminum case with sleeve			
Hexagonal screws			
Spring washers			
Stud fixing delivered with capacitor			
(steel hex nut, spring washer)			
\varnothing	d	l	Max. nut torque
36	M8	12 ± 1	4 Nm
≥ 51	M12	16 $\pm 1,5$	10 Nm

HEXAGONAL SCREWS

Screwing height between screws and terminals

Max. screw torque : M5 : 3 Nm (x min 8 mm)
M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	≤ 150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - long life

DIN 41 240 - Climatic category GPF

- 55°C + 85°C / 56 days

CECC 30 300

IEC 60 384.4 long life

Standard endurance test at U_R : 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIC CAPAX

BC - BD

15 000 h / 85°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C max. (m Ω)	II +20°C 5 min max. (mA)	I ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			+40°C max. (A)	+85°C (A)	BC	BD
Rated voltage 10 V										
47000	36	52	17	26	20	2,8	22	7,3	A 760020	A 761020
68000	36	60	10	15	17	4,0	22	11,0	A 760021	A 761021
100000	36	80	8	12	13	5,0	22	14,0	A 760022	A 761022
150000	51	62	8	12	13	5,0	25	15,0	A 760025	A 761025
220000	51	81	6	9	10	5,0	25	18,0	A 760026	A 761026
330000	51	104	5	8	10	5,0	25	22,0	A 760028	A 761028
470000	51	144	5	8	10	5,0	25	24,0	A 760029	A 761029
680000	73	104	4	6	7	6,0	50	26,0	A 760031	A 761031
1 F	73	144	3	5	6	10,0	50	35,0	A 760032	A 761032
1,5 F	77	220	3	5	6	12,0	55	43,0	A 760035	A 761035
2,2 F	90	200	3	5	6	15,0	80	46,0	A 760038	A 761038
Rated voltage 16 V										
22000	36	44	18	27	26	2,0	22	7,1	A 760044	A 761044
33000	36	52	16	24	24	3,0	22	8,1	A 760040	A 761040
47000	36	60	13	20	18	4,0	22	9,5	A 760041	A 761041
68000	36	80	11	17	15	5,0	22	12,0	A 760042	A 761042
100000	51	62	10	15	13	5,0	25	13,0	A 760045	A 761045
150000	51	81	8	12	11	5,0	25	15,0	A 760046	A 761046
220000	51	104	7	11	9	5,0	25	18,0	A 760048	A 761048
330000	51	144	5	8	7	6,0	25	24,0	A 760049	A 761049
470000	73	104	4	6	5	6,0	50	26,0	A 760051	A 761051
680000	73	104	3	5	6	6,0	50	31,0	A 760053	A 761053
680000	73	144	3	5	5	6,0	50	35,0	A 760052	A 761052
1 F	77	220	3	5	5	11,0	55	43,0	A 760055	A 761055
1,5 F	90	200	3	5	5	13,0	80	46,0	A 760058	A 761058
2,2 F	90	200	3	5	5	16,0	80	46,0	A 760059	A 761059
Rated voltage 25 V										
15000	36	44	20	30	28	2,0	22	6,7	A 760064	A 761064
22000	36	52	16	24	22	3,0	22	8,1	A 760060	A 761060
33000	36	80	15	23	18	4,0	22	10,0	A 760062	A 761062
47000	36	80	13	20	16	5,0	22	11,0	A 760063	A 761063
68000	51	62	10	15	13	5,0	25	12,0	A 760065	A 761065
100000	51	81	8	14	10	5,0	25	15,0	A 760066	A 761066
150000	51	104	7	11	9	5,0	25	18,0	A 760068	A 761068
220000	51	104	6	9	7	6,0	25	20,0	A 760067	A 761067
220000	51	144	6	9	7	6,0	25	24,0	A 760069	A 761069
330000	66	104	5	8	6	7,0	50	22,0	A 760070	A 761070
330000	77	104	4	6	5	7,0	55	27,0	A 760073	A 761073
470000	73	144	3	5	5	8,0	55	35,0	A 760072	A 761072
470000	77	104	3	5	5	8,0	55	32,0	A 760074	A 761074
680000	77	144	3	5	5	12,0	55	36,0	A 760076	A 761076
680000	77	220	3	5	5	12,0	55	43,0	A 760075	A 761075
1 F	90	200	3	5	5	14,0	80	46,0	A 760078	A 761078
Rated voltage 40 V										
10000	36	44	24	36	33	2,0	21	6,1	A 760083	A 761083
15000	36	60	19	29	27	3,0	22	7,8	A 760081	A 761081
22000	36	80	17	26	22	5,0	22	9,4	A 760082	A 761082
33000	36	80	16	24	20	5,0	22	9,7	A 760080	A 761080
33000	36	104	14	21	18	5,0	22	12,0	A 760084	A 761084
47000	36	80	12	18	16	5,0	22	11,0	A 760085	A 761085
47000	51	81	9	14	9	5,0	25	14,0	A 760086	A 761086
68000	51	104	8	12	8	6,0	25	17,0	A 760088	A 761088
100000	51	81	8	12	8	6,0	25	15,0	A 760087	A 761087
100000	51	144	7	11	8	6,0	25	21,0	A 760089	A 761089
150000	51	144	6	9	7	8,0	25	23,0	A 760090	A 761090
150000	73	104	6	9	7	8,0	55	22,0	A 760091	A 761091
220000	73	104	6	9	7	9,0	55	22,0	A 760093	A 761093
220000	73	144	5	8	7	9,0	55	27,0	A 760092	A 761092
330000	77	144	5	8	7	10,0	55	28,0	A 760094	A 761094
330000	90	144	4	6	6	10,0	80	34,0	A 760097	A 761097
560000	90	200	3	5	5	15,0	80	46,0	A 760098	A 761098
680000	90	200	3	5	5	16,0	80	46,0	A 760096	A 761096

15 000 h / 85°C

Capacitance [μ F]	Case		ESR		Z 10 kHz +20°C max. [m Ω]	I _{II} +20°C 5 min max. [mA]	I _~ 100 Hz		Code	
	\emptyset [mm]	H [mm]	Typic [m Ω]	100 Hz +20°C [m Ω]			+40°C max. [A]	+85°C [A]	BC	BD
Rated voltage 50 V										
10000	36	44	24	36	33	3,0	21	6,1	A 760101	A 761101
10000	36	52	21	32	30	3,0	22	7,0	A 760100	A 761100
15000	36	52	20	30	27	4,0	22	7,2	A 760103	A 761103
15000	36	80	19	29	24	4,0	22	8,9	A 760102	A 761102
22000	36	80	18	27	23	4,0	22	9,2	A 760105	A 761105
22000	36	104	17	26	21	4,0	22	11,0	A 760104	A 761104
33000	36	80	15	23	19	4,0	22	10,0	A 760108	A 761108
33000	51	81	12	18	15	4,0	25	13,0	A 760106	A 761106
47000	51	81	11	17	11	5,0	25	13,0	A 760107	A 761107
68000	51	144	10	15	10	6,0	25	18,0	A 760109	A 761109
100000	51	104	9	14	10	7,0	25	16,0	A 760111	A 761111
100000	66	104	8	12	9	7,0	50	18,0	A 760110	A 761110
150000	66	104	7	11	10	10,0	50	19,0	A 760112	A 761112
150000	77	104	7	11	10	10,0	55	21,0	A 760113	A 761113
220000	77	104	6	9	8	12,0	55	22,0	A 760115	A 761115
220000	77	144	5	8	7	12,0	55	28,0	A 760114	A 761114
330000	77	144	4	6	6	15,0	55	31,0	A 760116	A 761116
330000	90	144	4	6	6	15,0	80	34,0	A 760117	A 761117
470000	90	144	3	5	4	16,0	80	40,0	A 760118	A 761118
Rated voltage 63 V										
4700	36	44	45	68	52	1,6	16	4,5	A 760123	A 761123
6800	36	52	35	50	39	2,5	19	5,5	A 760120	A 761120
10000	36	80	23	34	28	3,0	22	8,1	A 760122	A 761122
15000	36	104	21	32	25	5,0	22	9,6	A 760124	A 761124
22000	36	104	19	29	23	5,0	22	10,0	A 760121	A 761121
22000	51	62	15	23	18	5,0	25	10,0	A 760125	A 761125
33000	51	81	12	18	15	5,0	25	13,0	A 760126	A 761126
47000	51	81	11	17	14	6,0	25	13,0	A 760127	A 761127
47000	51	104	11	17	14	6,0	25	15,0	A 760128	A 761128
56000	51	104	9	14	12	7,0	25	16,0	A 760130	A 761130
68000	51	144	9	14	12	8,0	25	19,0	A 760129	A 761129
100000	66	104	8	12	10	9,0	50	18,0	A 760131	A 761131
100000	73	144	7	11	9	9,0	55	23,0	A 760132	A 761132
150000	77	104	7	11	9	12,0	55	21,0	A 760133	A 761133
150000	77	144	6	9	8	12,0	55	26,0	A 760134	A 761134
220000	77	144	5	8	8	15,0	55	28,0	A 760136	A 761136
220000	77	220	5	8	8	15,0	55	34,0	A 760135	A 761135
330000	90	144	4	6	5	15,0	80	34,0	A 760137	A 761137
330000	90	200	3	5	4	15,0	80	45,0	A 760138	A 761138
Rated voltage 80 V										
4700	36	52	50	75	60	2,2	16	4,6	A 760140	A 761140
6800	36	80	33	53	42	3,0	22	6,8	A 760142	A 761142
10000	51	62	22	33	25	5,0	25	8,3	A 760145	A 761145
15000	51	81	17	25	20	5,0	25	11,0	A 760146	A 761146
22000	51	104	14	21	17	6,0	25	13,0	A 760148	A 761148
33000	51	144	12	18	15	6,0	25	16,0	A 760149	A 761149
47000	66	104	10	15	13	8,0	50	16,0	A 760150	A 761150
68000	73	144	8	12	10	9,0	55	22,0	A 760152	A 761152
100000	77	144	6	9	7	11,0	55	26,0	A 760154	A 761154
150000	90	144	5	8	7	14,0	80	31,0	A 760157	A 761157
220000	90	144	4	6	5	16,0	80	34,0	A 760158	A 761158
Rated voltage 100 V										
2200	36	44	80	120	100	1,1	12	3,4	A 760163	A 761163
3300	36	52	65	100	80	2,0	14	4,0	A 760160	A 761160
4700	36	80	45	68	54	2,5	20	5,8	A 760162	A 761162
6800	36	80	40	60	50	4,0	22	6,1	A 760164	A 761164
6800	51	62	30	45	35	4,0	25	7,1	A 760165	A 761165
10000	36	104	25	38	30	5,0	22	8,8	A 760168	A 761168
10000	51	81	20	30	21	5,0	25	10,0	A 760166	A 761166
15000	51	81	18	27	19	6,0	25	10,0	A 760167	A 761167
22000	51	144	16	24	18	6,0	25	14,0	A 760169	A 761169
33000	66	104	12	18	15	8,0	50	14,0	A 760170	A 761170
47000	66	104	10	15	13	9,0	50	16,0	A 760171	A 761171
47000	73	144	8	12	10	9,0	55	22,0	A 760172	A 761172
68000	77	144	7	11	10	10,0	55	24,0	A 760174	A 761174
100000	77	144	6	9	7	11,0	55	26,0	A 760175	A 761175
100000	90	144	6	9	7	11,0	80	28,0	A 760177	A 761177
150000	90	144	4	6	5	14,0	80	34,0	A 760176	A 761176
150000	90	200	3	5	4	14,0	80	45,0	A 760178	A 761178

FELSIC CAPAX

BC - BD

15 000 h / 85°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. ($\text{m}\Omega$)	II +20°C 5 min max. (mA)	I ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			+40°C max. (A)	+85°C (A)	BC	BD
Rated voltage 160 V										
1000	36	44	100	150	120	0,9	11	3,0	A 760683	A 761683
1500	36	52	70	105	90	1,3	13	3,9	A 760180	A 761180
2200	36	60	60	90	70	2,0	15	4,4	A 760681	A 761681
3300	36	80	50	75	50	3,0	19	5,5	A 760682	A 761682
4700	36	104	36	54	36	4,0	22	7,3	A 760684	A 761684
6800	51	81	28	42	30	5,0	25	8,2	A 760686	A 761686
10000	51	104	20	30	23	6,0	25	11,0	A 760688	A 761688
15000	51	144	14	21	17	8,0	25	15,0	A 760689	A 761689
22000	73	104	12	18	14	10,0	53	15,0	A 760691	A 761691
33000	73	144	9	14	11	12,0	55	20,0	A 760692	A 761692
47000	77	220	6	9	8	14,0	55	31,0	A 760695	A 761695
68000	90	200	5	8	7	16,0	80	35,0	A 760698	A 761698
Rated voltage 200 V										
1000	36	44	120	180	110	1,2	10	2,7	A 760703	A 761703
1000	36	52	95	145	90	1,2	12	3,3	A 760200	A 761200
1500	36	60	85	130	85	1,8	13	3,7	A 760701	A 761701
1500	36	80	70	105	75	1,8	16	4,6	A 760202	A 761202
2200	36	80	60	90	60	2,6	18	5,0	A 760702	A 761702
3300	36	104	50	75	50	3,5	22	6,2	A 760704	A 761704
4700	51	81	35	53	38	5,0	25	7,3	A 760706	A 761706
6800	51	104	30	45	33	8,0	25	8,8	A 760708	A 761708
10000	51	144	22	33	25	8,0	25	12,0	A 760709	A 761709
10000	66	104	18	27	21	8,0	41	12,0	A 760210	A 761210
15000	73	104	16	24	18	9,0	46	13,0	A 760711	A 761711
22000	73	144	12	18	14	12,0	55	18,0	A 760712	A 761712
33000	77	144	10	15	12	14,0	55	20,0	A 760714	A 761714
56000	90	200	6	9	8	16,0	80	32,0	A 760718	A 761718
Rated voltage 250 V										
470	36	44	150	220	120	0,7	8,6	2,4	A 760723	A 761723
680	36	52	100	150	90	1,0	11	3,2	A 760220	A 761220
1000	36	60	85	130	85	1,5	13	3,7	A 760721	A 761721
1500	36	80	65	100	65	2,0	17	4,8	A 760722	A 761722
2200	36	104	60	90	60	3,0	20	5,7	A 760724	A 761724
3300	51	81	40	60	40	4,0	24	6,9	A 760726	A 761726
4700	51	104	35	53	36	6,0	25	8,2	A 760728	A 761728
6800	51	144	30	45	38	8,0	25	10,0	A 760729	A 761729
10000	73	104	20	30	23	9,0	41	12,0	A 760731	A 761731
15000	73	144	16	24	18	10,0	53	15,0	A 760732	A 761732
22000	90	144	10	15	12	14,0	76	22,0	A 760737	A 761737
33000	90	200	8	12	10	16,0	80	28,0	A 760738	A 761738
Rated voltage 260 V										
6000	51	81	55	85	75	3,7	18	5,2	A 760446	A 761446
8200	51	104	47	66	60	4,4	22	6,3	A 760448	A 761448
15000	66	104	38	58	48	5,9	28	8,1	A 760450	A 761450
18000	73	104	32	52	42	6,5	33	9,4	A 760451	A 761451
22000	77	104	27	40	35	7,2	37	11,0	A 760453	A 760453
33000	77	144	22	35	30	8,8	47	13,0	A 760454	A 761454
46000	90	144	14	22	18	10,0	64	18,0	A 760457	A 760457
61000	90	200	10	19	15	12,0	80	25,0	A 760458	A 761458
Rated voltage 305 V										
1400	36	52	120	220	140	1,3	10	2,9	A 760420	A 761420
2400	36	80	80	130	100	1,7	15	4,3	A 760422	A 761422
3300	36	104	70	120	90	2	18	5,2	A 760424	A 761424
5600	51	81	60	90	80	2,6	20	5,6	A 760426	A 761426
11000	51	144	50	75	65	3,7	25	7,9	A 760429	A 761429
12000	66	104	40	60	50	3,8	28	7,9	A 760430	A 761430
15000	73	104	35	55	45	4,3	31	8,9	A 760431	A 761431
23000	73	144	30	50	40	5,3	39	11	A 760432	A 761432
27000	77	144	25	38	33	5,7	44	13	A 760434	A 761434
36000	77	220	21	31	27	6,6	55	17	A 760435	A 761435
39000	90	144	16	24	20	6,9	60	17	A 760437	A 761437
52000	90	200	11	20	16	8,0	80	24	A 760438	A 761438

FELSIC CAPAX

BC - BD

15 000 h / 85°C

Capacitance [μF]	Case		ESR		Z 10 kHz +20°C max. [mΩ]	II +20°C 5 min max. [mA]	I~ 100 Hz		Code	
	Ø [mm]	H [mm]	Typic [mΩ]	100 Hz +20°C [mΩ]			+40°C max. [A]	+85°C [A]	BC	BD
Rated voltage 350 V										
330	36	44	280	420	250	0,7	6,3	1,8	A 760764	A 761764
470	36	52	200	300	170	0,9	8,0	2,3	A 760760	A 761760
680	36	80	130	200	100	1,4	14,0	4,0	A 760262	A 761262
1000	36	80	95	140	88	2,0	18,0	5,0	A 760763	A 761763
1500	51	81	60	90	60	3,0	20,0	5,6	A 760266	A 761266
2200	51	81	55	83	55	4,0	21,0	5,8	A 760767	A 761767
3300	51	104	50	80	60	6,0	24,0	6,8	A 760768	A 761768
3300	51	144	35	52	35	6,0	25,0	9,5	A 760269	A 761269
4700	51	144	30	45	30	7,0	25,0	10,0	A 760770	A 761770
6800	73	104	23	35	24	7,0	38,0	11,0	A 760771	A 761771
10000	73	144	16	24	17	9,0	53,0	15,0	A 760772	A 761772
15000	77	220	12	18	14	14,0	55,0	22,0	A 760775	A 761775
22000	90	200	9	14	12	16,0	80,0	26,0	A 760778	A 761778
Rated voltage 360 V										
910	36	52	150	230	170	1,1	8,6	2,4	A 760380	A 761380
1600	36	80	100	150	120	1,5	14,0	3,9	A 760382	A 761382
2200	36	104	90	140	110	1,8	16,0	4,6	A 760384	A 761384
3300	51	81	80	120	100	2,2	17,0	4,8	A 760386	A 761386
4700	51	104	75	115	90	2,6	20,0	5,6	A 760388	A 761388
6800	51	144	70	105	80	3,1	23,0	6,7	A 760389	A 761389
8200	66	104	60	90	75	3,4	23,0	6,5	A 760390	A 761390
10000	73	104	50	75	65	3,8	26,0	7,5	A 760391	A 761391
15000	73	144	40	60	50	4,6	34,0	9,6	A 760392	A 761392
18000	77	144	28	45	35	5,0	42,0	12,0	A 760394	A 761394
26000	90	144	20	33	26	6,1	54,0	15,0	A 760397	A 761397
36000	90	200	14	25	20	7,8	74,0	21,0	A 760399	A 761399
Rated voltage 385 V										
220	36	44	500	750	480	0,5	4,7	1,3	A 760783	A 761783
330	36	52	300	450	280	0,8	6,5	1,9	A 760280	A 761280
470	36	60	220	330	210	1,1	8,1	2,3	A 760781	A 761781
680	36	80	190	290	180	1,5	10,0	2,8	A 760782	A 761782
1000	36	104	140	210	140	2,3	13,0	3,7	A 760784	A 761784
1500	51	81	80	120	80	3,4	17,0	4,8	A 760286	A 761286
2200	51	104	60	90	60	5,0	22,0	6,2	A 760788	A 761788
3300	51	144	50	75	50	6,0	25,0	7,9	A 760789	A 761789
4700	73	104	30	45	35	7,0	34,0	10,0	A 760791	A 761791
6800	73	144	18	27	22	8,0	50,0	14,0	A 760792	A 761792
10000	77	220	15	22	17	11,0	55,0	20,0	A 760295	A 761295
15000	90	200	11	16	13	12,0	80,0	24,0	A 760798	A 761798
20000	90	200	10	15	12	14,0	80,0	25,0	A 760799	A 761799
Rated voltage 400 V										
220	36	44	550	830	520	1,7	4,5	1,3	A 760803	A 761803
330	36	52	350	520	330	2,0	6,0	1,7	A 760300	A 761300
470	36	60	250	380	240	2,5	7,6	2,2	A 760801	A 761801
680	36	80	200	300	200	3,1	10,0	2,7	A 760802	A 761802
1000	36	104	150	230	150	3,5	13,0	3,6	A 760804	A 761804
1500	51	81	80	120	85	4,0	17,0	4,8	A 760806	A 761806
1800	51	81	75	113	80	4,5	18,0	5,0	A 760807	A 761807
2200	51	81	70	110	80	5,0	18,0	5,2	A 760805	A 761805
2200	51	104	60	105	70	5,0	22,0	6,2	A 760808	A 761808
3300	51	144	40	60	50	6,0	25,0	8,9	A 760809	A 761809
3300	66	104	40	60	40	6,0	28,0	7,9	A 760310	A 761310
4700	73	104	30	45	35	8,0	34,0	10,0	A 760811	A 761811
5600	73	144	22	33	26	8,5	46,0	13,0	A 760812	A 761812
6800	73	144	18	27	22	9,0	50,0	14,0	A 760813	A 761813
8200	77	144	16	24	19	11,0	55,0	16,0	A 760814	A 761814
10000	77	144	15	23	18	12,0	55,0	16,0	A 760816	A 761816
10000	77	220	13	20	16	12,0	55,0	21,0	A 760815	A 761815
10000	90	144	15	22	18	12,0	62,0	18,0	A 760317	A 761317
15000	90	200	11	17	13	13,0	80,0	24,0	A 760318	A 761318
18000	90	200	10	15	12	15,0	80,0	25,0	A 760319	A 761319
Rated voltage 410 V										
640	36	52	1000	1500	1200	3,0	3,0	1,0	A 760860	A 761860
1100	36	80	600	900	700	3,7	4,8	1,6	A 760861	A 761861
1500	36	104	450	680	550	4,1	6,3	2,1	A 760864	A 761864
2500	51	81	270	400	330	5,4	7,8	2,6	A 760866	A 761866
3400	51	104	200	300	250	6,2	10,0	3,4	A 760868	A 761868
5600	51	144	170	260	220	8,6	13,0	4,3	A 760869	A 761869
5600	66	104	120	180	150	8,6	14,0	4,6	A 760870	A 761870
6800	73	104	70	110	90	9,0	19,0	6,3	A 760871	A 761871

FELSIC CAPAX

BC - BD

15 000 h / 85°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. ($\text{m}\Omega$)	II +20°C 5 min max. (mA)	I ~ 100 Hz		Code	
	\varnothing (mm)	H (mm)	Typic ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			+40°C max. (A)	+85°C (A)	BC	BD
Rated voltage 410 V										
8200	77	104	50	80	70	11	23,0	7,7	A 760873	A 761873
12000	77	144	45	70	60	13	28,0	9,4	A 760874	A 761874
15000	77	220	30	50	42	14	41,0	14,0	A 760875	A 761875
18000	90	144	28	45	40	15	39,0	13,0	A 760877	A 761877
24000	90	200	22	35	30	18	51,0	17,0	A 760878	A 761878
26000	90	200	20	32	27	18	53,0	18,0	A 760879	A 761879
Rated voltage 415 V										
470	36	80	210	320	290	2,6	10	2,8	A 760322	A 761322
1000	51	62	110	170	140	3,9	13	3,7	A 760825	A 761825
1500	51	81	80	120	90	4,7	17	4,8	A 760826	A 761826
2200	51	104	60	90	70	5,7	22	6,2	A 760828	A 761828
3300	51	144	40	60	50	7	25	8,9	A 760829	A 761829
4700	73	104	30	45	34	8,3	34	10,0	A 760831	A 761831
6800	73	144	20	30	25	10	48	14,0	A 760832	A 761832
8200	77	144	16	24	19	11	55	16,0	A 760834	A 761834
10000	77	220	13	20	16	12	55	21,0	A 760835	A 761835
15000	90	200	10	16	13	15	80	25,0	A 760838	A 761838
Rated voltage 450 V										
220	36	44	600	900	700	1,8	4,3	1,2	A 760843	A 761843
330	36	52	450	680	500	2,3	5,3	1,5	A 760840	A 761840
470	36	80	300	450	350	2,7	7,9	2,2	A 760342	A 761342
680	51	62	180	270	210	3,3	10	2,9	A 760845	A 761845
1000	51	81	120	180	150	4	14	4,0	A 760346	A 761346
1500	51	81	90	135	100	5	16	4,6	A 760847	A 761847
2200	51	144	60	90	70	6	25	7,2	A 760349	A 761349
2700	51	144	55	85	65	6,6	25	7,6	A 760844	A 761844
3300	66	104	50	75	60	7,3	25	7,1	A 760850	A 761850
3900	73	104	40	60	50	7,9	29	8,4	A 760851	A 761851
4700	73	144	30	45	38	8,7	39	11,0	A 760352	A 761352
4700	77	104	30	45	38	8,7	35	10,0	A 760854	A 761854
5600	73	144	25	40	32	9,5	43	12,0	A 760853	A 761853
6800	77	144	19	40	32	10	52	15,0	A 760855	A 761855
8200	77	144	17	26	22	11	53	15,0	A 760848	A 761848
8200	77	220	15	23	20	11	55	20,0	A 760356	A 761356
10000	90	144	13	20	18	13	67	19,0	A 760857	A 761857
14000	90	200	11	17	15	16	80	24,0	A 760858	A 761858
15000	90	200	10	16	14	17	80	25,0	A 760859	A 761859
Rated voltage 460 V										
560	36	52	1200	1800	1350	3,0	2,8	0,9	A 760880	A 761880
1000	36	80	650	1000	750	4,1	4,6	1,5	A 760882	A 761882
1300	36	104	500	750	600	4,6	5,9	2,0	A 760884	A 761884
2200	51	81	300	450	400	6,1	7,5	2,5	A 760886	A 761886
3200	51	104	250	380	350	7,3	9,2	3,1	A 760887	A 761887
4500	51	144	150	220	180	8,5	14	4,6	A 760889	A 761889
5000	66	104	140	210	170	9,1	13	4,2	A 760890	A 761890
6300	73	104	100	150	120	10	16	5,3	A 760891	A 761891
7300	77	104	70	110	85	11	20	6,5	A 760893	A 761893
10000	73	144	65	100	75	13	23	7,6	A 760892	A 761892
11000	77	144	60	95	65	14	24	8,1	A 760894	A 761894
12000	77	144	50	80	60	14	27	9,0	A 760895	A 761895
15000	90	144	35	55	45	15	35	12	A 760897	A 761897
20000	90	200	25	40	34	18	48	16	A 760898	A 761898
22000	90	200	25	40	34	18	48	16	A 760899	A 761899
Rated voltage 500 V										
100	36	44	750	1100	900	1,3	3,8	1,1	A 760363	A 761363
150	36	52	500	750	600	1,6	5	1,4	A 760360	A 761360
220	36	80	280	420	300	2	8,1	2,3	A 760362	A 761362
330	36	104	240	360	260	2,4	10	2,8	A 760364	A 761364
470	51	62	200	300	220	2,9	10	2,7	A 760365	A 761365
680	51	81	140	210	150	3,5	11	3,3	A 760366	A 761366
1000	51	104	110	170	120	4,2	14	4,1	A 760368	A 761368
1500	51	144	90	140	100	5,2	18	5,3	A 760369	A 761369
2200	73	104	60	90	70	6,2	24	6,8	A 760371	A 761371
3300	73	144	40	60	50	7,7	34	9,6	A 760372	A 761372
4700	77	144	35	52	40	9,2	37	11,0	A 760374	A 761374
4700	77	220	28	42	30	9,2	50	14,0	A 760375	A 761375
5600	90	144	24	36	26	10	50	14,0	A 760377	A 761377
6800	90	200	15	23	17	11	72	20,0	A 760378	A 761378
8200	90	200	13	20	17	12	77	22,0	A 760379	A 761379

15 000 h / 85°C

PEAK VOLTAGE (V)

1000 cycles, without ripple current

Up : Repetitive standard peak voltage (30 s)

Us : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

U _R	10 V	16 V	25 V	40 V	50 V	63 V	80 V	100 V	160 V	200 V
Up	11,5	18	29	46	58	72	92	115	184	230
Us										200 235

U _R	250 V	305 V	350 V	360 V	385 V	400 V	410 V	415 V	450 V	460 V	500 V
Up	288	330	385	390	424	440	450	457	495	506	550
Us	290	335	405	405	430	450	468	468	500	540	600

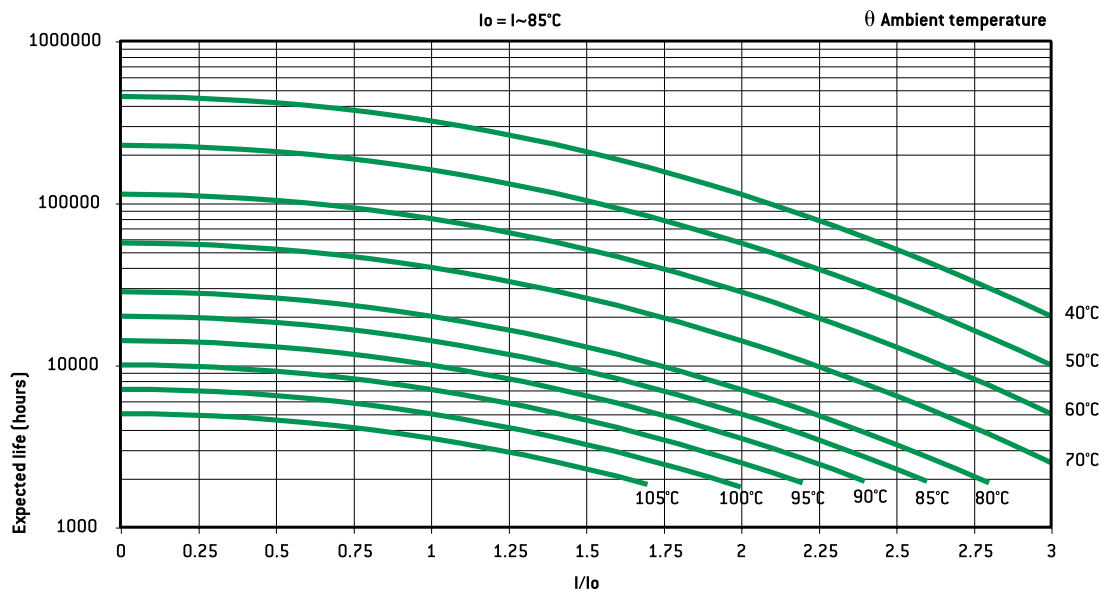
PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

Dimensions (mm)		I _p (A)		I _~ max.
Ø	H	40°C	85°C	(A)
36	44	330	170	22
36	52	400	200	22
36	60	450	220	22
36	80	600	300	22
36	104	700	400	22
51	62	700	400	25
51	81	800	400	25
51	104	1100	500	25
51	144	1300	600	25
66	104	1900	800	50
73	104	3000	1100	55
73	144	4000	1700	55
77	104	3100	1200	55
77	144	4200	1800	55
77	220	5700	2400	55
90	144	5700	2400	80
90	200	7700	3200	80

EXPECTED LIFE

as a function of temperature and ripple current :

**EXPECTED LIFE WITH ID :**

- 1 to 5 discharges per minute For I = Id 48 000 000 cycles
 - 10 discharges per minute For I = Id 36 000 000 cycles
 - 15 discharges per minute For I = Id 18 000 000 cycles
- $I = Id/2 > 1 \times 10^9$ cycles

- 15 to 60 discharges per minute

To have the highest dissipated power, use preferably FELSIC CAPAX 500 V and calculate r.m.s. current (general technical data § 6.4.2.).

In order to have the highest value of stored energy use preferably FELSIC CAPAX 305 V, 360 V, 410 V and 460 V (0.4 Wh/kg).

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I_~ : permissible r.m.s. current at 100 Hz

(Hz)	50	100	300	600	1 000	10 000	≥ 50 000
I	0,8 x I _~	I _~	1,2 x I _~	1,3 x I _~	1,35 x I _~	1,5 x I _~	1,6 x I _~

FAST DISCHARGES WORKING (ID)

Discharge current Id = peak current of 3 ms per cycle of 1 to 60 s, at 40°C.

Id as a function of case

Dimensions (mm)		Id
Ø	H	(A)
36	44	200
36	62	230
36	54	300
36	80	440
36	104	580
51	62	600
51	81	740
51	104	990
51	144	1280
66	104	1400
73	104	1570
73	144	2200
77	104	2000
77	144	2800
77	220	3700
90	144	3900
90	200	4800

CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series.

FELSIC 85

CO 54 - CO 53

15 000 h / 85°C

10 V ... 630 V	68 µF ... 680 000 µF	Ø 36 mm ... Ø 90 mm	- 55°C +85°C	Long Life Time
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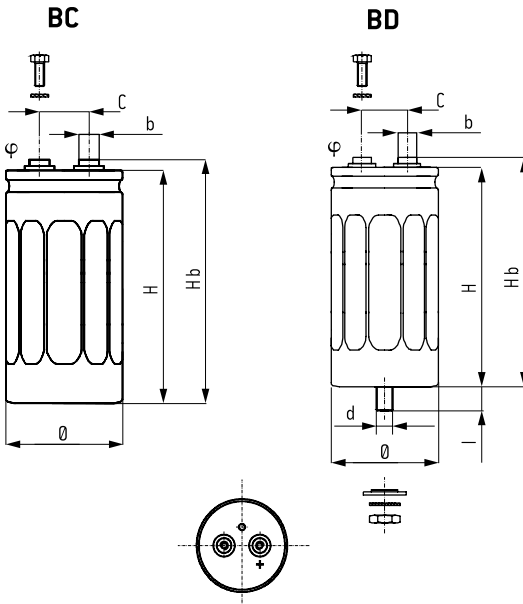


APPLICATIONS

- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current
- 360 V and 480 V series are mainly designed for repetitive fast discharges working.

Fixing : Clip or stud fixing
Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : -10 +30 %
Operating temperature : - 55°C + 85°C



DIMENSIONS (mm)

Ø ±1	H ±2	Hb ±2	C ±0,5	φ	b
36	52	58	12,7	M5	8
36	60	66	12,7	M5	8
36	80	86	12,7	M5	8
36	104	110	12,7	M5	8
51	81	87	22,2	M5	13
51	104	110	22,2	M5	13
66	104	110	28,5	M5	13
77	104	110	31,7	M5	13
77	144	150	31,7	M5	13
77	220	226	31,7	M5	13
90	144	151	31,7	M6	13
90	200	207	31,7	M6	13

BC

Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately

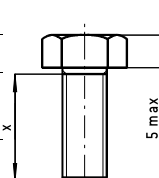
BD

Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor (steel hex nut, spring washer)

Ø	d	l	Max. nut torque
36	M8	12 ^{±1}	4 Nm
≥ 51	M12	16 ^{±1,5}	10 Nm

HEXAGONAL SCREWS

Screwing height between screws and terminals :	3,5 mm max
Max. screw torque :	M5 : 3 Nm (x min 8 mm) M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	≤150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life
DIN 41 240 - Climatic category GPF - 55°C + 85°C / 56 days
CECC 30301-059 Issue 3
CECC 30 301-810
IEC 60 384.4 long life
Standard endurance test at U_R : U_R ≤ 350 V : 5000 h / 85°C
U_R > 350 V : 2000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 MΩ
Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIC 85

CO 54 - CO 53

15 000 h / 85°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. ($\text{m}\Omega$)	II +20°C 5 min max. (mA)	I~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			+40°C max. (A)	+85°C (A)	CO 54 (BC)	CO 53 (BD)
Rated voltage 10 V										
33000	36	52	16	24	25	1,8	22	6,6	A 744020	A 745020
68000	36	104	7	11	13	4	22	13,5	A 744021	A 745021
330000	66	104	4	8	7	5	50	25	A 744023	A 745023
Rated voltage 16 V										
22000	36	52	16	24	25	2	22	6,6	A 744040	A 745040
47000	36	80	11	16	15	4	22	8,8	A 744041	A 745041
100000	51	81	8	12	10	5	25	13,7	A 744042	A 745042
150000	51	104	7	11	8	5	25	16,4	A 744043	A 745043
220000	66	104	5	8	6	5	50	22,3	A 744044	A 745044
330000	77	104	3	5	6	6	55	31,5	A 744045	A 745045
470000	77	144	3	5	6	6	55	36	A 744046	A 745046
680000	77	220	3	5	6	7	55	43	A 744047	A 745047
Rated voltage 25 V										
15000	36	52	18	27	26	2	22	6,2	A 744060	A 745060
22000	36	52	17	25	24	3	22	6,5	A 744069	A 745069
33000	36	80	15	23	18	4	22	8,2	A 744061	A 745061
47000	36	104	12	18	15	5	25	10,3	A 744070	A 745070
47000	51	81	9	14	10	5	25	12,9	A 744062	A 745062
68000	51	81	8	14	10	5	25	13,7	A 744063	A 745063
100000	51	104	8	14	8	5	25	15,3	A 744064	A 745064
150000	66	104	7	11	7	5	50	18,9	A 744065	A 745065
220000	77	104	4	6	7	6	55	26	A 744066	A 745066
330000	77	144	3	5	6	7	55	36	A 744067	A 745067
Rated voltage 40 V										
10000	36	52	20	30	28	2	21	5,9	A 744080	A 745080
15000	36	80	18	27	23	3	22	7,5	A 744081	A 745081
22000	36	104	15	22	19	5	22	9,2	A 744082	A 745082
33000	51	81	10	15	13	5	25	12	A 744091	A 745091
47000	51	81	9	14	9	5	25	12,9	A 744083	A 745083
68000	51	104	8	12	8	6	25	14,4	A 744092	A 745092
100000	66	104	7	11	7	6	50	18,9	A 744084	A 745084
150000	77	104	5	8	7	8	55	24,5	A 744085	A 745085
220000	77	144	4	6	6	9	55	31,5	A 744086	A 745086
470000	90	200	3	5	5	15	80	46	A 744088	A 745088
Rated voltage 63 V										
4700	36	52	40	60	48	1,6	15	4,2	A 744100	A 745100
6800	36	52	35	50	39	2,5	15	4,4	A 744112	A 745112
10000	36	80	23	34	28	3	22	7	A 744101	A 745101
15000	51	81	13	20	18	5	25	10,7	A 744102	A 745102
22000	51	81	12	18	15	5	25	11,1	A 744103	A 745103
33000	51	104	10	15	14	5	25	13,7	A 744113	A 745113
33000	66	104	10	15	14	5	50	15,8	A 744104	A 745104
47000	66	104	8	12	11	6	50	17,7	A 744105	A 745105
68000	77	104	5	8	8	8	55	24,5	A 744106	A 745106
100000	77	144	3	8	8	9	55	36	A 744107	A 745107
150000	77	220	3	8	8	11	55	43	A 744109	A 745109
220000	90	200	3	5	4	15	80	46	A 744110	A 745110
Rated voltage 80 V										
3300	36	52	60	90	70	1,5	12	3,4	A 744360	A 745360
10000	51	81	19	29	23	5	25	8,9	A 744363	A 745363
15000	51	81	17	25	20	5	25	9,4	A 744364	A 745364
22000	51	104	14	21	17	6	25	12	A 744365	A 745365
33000	66	104	12	18	15	6	49	14	A 744366	A 745366
47000	77	104	8	12	10	8	55	19	A 744367	A 745367
68000	77	144	6	9	8	9	55	26	A 744368	A 745368
Rated voltage 100 V										
2200	36	52	70	105	90	1,1	11	3,1	A 744120	A 745120
4700	36	80	45	68	54	2,5	16	4,7	A 744121	A 745121
6800	51	81	24	36	27	4	25	7,9	A 744122	A 745122
10000	51	81	20	30	21	5	25	8,7	A 744123	A 745123
15000	51	104	17	26	18	6	25	10,5	A 744124	A 745124
22000	66	104	13	19	15	6	49	13,9	A 744125	A 745125
33000	77	104	10	15	13	8	55	17,5	A 744126	A 745126
47000	77	144	7	11	10	9	55	23	A 744127	A 745127
100000	90	200	5	8	6	11	80	35	A 744130	A 745130

FELSIK 85

CO 54 - CO 53

15 000 h / 85°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C max. (m Ω)	I +20°C 5 min max. (mA)	I _r ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			+40°C max. (A)	+85°C (A)	CO 54 (BC)	CO 53 (BD)
Rated voltage 160 V										
1000	36	52	85	130	80	0,9	10	2,8	A 744140	A 745140
1500	36	80	55	85	70	1,3	15	4,3	A 744141	A 745141
2200	36	104	48	73	53	2	18	5,2	A 744142	A 745142
3300	51	81	28	42	34	3	25	7,3	A 744143	A 745143
4700	51	104	20	30	28	4	25	9,7	A 744144	A 745144
6800	66	104	17	25	21	5	43	12,3	A 744145	A 745145
10000	77	104	12	18	16	6	55	15,8	A 744146	A 745146
15000	77	144	10	14	13	8	55	20	A 744147	A 745147
22000	77	220	10	15	13	10	55	24	A 744148	A 745148
33000	90	200	8	12	11	14	80	28	A 744150	A 745150
Rated voltage 250 V										
470	36	52	110	170	100	0,7	9	2,5	A 744160	A 745160
1000	36	80	70	105	70	1,5	13	3,8	A 744161	A 745161
1500	51	81	50	75	50	2	19	5,5	A 744162	A 745162
2200	51	81	48	72	48	3	20	5,6	A 744163	A 745163
3300	51	104	35	50	35	4	25	7,6	A 744164	A 745164
4700	66	104	21	32	20	6	38	10,9	A 744165	A 745165
6800	77	104	16	24	15	8	46	13	A 744166	A 745166
10000	77	144	14	21	13	9	55	16,8	A 744167	A 745167
15000	77	220	12	18	12	10	55	22	A 744168	A 745168
22000	90	200	10	15	12	14	80	25	A 744170	A 745170
Rated voltage 350 V										
330	36	52	240	360	190	0,7	5,9	1,7	A 744180	A 745180
470	36	80	150	230	140	0,9	9	2,6	A 744181	A 745181
680	36	104	100	150	100	1,4	13	3,6	A 744182	A 745182
1000	51	81	75	110	65	2	16	4,5	A 744183	A 745183
1500	51	104	55	75	55	3	20	5,8	A 744184	A 745184
2200	66	104	30	45	32	4	32	9,1	A 744185	A 745185
3300	77	104	25	38	27	6	38	10,9	A 744186	A 745186
4700	77	104	20	30	18	7	43	12,2	A 744191	A 745191
6800	77	144	17	25	15	7	53	15,2	A 744187	A 745187
8200	77	220	12	18	15	8	55	22	A 744188	A 745188
10000	77	220	11	16	14	9	55	23	A 744189	A 745189
15000	90	200	10	15	13	14	80	25	A 744190	A 745190
Rated voltage 360 V										
910	36	80	160	200	130	3,4	9,8	2,8	A 744341	A 745341
1200	36	104	120	180	120	3,9	11	3,3	A 744342	A 745342
4700	66	104	80	120	80	7	20	5,6	A 744345	A 745345
10000	77	144	35	50	35	10	39	11	A 744347	A 745347
20000	90	200	9	14	12	16	80	26	A 744349	A 745349
Rated voltage 385 V										
220	36	52	380	570	360	0,5	4,6	1,3	A 744200	A 745200
1000	51	81	90	135	100	2,3	14	4,1	A 744202	A 745202
1500	51	104	70	110	80	3,4	18	5	A 744203	A 745203
2200	66	104	50	75	50	5	25	7,1	A 744204	A 745204
3300	77	104	29	45	30	6	35	10,1	A 744205	A 745205
4700	77	144	22	35	25	7	47	13,4	A 744206	A 745206
6800	77	220	17	25	15	8	55	18,4	A 744207	A 745207
Rated voltage 400 V										
220	36	52	400	600	500	1,7	4,6	1,3	A 744220	A 745220
330	36	80	280	420	300	2,0	6,6	1,9	A 744221	A 745221
470	36	104	200	300	200	2,5	9	2,5	A 744222	A 745222
1000	51	81	90	135	100	3,5	14	4,1	A 744223	A 745223
1500	66	104	60	90	60	4,0	22	6,4	A 744224	A 745224
2200	66	104	40	70	50	5,0	28	7,9	A 744225	A 745225
3300	77	104	29	50	35	6,0	35	10,1	A 744226	A 745226
4700	77	144	22	35	25	7,0	47	13,4	A 744227	A 745227
6800	90	144	16	25	15	9,0	64	18,4	A 744229	A 745229
10000	90	200	11	18	15	12,0	80	24,0	A 744230	A 745230

15 000 h / 85°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C max. (m Ω)	II +20°C 5 min max. (mA)	I ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			+40°C max. (A)	+85°C (A)	CO 54 (BC)	CO 53 (BD)
Rated voltage 450 V										
150	36	52	590	890	700	1,5	3,9	1,1	A 744240	A 745240
220	36	60	400	600	480	1,8	4,9	1,4	A 744241	A 745241
330	36	80	260	400	370	2,3	7	2,0	A 744242	A 745242
470	36	104	170	260	240	2,7	9,5	2,7	A 744243	A 745243
680	51	81	130	190	130	3,3	12	3,3	A 744244	A 745244
1000	51	104	85	130	90	4,0	16	4,7	A 744245	A 745245
1500	66	104	65	100	85	5,0	22	6,2	A 744246	A 745246
2200	66	104	50	85	70	6,0	25	7,0	A 744250	A 745250
2200	77	104	38	70	60	6,0	31	8,8	A 744247	A 745247
3300	77	144	25	50	40	7,3	44	12,6	A 744248	A 745248
4700	77	144	22	40	35	8,7	47	13,4	A 744252	A 745252
5600	77	220	20	40	30	9,5	55	17,0	A 744249	A 745249
6000	90	144	20	40	30	9,9	60	17,0	A 744253	A 745253
6800	90	200	15	30	20	10,0	72	20,0	A 744251	A 745251
8000	90	200	12	20	18	11,0	80	23,0	A 744255	A 745255
10000	90	200	11	18	16	13,0	80	24,0	A 744256	A 745256
Rated voltage 480 V										
150	36	52	550	820	600	1,6	3,9	1,1	A 744260	A 745260
220	36	60	450	680	500	2,0	4,6	1,3	A 744261	A 745261
330	36	80	290	440	400	2,4	6,7	1,9	A 744262	A 745262
470	36	104	200	300	300	2,9	8,8	2,5	A 744263	A 745263
680	51	81	150	220	150	3,8	11	3,2	A 744264	A 745264
1000	51	104	100	150	100	4,2	15	4,3	A 744265	A 745265
1500	66	104	65	100	85	5,0	22	6,2	A 744266	A 745266
2200	77	104	38	70	60	6,2	31	8,8	A 744267	A 745267
3300	77	144	25	50	40	7,5	44	12,6	A 744268	A 745268
4700	77	220	20	30	20	9,0	55	17,0	A 744269	A 745269
6800	90	200	15	25	15	11,0	74	21,0	A 744270	A 745270
Rated voltage 500 V										
68	36	52	700	1050	750	1,1	3,5	1,0	A 744280	A 745280
100	36	52	520	800	550	1,3	4	1,2	A 744381	A 745381
150	36	60	400	700	500	1,6	4,9	1,4	A 744382	A 745382
220	36	80	280	420	300	2,0	6,6	1,9	A 744383	A 745383
330	36	104	240	360	260	2,4	8	2,3	A 744384	A 745384
470	51	81	170	260	180	2,9	10	3,0	A 744385	A 745385
680	51	104	120	180	130	3,5	14	3,9	A 744386	A 745386
1000	66	104	80	120	80	4,2	20	5,6	A 744387	A 745387
1500	77	104	70	105	70	5,2	23	6,5	A 744388	A 745388
2200	77	144	50	75	50	6,2	31	8,9	A 744389	A 745389
3300	77	220	30	45	35	7,7	49	14,0	A 744390	A 745390
4700	90	200	20	35	25	9,2	62	18,0	A 744391	A 745391
Rated voltage 550 V										
68	36	52	850	1300	900	1,5	3,2	0,9	A 744302	A 745302
100	36	52	600	1000	700	1,9	3,8	1,1	A 744303	A 745303
150	36	80	500	800	600	2,3	5	1,4	A 744304	A 745304
220	36	104	400	600	450	2,8	6,3	1,8	A 744305	A 745305
330	51	81	300	450	330	3,4	7,8	2,2	A 744306	A 745306
470	51	104	200	300	230	4,1	11	3,1	A 744307	A 745307
680	66	104	130	200	150	4,9	15	4,4	A 744308	A 745308
1000	77	104	100	150	110	5,9	19	5,5	A 744309	A 745309
1500	77	144	80	120	80	7,3	25	7,0	A 744310	A 745310
2200	90	144	40	70	55	8,8	38	11,0	A 744311	A 745311
3300	90	200	25	45	35	11,0	56	16,0	A 744301	A 745301
4700	90	200	20	35	30	13,0	62	18,0	A 744313	A 745313
Rated voltage 630 V										
68	36	52	2400	3600	3000	2,0	1,9	0,5	A 744400	A 745400
100	36	52	2000	3000	2800	2,5	2,1	0,6	A 744411	A 745411
150	36	80	1100	1650	1200	3,1	3,3	1,0	A 744401	A 745401
220	36	104	750	1150	850	3,7	4,6	1,3	A 744402	A 745402
330	51	81	500	750	550	4,6	6	1,7	A 744403	A 745403
470	51	104	350	520	400	5,4	8	2,3	A 744404	A 745404
680	66	104	230	350	270	6,5	12	3,3	A 744405	A 745405
1000	77	104	200	300	250	7,9	14	3,9	A 744406	A 745406
1500	77	144	180	270	200	9,7	16	4,7	A 744407	A 745407
2200	90	144	120	180	120	12,0	22	6,3	A 744408	A 745408
3300	90	200	80	120	80	15,0	31	8,9	A 744409	A 745409

FELIC 85

CO 54 - CO 53

15 000 h / 85°C

PEAK VOLTAGE (V)

1000 cycles, without ripple current

Up : Repetitive standard peak voltage (30 s)

Us : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

U _R	10 V	16 V	25 V	40 V	63 V	80 V	100 V	160 V	250 V
Up	11,5	18	29	46	72	92	115	184	288
Us								200	290

U _R	350 V	360 V	385 V	400 V	450 V	480 V	500 V	550 V	630 V
Up	385	390	424	440	495	500	550	605	695
Us	405	405	430	450	500	540	600	650	700

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

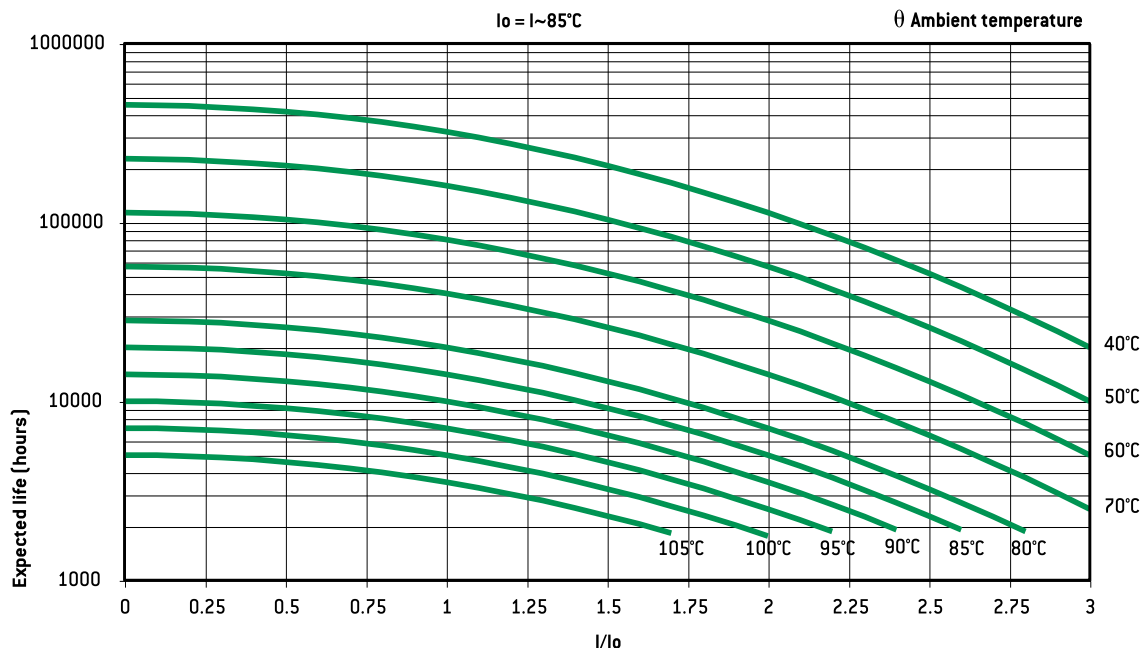
If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

Dimensions (mm)		I _p (A)		I _~ max.
Ø	H	40°C	85°C	(A)
36	52	400	200	22
36	60	450	220	22
36	80	600	300	22
36	104	700	400	22
51	81	800	400	25
51	104	1100	500	25
66	104	1900	800	50
77	104	3100	1200	55
77	144	4200	1800	55
77	220	5700	2400	55
90	144	5700	2400	80
90	200	7700	3200	80

EXPECTED LIFE

as a function of temperature and ripple current

For UR = 360 V and 480 V do not overstep 0.95 UR



EXPECTED LIFE WITH ID :

• 1 to 5 discharges per minute For I = I_d 48 000 000 cycles

In order to have the highest value of stored energy use preferably FELIC 85 360 V.

• 10 discharges per minute For I = I_d 36 000 000 cycles

• 15 discharges per minute For I = I_d 18 000 000 cycles

$$I = I_d/2 > 1 \times 10^9 \text{ cycles}$$

• 15 to 60 discharges per minute

To have the highest dissipated power, use preferably FELIC 85 480 V, 500 V and 550 V and calculate r.m.s. current (general technical data § 6.4.2.).

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I_~ : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I	0,8 x I _~	I _~	1,2 x I _~	1,3 x I _~	1,35 x I _~	1,5 x I _~	1,6 x I _~

FAST DISCHARGES WORKING (ID)

Discharge current I_d = peak current of 3 ms per cycle of 1 to 60 s, at 40°C.

I_d as a function of case

Dimensions (mm)		I _d
Ø	H	(A)
36	52	230
36	60	300
36	80	440
36	104	580
51	81	740
51	104	990
66	104	1400
77	104	2000
77	144	2800
77	220	3700
90	144	3900
90	200	4800

CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series (see FELIC in bank.).

FELSIK 85 M

CO 54 - CO 53

15 000 h / 85°C

10 V ... 630 V	68 μ F ... 330 000 μ F	\varnothing 36 mm ... \varnothing 90 mm	- 55°C + 85°C	Long Life Time
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APPLICATIONS

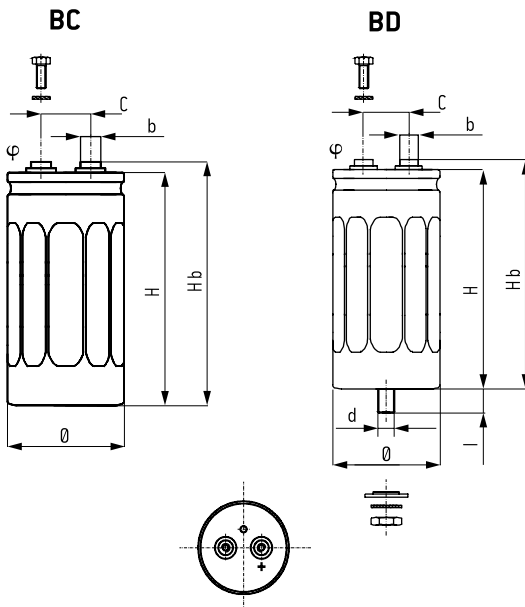
- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Fixing : Clip or stud fixing

Screw terminals : M5 or M6

Tolerance on capacitance at 20°C : -20 +20 %

Operating temperature : - 55°C + 85°C



DIMENSIONS (mm)

$\varnothing \pm 1$	H ± 2	Hb ± 2	c $\pm 0,5$	φ	b
36	52	58	12,7	M5	8
36	60	66	12,7	M5	8
36	80	86	12,7	M5	8
36	104	110	12,7	M5	8
51	81	87	22,2	M5	13
51	104	110	22,2	M5	13
66	104	110	28,5	M5	13
77	104	110	31,7	M5	13
77	144	150	31,7	M5	13
77	220	226	31,7	M5	13
90	144	151	31,7	M6	13
90	200	207	31,7	M6	13

\varnothing	d	l	Max. nut torque
36	M8	12 ± 1	4 Nm
≥ 51	M12	16 $\pm 1,5$	10 Nm

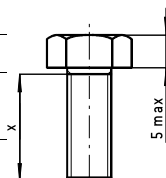
BC
Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately

BD
Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor (steel hex nut, spring washer)

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque : M5 : 3 Nm (x min 8 mm)
M6 : 6 Nm (x min 10 mm)



RESISTANCE TO VIBRATIONS

Hb (mm)	>150	≤150
(Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

DIN 41 240 - Climatic category GPF - 55°C + 85°C / 56 days

CECC 30301-059 Issue 3

CECC 30 301-810

IEC 60 384.4 long life

Standard endurance test at U_R : $U_R \leq 350$ V : 5000 h / 85°C $U_R > 350$ V : 2000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIC 85 M

CO 54 - CO 53

15 000 h / 85°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. ($\text{m}\Omega$)	II +20°C 5 min max. (mA)	I ~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic ($\text{m}\Omega$)	100 Hz +20°C ($\text{m}\Omega$)			+40°C max. (A)	+85°C (A)	CO 54 (M) (BC)	CO 53 (M) (BD)
Rated voltage 10 V										
33000	36	52	16	24	25	1,8	22	6,6	A 746020	A 747020
Rated voltage 16 V										
22000	36	52	16	24	25	2	22	6,6	A 746040	A 747040
47000	36	80	11	16	15	4	22	8,8	A 746041	A 747041
100000	51	81	8	12	10	5	25	13,7	A 746042	A 747042
150000	51	104	7	11	8	5	25	16,4	A 746043	A 747043
220000	66	104	5	8	6	5	50	22,3	A 746044	A 747044
Rated voltage 25 V										
15000	36	52	18	27	26	2	22	6,2	A 746060	A 747060
22000	36	52	17	25	24	3	22	6,5	A 746069	A 747069
33000	36	80	15	23	18	4	22	8,2	A 746061	A 747061
47000	36	104	12	18	15	5	25	10,3	A 746070	A 747070
47000	51	81	9	14	10	5	25	12,9	A 746062	A 747062
68000	51	81	8	14	10	5	25	13,7	A 746063	A 747063
100000	51	104	8	14	8	5	25	15,3	A 746064	A 747064
220000	77	104	4	6	7	6	55	26	A 746066	A 747066
330000	77	144	3	5	6	7	55	36	A 746067	A 747067
Rated voltage 40 V										
10000	36	52	20	30	28	2	21	5,9	A 746080	A 747080
15000	36	80	18	27	23	3	22	7,5	A 746081	A 747081
22000	36	104	15	22	19	5	22	9,2	A 746082	A 747082
33000	51	81	10	15	13	5	25	12	A 746091	A 747091
47000	51	81	9	14	9	5	25	12,9	A 746083	A 747083
68000	51	104	8	12	8	6	25	14,4	A 746092	A 747092
100000	66	104	7	11	7	6	50	18,9	A 746084	A 747084
150000	77	104	5	8	7	8	55	24,5	A 746085	A 747085
220000	77	144	4	6	6	9	55	31,5	A 746086	A 747086
Rated voltage 63 V										
4700	36	52	40	60	48	1,6	15	4,2	A 746100	A 747100
6800	36	52	35	50	39	2,5	15	4,4	A 746112	A 747112
10000	36	80	23	34	28	3	22	7	A 746101	A 747101
15000	51	81	13	20	18	5	25	10,7	A 746102	A 747102
22000	51	81	12	18	15	5	25	11,1	A 746103	A 747103
33000	51	104	10	15	14	5	25	13,7	A 746113	A 747113
33000	66	104	10	15	14	5	50	15,8	A 746104	A 747104
47000	66	104	8	12	11	6	50	17,7	A 746105	A 747105
68000	77	104	5	8	8	8	55	24,5	A 746106	A 747106
100000	77	144	3	8	8	9	55	36	A 746107	A 747107
150000	77	220	3	8	8	11	55	43	A 746109	A 747109
220000	90	200	3	5	4	15	80	46	A 746110	A 747110
Rated voltage 80 V										
10000	51	81	19	29	23	5	25	8,9	A 746363	A 747363
15000	51	81	17	25	20	5	25	9,4	A 746364	A 747364
22000	51	104	14	21	17	6	25	12	A 746365	A 747365
33000	66	104	12	18	15	6	49	14	A 746366	A 747366
Rated voltage 100 V										
2200	36	52	70	105	90	1,1	11	3,1	A 746120	A 747120
4700	36	80	45	68	54	2,5	16	4,7	A 746121	A 747121
6800	51	81	24	36	27	4	25	7,9	A 746122	A 747122
10000	51	81	20	30	21	5	25	8,7	A 746123	A 747123
15000	51	104	17	26	18	6	25	10,5	A 746124	A 747124
22000	66	104	13	19	15	6	49	13,9	A 746125	A 747125
33000	77	104	10	15	13	8	55	17,5	A 746126	A 747126
47000	77	144	7	11	10	9	55	23	A 746127	A 747127
Rated voltage 160 V										
1000	36	52	85	130	80	0,9	10	2,8	A 746140	A 747140
1500	36	80	55	85	70	1,3	15	4,3	A 746141	A 747141
2200	36	104	48	73	53	2	18	5,2	A 746142	A 747142
3300	51	81	28	42	34	3	25	7,3	A 746143	A 747143
4700	51	104	20	30	28	4	25	9,7	A 746144	A 747144
6800	66	104	17	25	21	5	43	12,3	A 746145	A 747145
10000	77	104	12	18	16	6	55	15,8	A 746146	A 747146
15000	77	144	10	14	13	8	55	20	A 746147	A 747147
22000	77	220	10	15	13	10	55	24	A 746148	A 747148
33000	90	200	8	12	11	14	80	28	A 746150	A 747150

FELSIC 85 M

CO 54 - CO 53

15 000 h / 85°C

Capacitance (μ F)	Case		ESR		Z 10 kHz +20°C max. (m Ω)	II +20°C 5 min max. (mA)	I~ 100 Hz		Code	
	\emptyset (mm)	H (mm)	Typic (m Ω)	100 Hz +20°C (m Ω)			+40°C max. (A)	+85°C (A)	CO 54 (M) (BC)	CO 53 (M) (BD)
Rated voltage 250 V										
470	36	52	110	170	100	0,7	9	2,5	A 746160	A 747160
1000	36	80	70	105	70	1,5	13	3,8	A 746161	A 747161
1500	51	81	50	75	50	2	19	5,5	A 746162	A 747162
2200	51	81	48	72	48	3	20	5,6	A 746163	A 747163
3300	51	104	35	50	35	4	25	7,6	A 746164	A 747164
4700	66	104	21	32	20	6	38	10,9	A 746165	A 747165
6800	77	104	16	24	15	8	46	13	A 746166	A 747166
10000	77	144	14	21	13	9	55	16,8	A 746167	A 747167
22000	90	200	10	15	12	14	80	25	A 746170	A 747170
Rated voltage 350 V										
330	36	52	240	360	190	0,7	5,9	1,7	A 746180	A 747180
470	36	80	150	230	140	0,9	9	2,6	A 746181	A 747181
680	36	104	100	150	100	1,4	13	3,6	A 746182	A 747182
1000	51	81	75	110	65	2	16	4,5	A 746183	A 747183
1500	51	104	55	75	55	3	20	5,8	A 746184	A 747184
2200	66	104	30	45	32	4	32	9,1	A 746185	A 747185
3300	77	104	25	38	27	6	38	10,9	A 746186	A 747186
4700	77	104	20	30	18	7	43	12,2	A 746191	A 747191
6800	77	144	17	25	15	7	53	15,2	A 746187	A 747187
Rated voltage 385 V										
220	36	52	380	570	360	0,5	4,6	1,3	A 746200	A 747200
1000	51	81	90	135	100	2,3	14	4,1	A 746202	A 747202
1500	51	104	70	110	80	3,4	18	5	A 746203	A 747203
2200	66	104	50	75	50	5	25	7,1	A 746204	A 747204
3300	77	104	29	45	30	6	35	10,1	A 746205	A 747205
4700	77	144	22	35	25	7	47	13,4	A 746206	A 747206
6800	77	220	17	25	15	8	55	18,4	A 746207	A 747207
Rated voltage 400 V										
220	36	52	400	600	500	1,7	4,6	1,3	A 746220	A 747220
330	36	80	280	420	300	2,0	6,6	1,9	A 746221	A 747221
470	36	104	200	300	200	2,5	9	2,5	A 746222	A 747222
1000	51	81	90	135	100	3,5	14	4,1	A 746223	A 747223
1500	66	104	60	90	60	4,0	22	6,4	A 746224	A 747224
2200	66	104	40	70	50	5,0	28	7,9	A 746225	A 747225
3300	77	104	29	50	35	6,0	35	10,1	A 746226	A 747226
4700	77	144	22	35	25	7,0	47	13,4	A 746227	A 747227
6800	90	144	16	25	15	9,0	64	18,4	A 746229	A 747229
10000	90	200	11	18	15	12,0	80	24,0	A 746230	A 747230
Rated voltage 450 V										
150	36	52	590	890	700	1,5	3,9	1,1	A 746240	A 747240
330	36	80	260	400	370	2,3	7	2,0	A 746242	A 747242
470	36	104	170	260	240	2,7	9,5	2,7	A 746243	A 747243
680	51	81	130	190	130	3,3	12	3,3	A 746244	A 747244
1000	51	104	85	130	90	4,0	16	4,7	A 746245	A 747245
1500	66	104	65	100	85	5,0	22	6,2	A 746246	A 747246
2200	66	104	50	85	70	6,0	25	7,0	A 746250	A 747250
2200	77	104	38	70	60	6,0	31	8,8	A 746247	A 747247
3300	77	144	25	50	40	7,3	44	12,6	A 746248	A 747248
4700	77	144	22	40	35	8,7	47	13,4	A 746252	A 747252
5600	77	220	20	40	30	9,5	55	17,0	A 746249	A 747249
6000	90	144	20	40	30	9,9	60	17,0	A 746253	A 747253
6800	90	200	15	30	20	10,0	72	20,0	A 746251	A 747251
8000	90	200	12	20	18	11,0	80	23,0	A 746255	A 747255
10000	90	200	11	18	16	13,0	80	24,0	A 746256	A 747256
Rated voltage 500 V										
68	36	52	700	1050	750	1,1	3,5	1,0	A 746280	A 747280
100	36	52	520	800	550	1,3	4	1,2	A 746381	A 747381
150	36	60	400	700	500	1,6	4,9	1,4	A 746382	A 747382
220	36	80	280	420	300	2,0	6,6	1,9	A 746383	A 747383
330	36	104	240	360	260	2,4	8	2,3	A 746384	A 747384
470	51	81	170	260	180	2,9	10	3,0	A 746385	A 747385
680	51	104	120	180	130	3,5	14	3,9	A 746386	A 747386
1000	66	104	80	120	80	4,2	20	5,6	A 746387	A 747387
1500	77	104	70	105	70	5,2	23	6,5	A 746388	A 747388
3300	77	220	30	45	35	7,7	49	14,0	A 746390	A 747390

FELSIK 85 M

CO 54 - CO 53

15 000 h / 85°C

Capacitance (μF)	Case		ESR		Z 10 kHz +20°C max. (mΩ)	II +20°C 5 min max. (mA)	I~ 100 Hz		Code	
	Ø (mm)	H (mm)	Typic (mΩ)	100 Hz +20°C (mΩ)			+40°C max. (A)	+85°C (A)	CO 54 (M) (BC)	CO 53 (M) (BD)
Rated voltage 550 V										
68	36	52	850	1300	900	1,5	3,2	0,9	A 746302	A 747302
100	36	52	600	1000	700	1,9	3,8	1,1	A 746303	A 747303
150	36	80	500	800	600	2,3	5	1,4	A 746304	A 747304
220	36	104	400	600	450	2,8	6,3	1,8	A 746305	A 747305
330	51	81	300	450	330	3,4	7,8	2,2	A 746306	A 747306
470	51	104	200	300	230	4,1	11	3,1	A 746307	A 747307
680	66	104	130	200	150	4,9	15	4,4	A 746308	A 747308
1000	77	104	100	150	110	5,9	19	5,5	A 746309	A 747309
1500	77	144	80	120	80	7,3	25	7,0	A 746310	A 747310
2200	90	144	40	70	55	8,8	38	11,0	A 746311	A 747311
3300	90	200	25	45	35	11,0	56	16,0	A 746301	A 747301
4700	90	200	20	35	30	13,0	62	18,0	A 746313	A 747313
Rated voltage 630 V										
68	36	52	2400	3600	3000	2,0	1,9	0,5	A 746400	A 747400
100	36	52	2000	3000	2800	2,5	2,1	0,6	A 746411	A 747411
150	36	80	1100	1650	1200	3,1	3,3	1,0	A 746401	A 747401
220	36	104	750	1150	850	3,7	4,6	1,3	A 746402	A 747402
330	51	81	500	750	550	4,6	6	1,7	A 746403	A 747403
470	51	104	350	520	400	5,4	8	2,3	A 746404	A 747404
680	66	104	230	350	270	6,5	12	3,3	A 746405	A 747405
1000	77	104	200	300	250	7,9	14	3,9	A 746406	A 747406
1500	77	144	180	270	200	9,7	16	4,7	A 746407	A 747407
2200	90	144	120	180	120	12,0	22	6,3	A 746408	A 747408
3300	90	200	80	120	80	15,0	31	8,9	A 746409	A 747409

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

Dimensions (mm)		I_p (A)		I_{\sim} max. (A)
Ø	H	40°C	85°C	
36	52	400	200	22
36	60	450	220	22
36	80	600	300	22
36	104	700	400	22
51	81	800	400	25
51	104	1100	500	25
66	104	1900	800	50
77	104	3100	1200	55
77	144	4200	1800	55
77	220	5700	2400	55
90	144	5700	2400	80
90	200	7700	3200	80

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

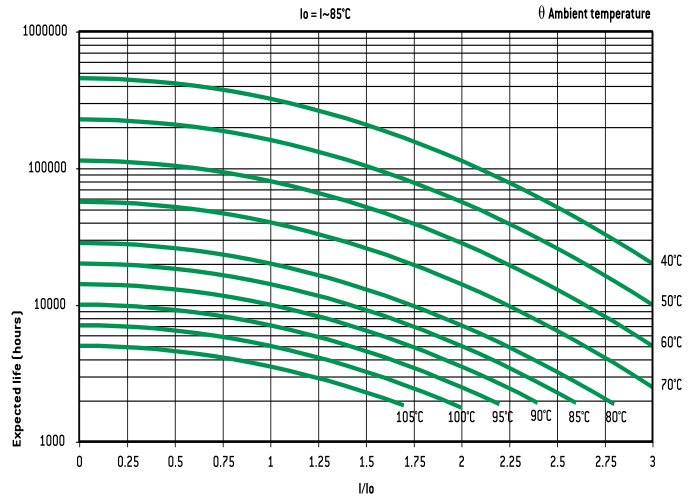
versus frequency f :

I_{\sim} : permissible r.m.s. current at 100 Hz

(Hz)	50	100	300	600	1 000	10 000	50 000
I	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$

EXPECTED LIFE

As a function of temperature and ripple current



CONNECTIONS IN SERIES :

Operating voltages exceeding 500 V up to 20000 V will be reached by connecting capacitors with rated voltages higher or equal to 350 V in series.

FELSIC 039 - FELIC 037

CO 37 - CO 39

32 000 h / 85°C

10 V ... 400 V	100 μ F ... 150 000 μ F	\emptyset 36 mm ... \emptyset 77 mm	- 55°C + 85°C	Long Life Time
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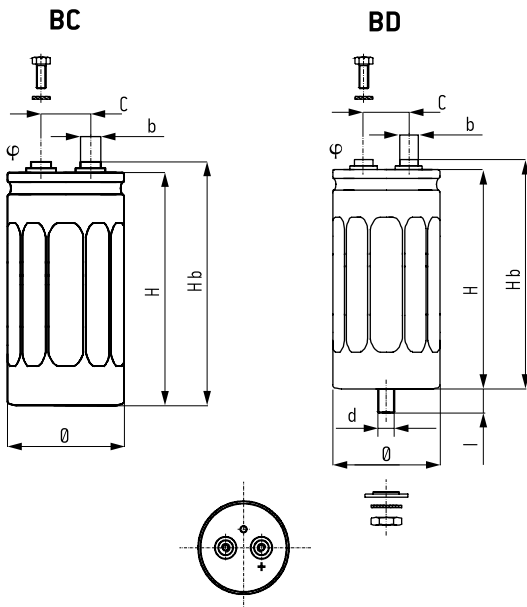
APPLICATIONS

- Power electronics : converters, current inverters
- Switch mode power supplies
- Magnetization, welding machines, flash
- Circuit with high impulse current

Screw terminals : M4 or M5

Tolerance on capacitance at 20°C : -10 +50 %

Operating temperature : - 55°C + 85°C



DIMENSIONS [mm]

$\emptyset \pm 1$	H ± 2	Hb ± 2	C $\pm 0,5$	ϕ	b
36	47	53	12,7	M4	8
36	60	66	12,7	M4	8
36	80	86	12,7	M4	8
51	62	68	22,2	M5	13
51	81	87	22,2	M5	13
51	112	118	22,2	M5	13
66	112	118	28,7	M5	13
73	112	118	31,7	M5	13
77	144	150	31,7	M5	13

\emptyset	d	l	Max. nut torque
36	M8	12 ± 1	4 Nm
≥ 51	M12	16 $\pm 1,5$	10 Nm

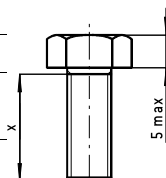
BC
Insulated aluminum case
Hexagonal screws
Spring washers
Fixing clip must be ordered separately

BD
Aluminum case with sleeve
Hexagonal screws
Spring washers
Stud fixing delivered with capacitor (steel hex nut, spring washer)

HEXAGONAL SCREWS

Screwing height between screws and terminals : 3,5 mm max

Max. screw torque :	M4 : 2 Nm (x min 8 mm)
	M5 : 3 Nm (x min 8 mm)



RESISTANCE TO VIBRATIONS

f [Hz]	10 - 2000 Hz
Amplitude	1,5 mm
Acceleration	20 g - 96 m/s ²
t [h]	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Models CO 39, CO 37 - Long life

DIN 41 240 - Climatic category FDP - 55°C + 85°C / 56 days

CECC 30301-017 Issue 4

IEC 60 384.4 long life

Standard endurance test at U_R : $U_R \leq 160$ V : 10 000 h / 85°C
 $U_R > 160$ V : 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between terminals and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

FELSIC 039 - FELSIC 037

CO 37 - CO 39

32 000 h / 85°C

Capacitance [μF]	Case		ESR		Z 10 kHz +20°C max. [mΩ]	II +20°C 5 min max. [mA]	I ~ 100 Hz			Code	
	0 [mm]	H [mm]	Typic [mΩ]	100 Hz +20°C [mΩ]			+40°C max. [A]	+85°C [A]	+105°C [A]	FELSIC 039 [BC]	FELSIC 037 [BD]
Rated voltage 10 V											
15000	36	60	23	35	35	0,9	22	6,5	4,2	A 728321	A 728331
22000	36	80	17	22	25	1,2	22	8,7	5,6	A 728322	A 728332
Rated voltage 16 V											
6800	36	47	35	42	50	0,6	17	4,5	2,9	A 728340	A 738350
10000	36	60	24	35	35	0,9	22	6,4	4,1	A 728341	A 738351
15000	36	80	19	30	25	1,4	22	8,1	5,2	A 728342	A 738352
22000	51	62	26	3	40	2	25	7,3	4,7	A 728343	A 738353
33000	51	81	18	25	30	3	25	10	6,4	A 728344	A 738354
47000	51	112	14	19	20	4	25	13	8,4	A 728345	A 738355
68000	66	112	8	11	12	5	50	18	11,6	A 728346	A 738356
100000	73	112	8	11	11	5	50	19	12,3	A 728347	A 738357
Rated voltage 25 V											
4700	36	47	39	62	54	0,7	16	4,3	2,8	A 728360	A 738370
6800	36	60	27	40	40	1	22	6	3,9	A 728361	A 738371
10000	36	80	21	30	30	1,5	22	7,5	4,8	A 728362	A 738372
22000	51	81	16	21	30	3	25	10	6,4	A 728364	A 738374
33000	51	112	14	20	20	4	25	13	8,4	A 728365	A 738375
47000	66	112	10	13	16	5	50	17,3	11,2	A 728366	A 738376
68000	73	112	10	13	16	5	50	18,4	11,9	A 728367	A 738377
150000	77	144	5	8	10	6	55	20	12,9	A 728368	A 738378
Rated voltage 40 V											
3300	36	47	43	60	60	0,7	15	4,1	2,7	A 728380	A 738390
4700	36	60	29	45	45	1	21	5,7	3,7	A 728381	A 738391
6800	36	80	23	40	35	1,5	22	7,2	4,7	A 728382	A 738392
10000	51	62	28	40	40	2	25	7	4,5	A 728383	A 738393
15000	51	81	22	33	30	3	25	8,7	5,6	A 728384	A 738394
22000	51	112	15	23	23	5	25	12,6	8	A 728385	A 738395
33000	66	112	10	13	18	5	50	16,5	10,6	A 728386	A 738396
47000	73	112	10	13	16	5	50	18,4	11,9	A 728387	A 738397
100000	77	144	5	8	10	6	55	22	14	A 728388	A 738398
Rated voltage 63 V											
2200	36	47	47	80	65	0,7	15	3,9	2,5	A 728400	A 738410
3300	36	60	32	60	50	1,1	20	5,4	3,5	A 728401	A 738411
4700	36	80	25	40	40	1,6	22	6,9	4,5	A 728402	A 738412
6800	51	62	30	45	45	2	25	6,7	4,3	A 728403	A 738413
10000	51	81	23	32	35	3	25	8,5	5,5	A 728404	A 738414
15000	51	112	16	24	24	5	25	12,5	8	A 728405	A 738415
22000	66	112	13	20	16	5	50	15,7	10,1	A 728406	A 738416
33000	73	112	12	16	16	5	50	17,5	11,3	A 728407	A 738417
47000	77	144	7	9	12	6	55	20	12,9	A 728408	A 738418
Rated voltage 100 V											
1000	36	47	58	170	150	0,5	13	3,5	2,3	A 728420	A 738430
1500	36	60	38	120	100	0,8	18	4,9	3,2	A 728421	A 738431
2200	36	80	31	85	70	1,1	22	6,1	4	A 728422	A 738432
3300	51	62	34	85	70	1,8	24	6,3	4,1	A 728423	A 738433
4700	51	81	26	52	50	2,5	25	8	5,2	A 728424	A 738434
6800	51	112	18	36	40	4	25	11,3	7,3	A 728425	A 738435
10000	66	112	16	32	18	5	50	13,9	9	A 728426	A 738436
15000	73	112	16	21	18	6	50	14,8	9,6	A 728427	A 738437
22000	77	144	10	13	14	6	55	18	11,6	A 728428	A 738438
Rated voltage 160 V											
470	36	47	185	270	190	0,4	8	2	1,3	A 728440	A 738450
680	36	60	130	240	130	0,5	9	2,5	1,6	A 728441	A 738451
1000	36	80	100	170	95	0,9	12	3,1	2	A 728442	A 738452
1500	51	62	72	130	95	1,3	16	4,2	2,8	A 728443	A 738453
2200	51	81	52	85	74	2	20	5,4	3,6	A 728444	A 738454
3300	51	112	35	50	60	3	25	8	5,1	A 728445	A 738455
4700	66	112	24	40	40	4	39	10,5	7	A 728446	A 738456
6800	73	112	16	25	40	5	50	13,7	8,8	A 728447	A 738457
10000	77	144	12	17	16	6	55	18	11,6	A 728448	A 738458

FELSIC 039 - FELIC 037

32 000 h / 85°C

CO 37 - CO 39

Capacitance [μF]	Case		ESR		Z 10 kHz +20°C max. [m Ω]	II +20°C 5 min max. [mA]	I \sim 100 Hz		Code	
	\emptyset [mm]	H [mm]	Typic [m Ω]	100 Hz +20°C [m Ω]			+40°C max. [A]	+85°C [A]	FELSIC 039 [BC]	FELIC 037 [BD]
Rated voltage 250 V										
220	36	47	250	800	270	0,3	5	1,2	A 728480	A 738490
330	36	60	180	450	200	0,5	7	1,8	A 728481	A 738491
470	36	80	120	300	150	0,7	9	2,3	A 728482	A 738492
680	51	62	100	200	120	1	11	3	A 728483	A 738493
1000	51	81	80	160	90	1,5	14	3,7	A 728484	A 738494
3300	73	112	25	45	40	4	36	9,6	A 728487	A 738497
4700	77	144	20	37	22	6	43	11,5	A 728488	A 738498
Rated voltage 350 V										
150	36	47	530	800	360	0,3	5	1,2	A 728800	A 738810
220	36	60	350	580	290	0,4	5	1,4	A 728801	A 738811
330	36	80	230	390	170	0,7	7	1,9	A 728802	A 738812
470	51	62	180	300	160	0,9	10	2,6	A 728803	A 738813
680	51	81	120	200	110	1,4	14	3,6	A 728804	A 738814
1000	51	112	80	120	70	2	19	5	A 728805	A 738815
1500	66	112	60	90	48	3	26	6,8	A 728806	A 738816
2200	73	112	50	70	44	4	30	7,9	A 728807	A 738817
3300	77	144	30	45	26	6	43	11,5	A 728808	A 738818
Rated voltage 400 V										
100	36	47	700	1500	1100	1,1	3	0,8	A 728830	A 738840
150	36	60	560	1200	760	1,4	4	1,0	A 728831	A 738841
220	36	80	400	850	520	1,7	5	1,4	A 728832	A 738842
330	51	62	300	550	380	2,0	7	1,8	A 728833	A 738843
470	51	81	170	320	160	2,5	10	2,6	A 728834	A 738844
680	51	112	130	230	180	3,0	13	3,5	A 728835	A 738845
1000	66	112	80	150	120	3,5	19	5,0	A 728836	A 738846
1500	73	112	55	100	95	4,0	24	6,3	A 728837	A 738847
2200	77	144	40	85	60	5,0	30	8,0	A 728848	A 738848

FELSIK 039 - FELSIK 037

CO 37 - CO 39

32 000 h / 85°C

PEAK VOLTAGE (V)

1000 cycles, without ripple current
 Up : Repetitive standard peak voltage (30 s)
 Us : Repetitive surge voltage (0,1 s)
 Do not exceed this value safely

U _R	10 V	16 V	25 V	40 V	63 V	100 V	160 V	250 V	350 V	400 V
Up	11,5	18	29	46	72	115	184	288	385	440
Us							235	290	405	450

PERMISSIBLE REPETITIVE PEAK CURRENT I_p :

If given corresponding max r.m.s. currents are not exceeded, peak current values are as follows :

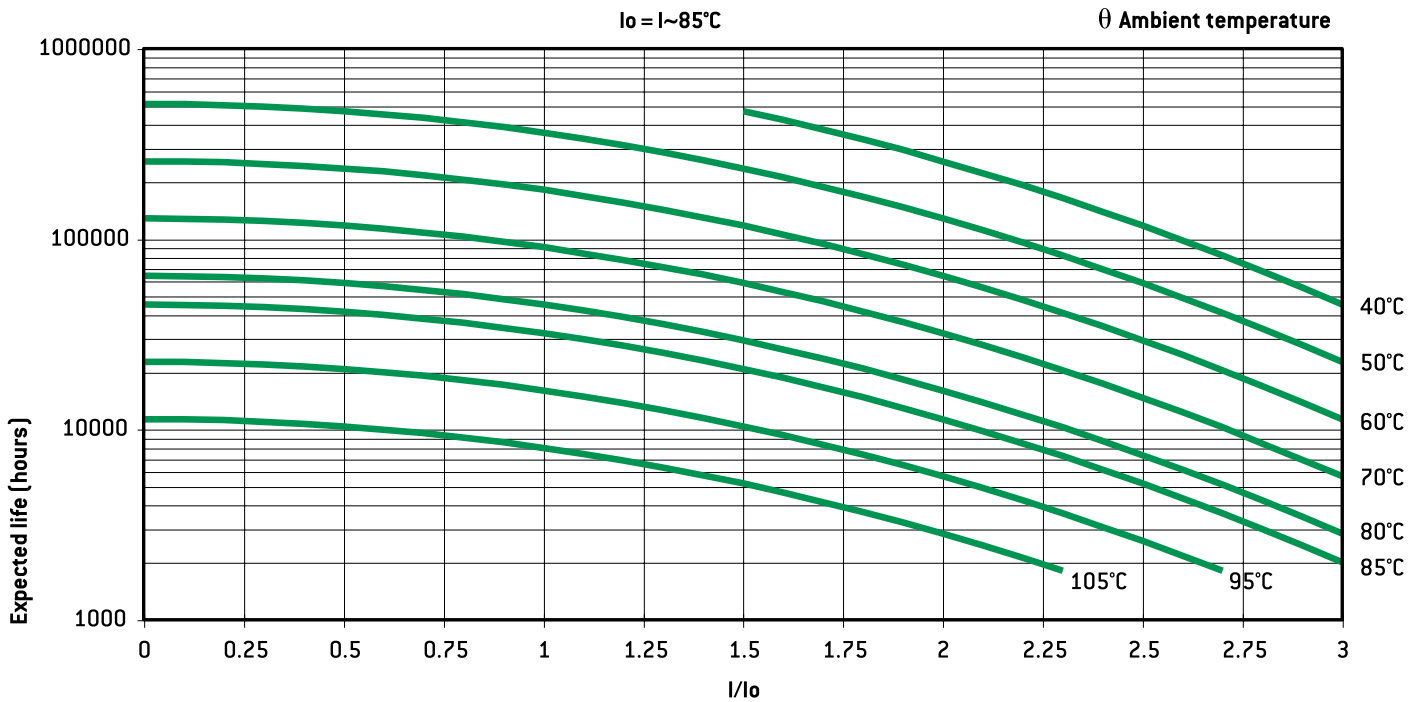
Dimensions (mm)		I _p (A)	I _{rms} max. (A)
Ø	H	40°C	
36	47	400	22
36	60	450	22
36	80	600	22
51	62	700	25
51	81	800	25
51	112	1100	25
66	112	1900	50
73	112	3000	50
77	144	4200	55

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

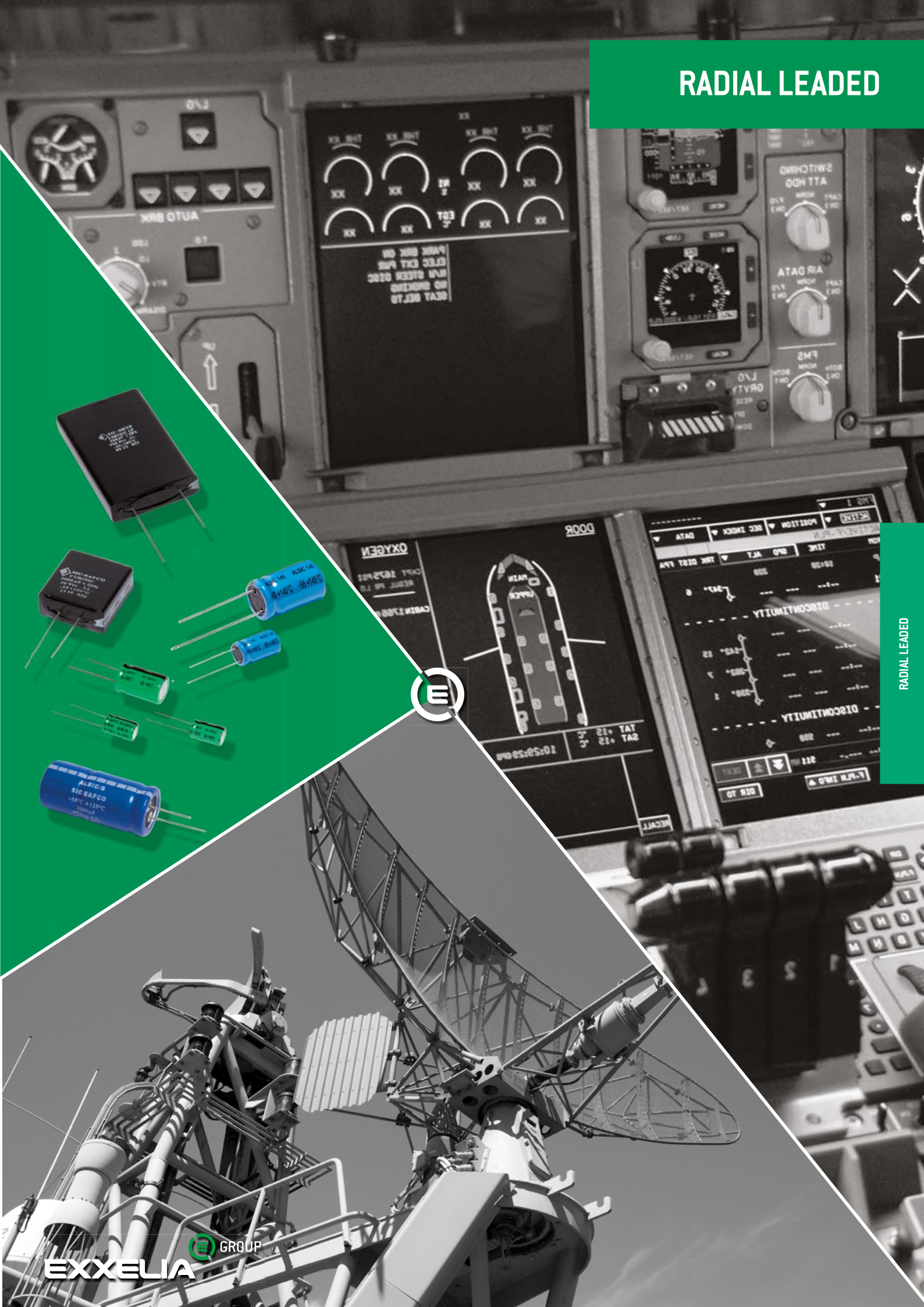
versus frequency f :
 I_{rms} : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	50 000
I	0,8 x I _{rms}	I _{rms}	1,2 x I _{rms}	1,3 x I _{rms}	1,35 x I _{rms}	1,5 x I _{rms}	1,6 x I _{rms}

EXPECTED LIFE as a function of temperature and ripple current



RADIAL LEADED



RADIAL LEADED

CUBIC

8 000 h / 105°C

10 V ... 400 V	100 μ F ... 33 000 μ F	35 x 35 x 16	- 55°C + 105°C	Long Life Time
450 V	100 μ F ... 220 μ F	35 x 50 x 16	- 55°C + 85°C	



APPLICATIONS

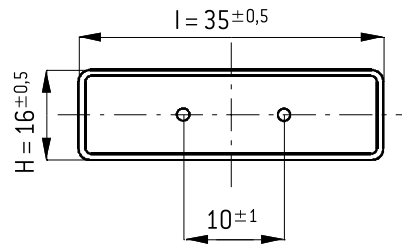
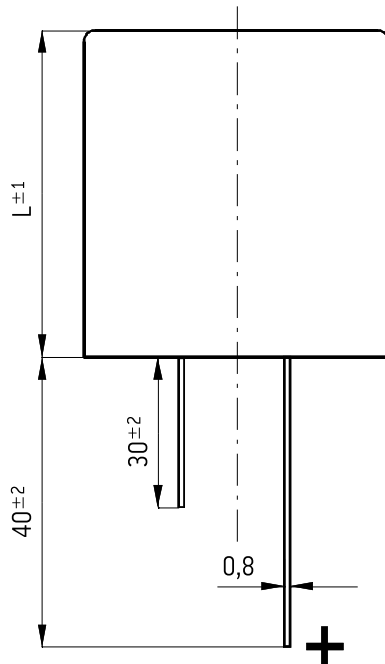
- Low profile printed circuit mounting
- Possible thermal dissipation per conduction through lower and upper surface
- Switch mode power supplies, impulse current

Aluminum case : Tin coated leads

Negative pole marked

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 105°C



SPECIFICATIONS

CECC 30300 Long life

IEC 60 384-4 Long life

DIN 41 240 climatic category : - 55 + 105°C

and GPF : - 55°C + 105°C / 56 days

- 55°C + 85°C / 56 days

RESISTANCE TO VIBRATIONS

Frequency range	: 10 – 2000 Hz
Displacement amplitude	: 1.5 mm
or max acceleration	: 20 g – 196 m/s ²
Duration	: 3 x 2 hours

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between leads and mounting hardware : 1000 V

Fire resistance : self extinguish 15 s. (IEC 60 695-2-2)

8 000 h / 105°C

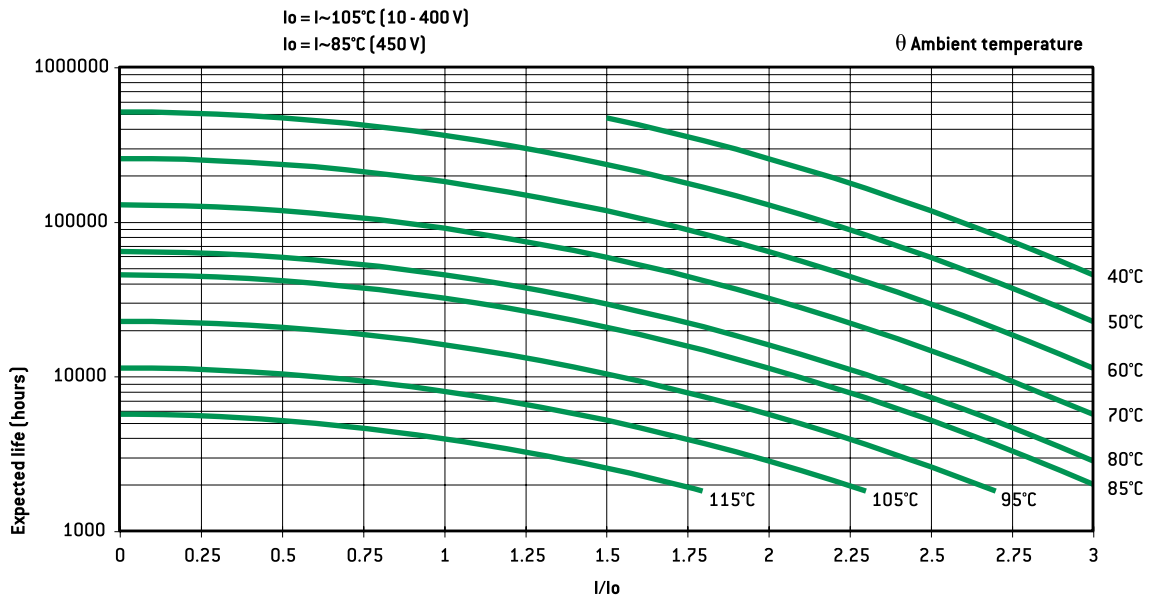
Capacitance (μF)	Case			Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C max. Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	I (mm)	L (mm)	H (mm)					+40°C max. (A)	+105°C - U _R < 450 V +85°C - U _R = 450 V (A)	
Rated voltage 10 V										
15000	35	35	16	28	20	18	0,90	16,8	4,5	A 710000
22000	35	50	16	35	17	14	1,30	20	5,8	A 710001
33000	35	50	16	47	15	11	1,98	20	6,1	A 710002
Rated voltage 16 V										
10000	35	35	16	18	19	17	0,96	17,3	4,7	A 710020
15000	35	35	16	25	18	15	1,40	18	4,8	A 710022
22000	35	50	16	30	16	13	2,10	20	5,9	A 710021
Rated voltage 25 V										
6800	35	35	16	17	27	19	1,00	14,5	3,9	A 710040
10000	35	50	16	17	18	15	1,50	20	5,6	A 710041
15000	35	50	16	21	15	13	2,20	20	6,1	A 710042
Rated voltage 35 V										
5600	35	35	16	14	27	19	1,20	14,5	3,9	A 710060
6800	35	35	16	15	24	17	1,40	15,4	4,1	A 710061
10000	35	50	16	17	19	13	2,10	20	5,5	A 710062
Rated voltage 40 V										
4700	35	35	16	12	26	18	1,10	15	4	A 710080
6800	35	50	16	13	21	13	1,60	19	5,2	A 710081
Rated voltage 50 V										
3300	35	35	16	10	33	26	0,99	13	3,5	A 710100
5000	35	35	16	10	20	12	1,50	17	4,5	A 710101
8200	35	50	16	15	20	12	2,50	20	5,3	A 710102
Rated voltage 63 V										
2200	35	35	16	10	42	25	0,83	12	3,2	A 710120
3300	35	50	16	10	31	20	1,20	16	4,3	A 710121
4700	35	50	16	12	28	18	1,80	17	4,5	A 710122
Rated voltage 80 V										
1500	35	35	16	10	52	30	0,72	10,4	2,8	A 710140
2200	35	50	16	10	43	17	1,10	13,6	3,6	A 710141
Rated voltage 100 V										
1000	35	35	16	10	51	35	0,60	10,8	2,8	A 710160
1500	35	50	16	10	36	23	0,90	14,9	4	A 710161
1800	35	50	16	10	29	19	1,1	16,6	4,4	A 710162
Rated voltage 160 V										
470	35	35	16	11	170	130	0,45	5,8	1,6	A 710180
680	35	50	16	11	150	110	0,66	7,3	1,9	A 710181
Rated voltage 200 V										
330	35	35	16	12	250	160	0,39	4,8	1,3	A 710200
470	35	50	16	12	160	120	0,56	7,1	1,9	A 710201
680	35	50	16	12	150	110	0,81	7,3	1,9	A 710202
Rated voltage 250 V										
330	35	35	16	12	260	170	0,50	4,7	1,3	A 710220
470	35	50	16	12	160	120	0,70	7,1	1,9	A 710221
Rated voltage 350 V										
220	35	35	16	10	280	130	0,46	4,6	1,2	A 710240
330	35	50	16	10	180	80	0,69	6,6	1,8	A 710241
Rated voltage 400 V										
100	35	35	16	10	420	260	0,80	3,8	1	A 710260
150	35	35	16	10	280	150	1,00	4,6	1,2	A 710262
220	35	50	16	10	200	130	1,20	6,3	1,7	A 710261
Rated voltage 450 V										
100	35	35	16	10	600	320	0,80	3,1	0,8	A 710280
150	34	50	16	10	420	220	1,00	4,4	1,2	A 710281
220	35	50	16	10	300	160	1,30	5,2	1,4	A 710282

CUBIC

8 000 h / 105°C

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

$I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
$I \sim$	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

8 000 h / 105°C

10 V ... 400 V	120 μ F ... 68 000 μ F	45 x 12 x 35 45 x 12 x 50 45 x 12 x 75	- 55°C + 105°C	Long Life Time
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APPLICATIONS

- Low profile printed circuit mounting
- Possible mounting with 45 x 12 bracket (A691057)
- Possible thermal dissipation per conduction through lower and upper surface
- Switch mode power supplies, impulse current

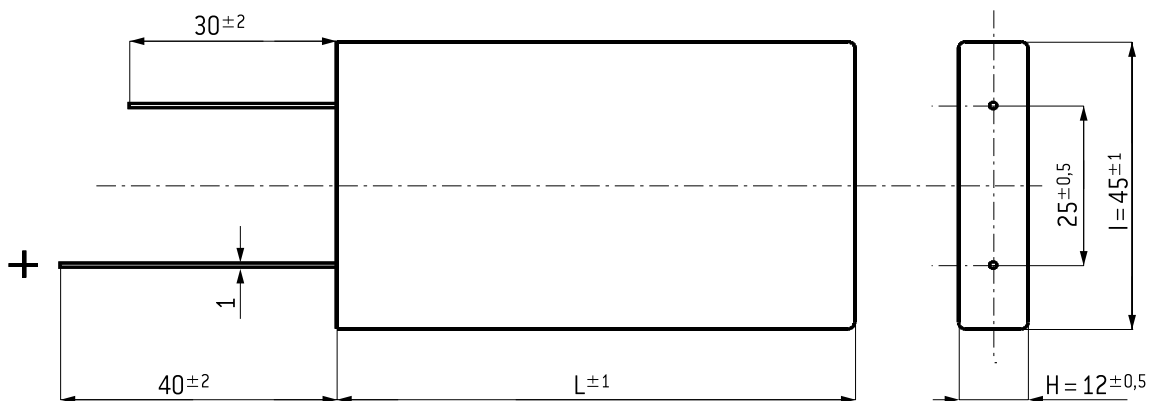
Aluminum case : Tin coated leads

Negative pole marked

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 105°C

12 mm height. The best capacitance per area unit



SPECIFICATIONS

CECC 30300 Long life

IEC 60 384-4 Long life

DIN 41 240 climatic category : - 55 + 105°C

and GPF : - 55°C + 105°C / 56 days

RESISTANCE TO VIBRATIONS

Frequency range : 10 – 2000 Hz

Displacement amplitude : 1.5 mm

or max acceleration : 20 g – 196 m/s²

Duration : 3 x 2 hours

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between leads and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s. (IEC 60 695-2-2)

CUBISIC LP

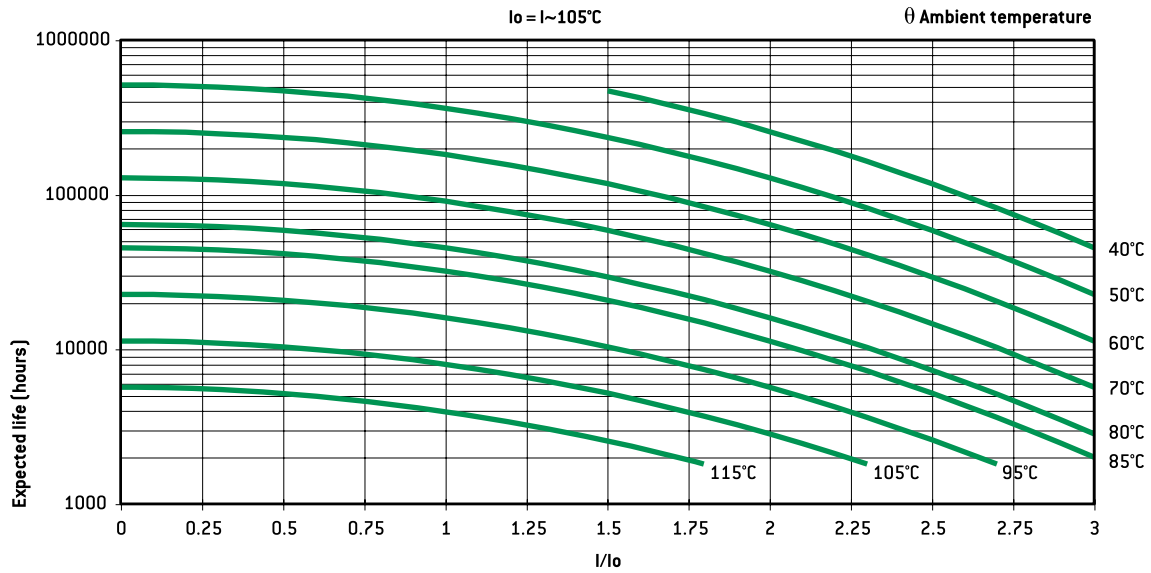
8 000 h / 105°C

Capacitance (μF)	Case			Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	I _L +20°C 5 min. max. (mA)	I _r 100 Hz		Code
	I (mm)	L (mm)	H (mm)					+40°C max. (A)	+105°C max. (A)	
Rated voltage 10 V										
22000	45	50	12	62	30	22	0,7	17	4,6	A 712000
47000	45	75	12	84	19	15	1,4	20	6,9	A 712001
68000	45	75	12	96	15	10	2,0	20	7,8	A 712002
Rated voltage 16 V										
15000	45	35	12	59	42	31	0,7	12	3,3	A 712020
22000	45	50	12	62	30	22	1,1	17	4,6	A 712021
33000	45	50	12	78	25	20	1,6	19	5,0	A 712022
47000	45	75	12	88	20	16	2,2	20	6,7	A 712023
Rated voltage 25 V										
22000	45	50	12	66	32	24	1,7	17	4,4	A 712040
33000	45	75	12	68	22	18	2,5	20	6,4	A 712041
Rated voltage 35 V										
10000	45	35	12	42	45	35	1,1	12	3,2	A 712060
15000	45	50	12	45	32	22	1,6	17	4,4	A 712061
22000	45	75	12	56	27	24	2,3	20	5,8	A 712062
Rated voltage 40 V										
6800	45	35	12	32	50	38	0,8	11	3,0	A 712080
10000	45	50	12	32	34	26	1,2	16	4,3	A 712081
Rated voltage 50 V										
10000	45	50	12	33	35	27	1,5	16	4,2	A 712100
15000	45	75	12	28	20	15	2,3	20	6,7	A 712101
Rated voltage 63 V										
6800	45	50	12	23	36	25	1,3	16	4,2	A 712120
10000	45	75	12	21	22	17	1,9	20	6,4	A 712121
Rated voltage 80 V										
4700	45	50	12	15	35	23	1,1	16	4,2	A 712140
6800	45	75	12	16	25	19	1,6	20	6,0	A 712141
Rated voltage 100 V										
2200	45	50	12	10	40	25	0,7	15	3,9	A 712160
3300	45	75	12	10	30	22	1,0	20	5,5	A 712161
Rated voltage 160 V										
1000	45	50	12	10	90	70	0,5	10	2,6	A 712180
1500	45	75	12	10	70	48	0,7	14	3,6	A 712181
Rated voltage 200 V										
470	45	35	12	10	200	130	0,3	5,6	1,5	A 712200
680	45	50	12	10	100	63	0,4	9,3	2,5	A 712201
1000	45	75	12	10	90	57	0,6	12	3,2	A 712202
Rated voltage 250 V										
470	45	50	12	10	180	120	0,4	7	1,9	A 712220
680	45	75	12	10	100	63	0,5	11	3,0	A 712221
Rated voltage 350 V										
330	45	50	12	10	280	180	0,3	5,6	1,5	A 712240
470	45	75	12	10	220	100	0,5	7,6	2,0	A 712241
Rated voltage 400 V										
220	45	50	12	10	320	220	0,3	5,2	1,4	A 712260
330	45	75	12	10	220	110	0,4	7,6	2,0	A 712261

8 000 h / 105°C

EXPECTED LIFE

as a function of temperature and ripple current

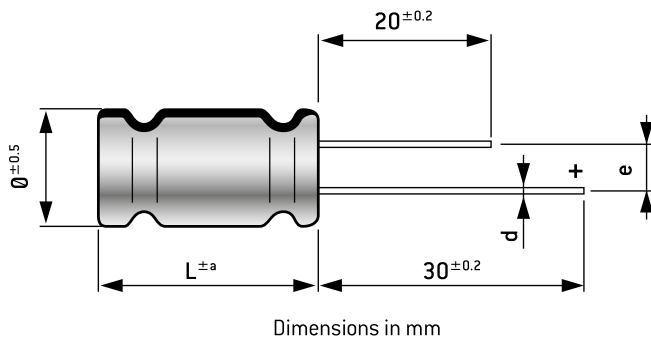
**PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)**versus frequency f : $I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

ALSiC 145 20G

2 000 h / 145°C

10 V ... 110 V	220 μ F ... 3300 μ F	\emptyset 18 mm ... \emptyset 22.5 mm	- 55°C + 145°C	Long life time
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\emptyset (mm)	$e \pm 0.5$	d	b	c	$\pm a$
18	7.5	0.8	15	20	1
18	7.5	0.8	25	30	2

SPECIFICATIONS

NFC 83 110 - Long life

CECC 30 300

IEC 60 384-4 Long life

Standard endurance test at U_R : 5000h / 125°C

Climatic category GPF: -55°C + 145°C / 56 days

APPLICATIONS

- Automotive
- High frequency switched mode power supplies
- High ripple current
- Low inductance
- Low impedance

Insulating aluminum case

Tin coated leads

Negative pole marked

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 145°C

RESISTANCE TO VIBRATIONS

Hb (mm)	Standard
f (Hz)	10 - 55 Hz
Amplitude	0.75 mm
Acceleration	20 g - 98 m/s ²
t (h)	3 x 2 h

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between

leads and mounting hardware

: 100 M Ω

Test voltage at 50 Hz 1 min. between

terminals and mounting hardware

: 1 000 V

Fire resistance

: self extinguish 30 s

[IEC 60 695-2-2] without PVC

ALSiC 145 20G

2 000 h / 145°C

Capacitance (μF)	Case		ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 100 kHz		I. leak +20°C 5 min. max. (mA)	I~ +145°C		Code
	\varnothing (mm)	L (mm)		+20°C max. ($\text{m}\Omega$)	-10°C max. ($\text{m}\Omega$)		100 Hz (A)	100 kHz (A)	
Rated voltage / Peak voltage: 10/12V									
2200	18	35	50	25	50	70	2,6	4,1	A776000
2200	18	40	50	40	80	70	2,8	4,5	A776001
Rated voltage / Peak voltage: 16/18V									
1500	18	40	80	60	120	75	2,2	3,6	A776002
Rated voltage / Peak voltage: 40/46V									
2200	18	30	50	40	80	270	2,5	4	A776003
3300	18	35	45	35	70	400	2,7	4,4	A776004
3300	22,5	40	30	20	40	400	4	6,3	A776005
Rated voltage / Peak voltage: 50/58V									
1800	18	35	60	50	100	270	2,4	3,8	A776006
2200	18	35	70	45	85	330	2,2	3,5	A776007
2700	18	40	50	40	80	400	2,8	4,5	A776008
Rated voltage / Peak voltage: 63/72V									
470	18	35	145	90	170	93	1,5	2,4	A776009
560	18	35	135	85	160	110	1,7	2,8	A776010
680	18	35	80	30	55	130	2	3,3	A776011
820	18	35	75	28	52	160	2,1	3,4	A776012
1000	18	30	70	50	100	190	2,1	3,3	A776013
Rated voltage / Peak voltage: 100/115V									
220	18	25	480	280	510	70	0,7	1,1	A776014
330	18	25	450	250	450	105	0,7	1,2	A776015
330	18	35	390	190	340	105	0,9	1,5	A776016
470	18	35	300	150	270	140	1,1	1,7	A776017

MAX ESR 100 Hz, 20°C

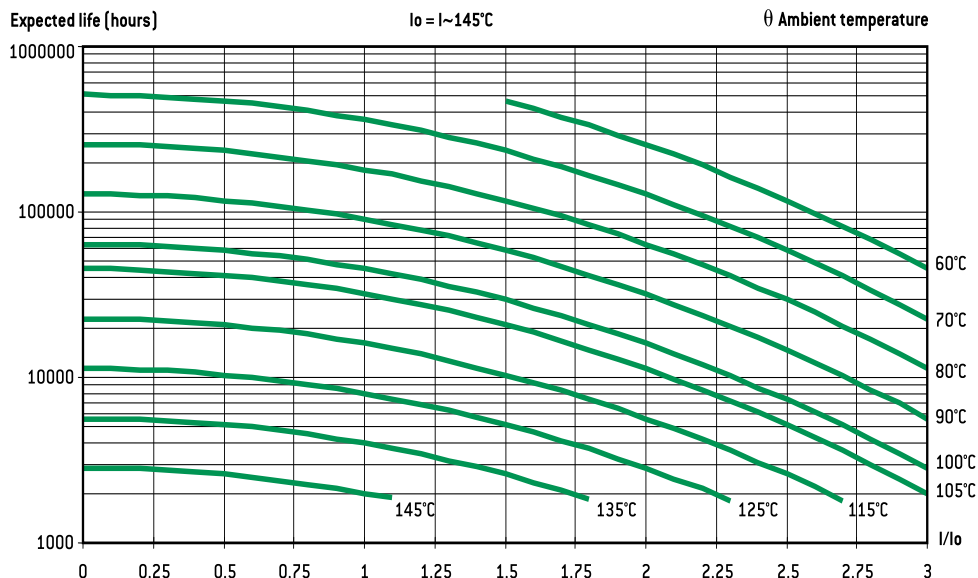
ESR max \cong ESR typ. x 1.3

MAX IMPEDANCE 100 kHz, 20°C

Z max \cong Z typ. x 1.3

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

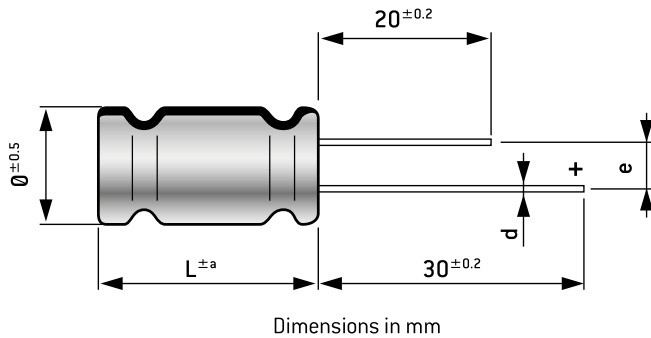
 $I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	0,8 x I~	I~	1,2 x I~	1,3 x I~	1,35 x I~	1,5 x I~	1,6 x I~

ALSiC 20G

8 000 h / 105°C

10V ... 500V	33 μ F ... 80 000 μ F	\emptyset 18 mm ... \emptyset 35.5 mm	- 55°C + 105°C	Long life time
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\emptyset (mm)	$e \pm 0.5$	d	$b \pm 2$	$\pm a$	$c \pm 2$
18	7.5	0.8	15	1	20
22.5 - 35.5	8.3	1.2	25	2	30

SPECIFICATIONS

NFC 83 110 - Long life

CECC 30 300

IEC 60 384-4 Long life

Standard endurance test at U_R : 5000h / 105°C

Climatic category GPF: - 55°C + 105°C / 56 days

APPLICATIONS

- Automotive
- High frequency switched mode power supplies
- High ripple current
- Low inductance
- Low impedance

Insulating aluminum case

Tin coated leads

Negative pole marked

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 105°C

RESISTANCE TO VIBRATIONS

Hb (mm)	Standard
f (Hz)	10 - 55 Hz
Amplitude	0.75 mm
Acceleration	20 g - 98 m/s ²
t (h)	3 x 2 h

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between

leads and mounting hardware

: 100 M Ω

Test voltage at 50 Hz 1 min. between

terminals and mounting hardware

: 1 000 V

Fire resistance

: self extinguish 30 s
(IEC 60 695-2-2)

ALSiC 20G

8 000 h / 105°C

Capacitance (μ F)	Case		ESR 100 Hz +20°C Typic (m Ω)	Z F(1) +20°C max. (m Ω)	I. leak +20°C 5 min. max. (mA)	I _r +105°C 100 Hz (A)	Code
	\emptyset (mm)	L (mm)					
Rated voltage/Peak voltage: 10 / 12 V							
15000	18	40	25	20	0,9	3,9	A776100
Rated voltage/Peak voltage: 16 / 18V							
8200	18	35	40	25	0,4	2,9	A776101
14000	18	40	25	20	1,3	3,9	A776102
66000	35,5	45	13	11	6,3	20	A776103
80000	35,5	50	13	11	8,1	20	A776104
Rated voltage/Peak voltage: 25 / 29V							
3700	22,5	40	35	25	0,6	3,7	A776105
Rated voltage/Peak voltage: 35 / 40V							
2200	18	35	40	30	0,42	2,9	A776106
2700	18	35	30	18	0,29	3,3	A776107
3300	18	30	35	26	0,35	2,9	A776108
4700	18	35	30	25	0,5	3,3	A776109
5800	18	40	30	25	1,2	3,5	A776110
Rated voltage/Peak voltage: 50 / 58V							
2200	18	35	40	27	0,33	2,9	A776111
2700	18	35	30	18	0,41	3,3	A776112
3000	18	35	40	27	0,45	2,9	A776113
3300	18	40	25	15	0,5	3,9	A776114
Rated voltage/Peak voltage: 63 / 72V							
600	22,5	25	75	33	0,3	2,1	A776115
2700	25,5	40	8	30	0,51	4,3	A776116
3000	18	40	30	20	0,57	3,5	A776117
4700	25,5	40	15	35	1,8	3,2	A776118
Rated voltage/Peak voltage: 100 / 115V							
2200	25,5	40	10	10			A776119
Rated voltage: 160 V							
220	22,5	25	12	0,5	210	0,8	A776120
330	22,5	30	12	0,3	320	1,1	A776121
470	25,5	30	12	0,2	450	1,5	A776122
1000	25,5	40	12	0,1	960	2,3	A776123
2200	35,5	40	17	0,07	2100	3,4	A776124
Rated voltage: 200 V							
220	22,5	25	12	0,5	260	0,8	A776125
330	22,5	30	12	0,3	390	1,1	A776126
470	25,5	30	12	0,2	560	1,5	A776127
680	25,5	40	12	0,15	810	1,9	A776128
1000	25,5	50	12	0,1	1200	2,6	A776129
1500	30,5	50	15	0,09	1800	3	A776130
2200	35,5	50	15	0,055	2600	4,2	A776131
Rated voltage: 250 V							
100	22,5	25	12	0,8	150	0,62	A776132
150	22,5	25	12	0,6	220	0,72	A776133
220	22,5	30	12	0,4	330	1	A776134
330	25,5	30	12	0,25	500	1,3	A776135
390	22,5	40	12	0,22	600	1,4	A776136
470	25,5	40	12	0,16	700	1,8	A776137
680	25,5	50	12	0,13	1000	2,3	A776138
1000	30,5	50	12	0,1	1500	2,9	A776139
1500	35,5	50	12	0,07	2300	3,7	A776140

F(1): $\emptyset \leq 18$ mm = 100 kHz $\emptyset > 18$ mm = 10 kHz

ALSF 20G

8 000 h / 105°C

Capacitance (μ F)	Case		ESR 100 Hz +20°C Typic (m Ω)	Z F(1)	I _{leak} +20°C 5 min. max. (mA)	I _~ +105°C	Code
	\emptyset (mm)	L (mm)		+20°C max. (m Ω)		100 Hz (A)	
Rated voltage: 350V							
100	22,5	25	12	0,7	210	0,67	A776141
220	22,5	40	12	0,35	460	1,2	A776142
470	30,5	40	12	0,15	1000	2,1	A776143
680	35,5	40	12	0,11	1400	2,7	A776144
Rated voltage: 400V							
68	22,5	25	10	1,2	650	0,51	A776145
100	22,5	30	10	0,9	800	0,64	A776146
150	22,5	40	10	0,6	1000	0,89	A776147
220	25,5	40	10	0,4	1200	1,3	A776148
330	30,5	40	10	0,3	1500	1,5	A776149
470	30,5	50	10	0,2	1800	2	A776150
680	35,5	50	12	0,15	2100	2,5	A776151
Rated voltage: 450V							
33	18	35	5	1,8	730	0,43	A776152
47	18	25	10	2	600	0,33	A776153
47	18	35	10	2	600	0,41	A776154
47	22,5	25	10	1,7	600	0,43	A776155
68	22,5	25	10	1,2	700	0,51	A776156
100	22,5	40	10	1,1	800	0,65	A776157
150	22,5	40	10	0,7	1000	0,82	A776158
220	25,5	50	10	0,4	1250	1,3	A776159
330	30,5	40	10	0,3	1500	1,5	A776160
470	35,5	40	10	0,2	1800	2	A776161
Rated voltage: 500V							
47	22,5	30	12	3	620	0,35	A776162
100	25,5	40	12	1,8	900	0,55	A776163
150	30,5	40	12	1	1100	0,82	A776164
220	30,5	50	12	0,4	1350	1,4	A776165
330	35,5	50	12	0,3	1600	1,8	A776166

F(1): $\emptyset \leq 18$ mm = 100 kHz
 $\emptyset > 18$ mm = 10 kHz

MAX ESR 100 Hz, 20°C

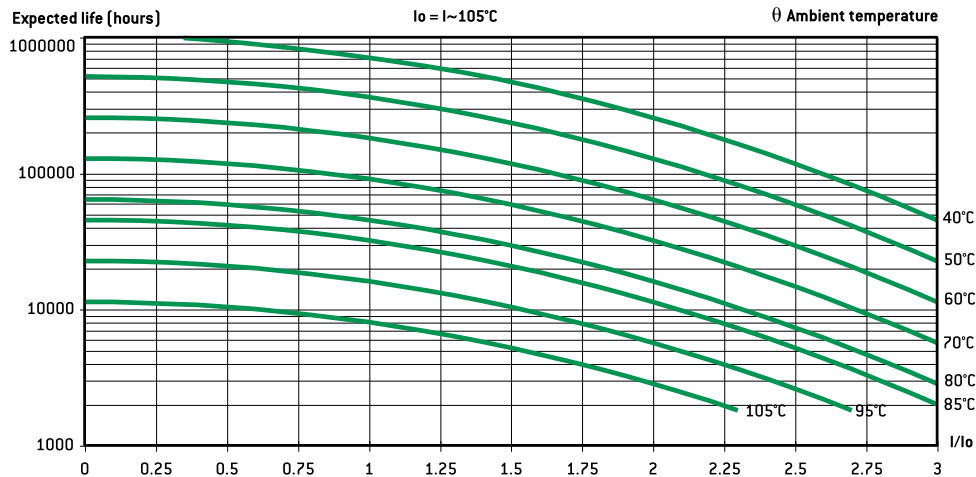
ESR max \cong ESR typ. x 1.3

MAX IMPEDANCE 100 kHz, 20°C

Z max \cong Z typ. x 1.3

EXPECTED LIFE

As a function of temperature and ripple current.



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I_~ : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	0,8 x I _~	I _~	1,2 x I _~	1,3 x I _~	1,35 x I _~	1,5 x I _~	1,6 x I _~



SNAPSIC 125

8 000 h / 125°C

16 V ... 100 V	470 μ F ... 47 000 μ F	\varnothing 22 mm ... \varnothing 35 mm	- 55°C + 125°C	Long Life Time
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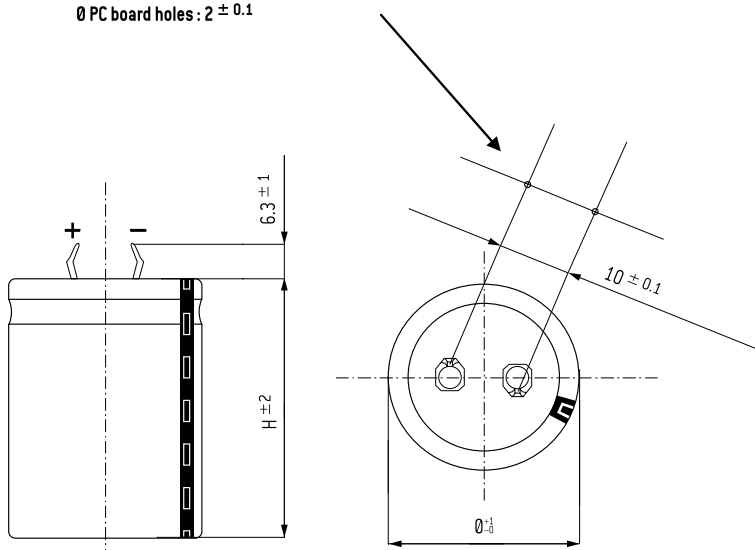
APPLICATIONS

- High frequency switched mode power supplies
- High ripple current
- Low impedance

Insulating aluminum case pure tin coated
Snap-in pins negative
Pole marked

Tolerance on capacitance at 20°C : - 20 + 20 %
Operating temperature : - 55°C + 125°C

\varnothing PC board holes : 2 ± 0.1



Can size	\varnothing (mm)	H (mm)
1	22	25
2	22	30
3*	22	40
4*	25	25
5	25	30
6	25	40
7*	25	50
8*	30	25
9*	30	30
10	30	35
11	30	40
12*	30	45
13*	30	50
14*	35	30
15*	35	35
16	35	40
17*	35	45
18	35	50

* Out of range

Standard pins can be replaced by 4.5 mm max pins on request.

SPECIFICATIONS

NFC 83 110 - Long life
CECC 30 300
IEC 60 384-4 Long life
Climatic category: - 55°C + 125°C / 56 days

RESISTANCE TO VIBRATIONS

Frequency : 10 – 500 Hz
Displacement amplitude or
max acceleration : 0,75 mm
: 10 g – 98 m/s²
Duration : 3 x 10 sweep cycles

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between pins and mounting hardware : 100 M Ω
Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
Fire resistance : self extinguish 30 s. (IEC 60 695-2-2) Without PVC

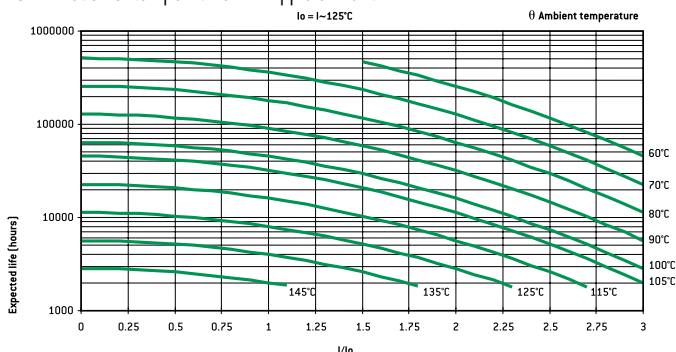
SNAPSIC 125

8 000 h / 125°C

Capacitance (μF)	Dimension		Can size	$\text{Tan}\delta$ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 10 kHz +20°C Typic ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I_{\sim} +125°C max.		Code
	\emptyset (mm)	H (mm)						100 Hz (A)	10 kHz (A)	
Rated voltage 16/18 V										
4700	22	25	1	20	45	35	0,23	2,7	4,0	A 718000
6800	22	30	2	22	35	28	0,33	3,2	4,9	A 718001
10000	25	30	5	28	30	25	0,48	3,8	5,7	A 718002
15000	25	40	6	38	27	19	0,72	4,5	6,7	A 718003
22000	30	40	11	41	20	17	1,1	5,8	8,7	A 718006
33000	35	40	16	50	16	14	1,6	7,1	11	A 718007
47000	35	50	18	62	14	12	2,2	8,3	12	A 718010
Rated voltage 25/29 V										
3300	22	25	1	16	50	38	0,25	2,5	3,8	A 718020
4700	25	30	5	19	43	31	0,35	3,2	4,7	A 718022
6800	25	40	6	19	30	20	0,51	4,3	6,4	A 718023
10000	30	35	10	28	30	19	0,75	4,5	6,7	A 718025
15000	30	40	11	31	22	17	1,1	5,5	8,3	A 718026
22000	35	50	18	41	20	16	1,7	7,0	10	A 718028
33000	35	50	18	56	18	14	2,4	7,3	11	A 718030
Rated voltage 40/46 V										
2200	22	30	2	12	60	45	0,26	2,5	3,7	A 718041
3300	25	30	5	13	42	32	0,40	3,2	4,8	A 718042
4700	25	40	6	15	33	24	0,56	4,1	6,1	A 718043
6800	30	35	10	19	30	21	0,82	4,5	6,7	A 718045
10000	35	40	16	26	28	19	1,2	5,4	8,0	A 718047
15000	35	50	18	31	22	16	1,8	6,6	10	A 718048
22000	35	50	18	41	20	14	2,6	7	10	A 718050
Rated voltage 50/58 V										
1500	22	25	1	10	70	60	0,23	2,1	3,2	A 718060
2200	25	30	5	9	45	38	0,33	3,1	4,6	A 718062
3300	25	40	6	10	32	27	0,50	4,1	6,2	A 718063
4700	30	35	10	13	30	22	0,71	4,5	6,7	A 718065
6800	30	40	11	17	27	21	1,0	5,0	7,5	A 718066
10000	35	50	18	21	22	17	1,5	6,6	10	A 718068
15000	35	50	18	28	20	14	2,3	7	10	A 718070
Rated voltage 63/72 V										
1000	22	30	2	7	60	46	0,19	2,5	3,7	A 718081
1500	25	30	5	8	50	43	0,28	2,9	4,4	A 718082
2200	25	40	6	8	35	30	0,42	3,9	5,9	A 718083
2700	25	40	6	8	30	25	0,51	4,3	6,4	A 718084
3300	30	40	11	9	30	22	0,62	5,2	7,8	A 718086
4700	35	40	16	12	28	20	0,89	5,4	8,0	A 718087
6800	35	50	18	16	25	19	1,3	6,2	9,3	A 718088
10000	35	50	18	22	23	18	1,9	6,5	9,7	A 718090
Rated voltage 100/115 V										
470	22	30	2	8	190	130	0,14	1,4	2,1	A 718101
680	25	30	5	10	150	100	0,20	1,7	2,5	A 718102
1000	25	40	6	10	100	70	0,30	2,3	3,5	A 718103
1500	30	35	10	10	70	54	0,45	2,9	4,4	A 718105
2200	35	40	16	12	60	46	0,66	3,7	5,5	A 718107
3300	35	50	18	17	55	42	1,0	4,2	6,3	A 718108
4700	35	50	18	22	50	38	1,4	4,4	6,6	A 718110

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f : I_{\sim} : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I_{\sim}	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$

SNAPSIC HV

8 000 h / 105°C

160 V ... 500 V	47 μ F ... 2200 μ F	\emptyset 22 mm ... \emptyset 35 mm	- 55°C + 105°C	Long Life Time
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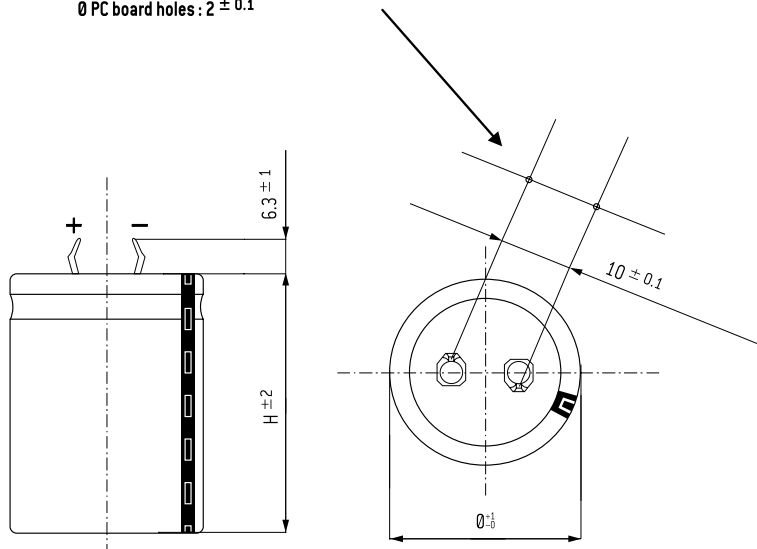
APPLICATIONS

- For solid PC board mounting
- Switch mode power supplies
- Impulse current

Fixing : Printed SNAP-IN pins

Tolerance on capacitance at 20°C : $\pm 20\%$
 Operating temperature : $-55^\circ\text{C} + 105^\circ\text{C}$

\emptyset PC board holes : 2 ± 0.1



Can size	\emptyset (mm)	H (mm)
1	22	25
2	22	30
3	22	40
4*	25	25
5	25	30
6	25	40
7	25	50
8*	30	25
9	30	30
10	30	35
11	30	40
12*	30	45
13*	30	50
14	35	30
15	35	35
16	35	40
17*	35	45
18	35	50

* Out of range

Standard pins can be replaced by 4,5mm max pins on request

SPECIFICATIONS

CECC 30300 - Long life

DIN 41 240 - Climatic category $-55^\circ\text{C} + 105^\circ\text{C} / 56$ days

IEC 60 384.4 Long life

Standard endurance test at U_R : 2000 h / 105°C

RESISTANCE TO VIBRATIONS

Frequency range : 10 – 500 Hz
 Displacement amplitude : 0,75 mm
 or max acceleration : 10 g – 98 m/s²
 Duration : 3 x 10 sweep cycles

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

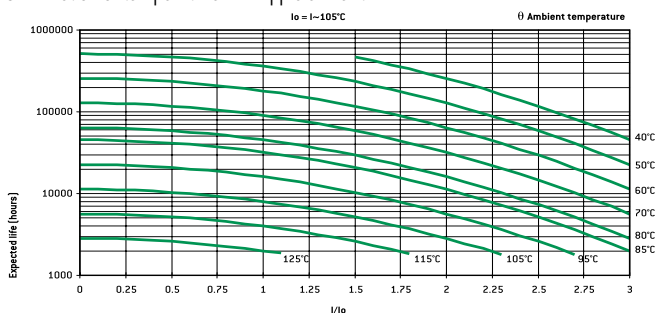
Fire resistance : self extinguish 30 s (IEC 60 695-2-2) without PVC

8 000 h / 105°C

Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 10 kHz +20°C Typic ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage / Peak voltage: 160/185 V										
220	22	25	1	10	500	300	0,21	3	0,8	A 716020
330	22	30	2	10	300	200	0,32	4,2	1,1	A 716021
470	25	30	5	10	200	130	0,45	5,5	1,5	A 716024
680	25	40	6	10	150	110	0,66	7,1	1,9	A 716025
1000	30	35	10	10	100	70	0,96	9,2	2,5	A 716027
1500	35	40	16	12	80	60	1,4	12	3,2	A 716031
2200	35	50	18	13	60	40	2,1	15	4	A 716032
Rated voltage / Peak voltage: 200/230 V										
150	22	25	1	9	600	350	0,18	2,7	0,7	A 716040
220	22	30	2	9	400	250	0,26	3,6	1	A 716041
330	25	30	5	7	200	130	0,39	5,5	1,5	A 716044
470	25	40	6	7	140	80	0,56	7,4	2	A 716045
560	30	30	9	8	150	100	0,67	7,1	1,9	A 716046
680	35	30	14	10	150	100	0,81	7,7	2,1	A 716049
1000	35	35	15	12	120	70	1,2	9,2	2,5	A 716050
1500	35	40	16	10	70	50	1,8	12	3,4	A 716051
2200	35	50	18	12	55	40	2,6	15	4,2	A 716052
Rated voltage / Peak voltage: 250/290 V										
150	22	25	1	8	600	330	0,22	2,7	0,7	A 716060
220	22	30	2	8	400	220	0,33	3,6	1	A 716061
330	25	30	5	8	180	110	0,5	5,8	1,5	A 716064
470	30	30	9	8	150	120	0,7	7,1	1,9	A 716066
680	30	40	11	8	130	95	1	8,5	2,3	A 716068
1000	35	40	16	9	90	60	1,5	12	3	A 716071
1500	35	50	18	10	70	45	2,3	14	3,7	A 716072
Rated voltage / Peak voltage: 400/450 V										
68	22	30	2	6	600	320	0,65	2,9	0,8	A 716101
100	22	30	2	6	500	250	0,8	3,2	0,9	A 716102
150	22	40	3	6	400	210	1	4,1	1,1	A 716103
220	25	40	6	6	340	190	1,2	4,7	1,3	A 716105
220	30	35	10	8	400	280	1,2	3,8	1	A 716106
330	25	50	7	6	200	100	1,5	6,8	1,8	A 716107
330	30	40	11	6	220	120	1,5	6,6	1,7	A 716108
470	35	40	16	6	150	100	1,8	8,7	2,3	A 716111
560	35	50	18	6	120	90	1,9	11	2,8	A 716112
Rated voltage / Peak voltage: 450/500 V										
47	22	30	2	6	800	410	0,6	2,5	0,7	A 716121
68	22	30	2	6	600	320	0,7	2,9	0,8	A 716122
100	22	40	3	6	500	260	0,8	3,3	1	A 716123
150	25	40	6	6	380	230	1	4,5	1,2	A 716125
220	30	40	11	6	280	170	1,25	5,8	1,5	A 716128
220	35	30	14	6	300	190	1,25	5,5	1,5	A 716129
330	35	40	16	6	200	130	1,5	7,5	2	A 716131
470	35	50	18	6	150	120	1,8	8,9	2,5	A 716132
Rated voltage / Peak voltage: 500/550 V										
47	22	30	2	6	1200	750	0,62	2,1	0,6	A 716141
100	25	40	6	6	650	440	0,9	3,4	0,9	A 716145
150	25	50	7	6	290	190	1,1	5,7	1,5	A 716147
150	30	40	11	6	320	210	1,1	5,4	1,4	A 716148
180	35	30	14	6	300	250	1,2	5,5	1,5	A 716149
220	35	40	16	6	260	170	1,35	6,6	1,8	A 716151
330	35	50	18	8	200	160	1,6	8	2,2	A 716153

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :I \sim : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	0,8 x I \sim	I \sim	1,2 x I \sim	1,3 x I \sim	1,35 x I \sim	1,5 x I \sim	1,6 x I \sim

SNAPSIC 105

8 000 h / 105°C

16 V ... 500 V	22 μ F ... 68 000 μ F	\varnothing 22 mm ... \varnothing 35 mm	- 55°C + 115°C	Long Life Time
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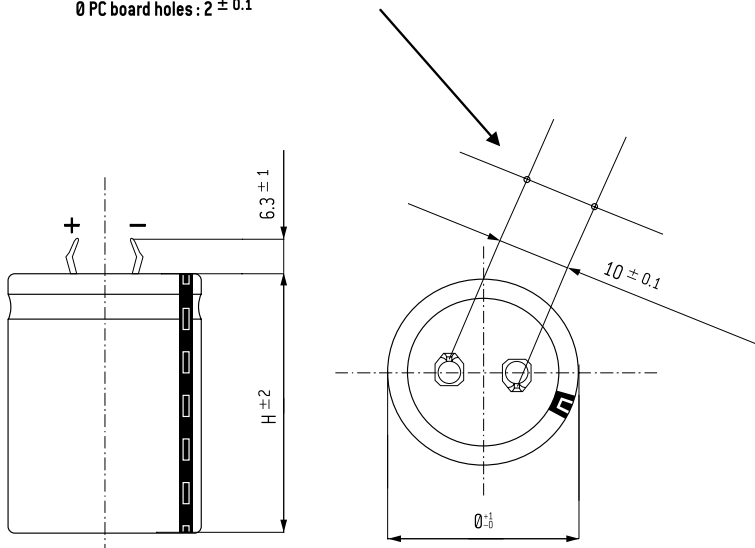
APPLICATIONS

- For solid PC board mounting
- Switch mode power supplies
- Impulse current

Fixing : Printed SNAP-IN pins

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 115°C

 \varnothing PC board holes : 2 ± 0.1 

Can size	\varnothing (mm)	H (mm)
1	22	25
2	22	30
3	22	40
4	25	25
5	25	30
6	25	40
7*	25	50
8*	30	25
9	30	30
10	30	35
11	30	40
12*	30	45
13*	30	50
14	35	30
15	35	35
16	35	40
17	35	45
18	35	50

* Out of range

Standard pins can be replaced by 4,5mm max pins on request

SPECIFICATIONS

CECC 30300 - Long life

DIN 41 240 - Climatic category: -55 + 105°C / 56 days

IEC 60 384.4 Long life

Standard endurance test at U_R : 2000 h / 105°C

RESISTANCE TO VIBRATIONS

Frequency range	: 10 - 500 Hz
Displacement amplitude	: 0,75 mm
or max acceleration	: 10 g - 98 m/s ²
Duration	: 3 x 10 sweep cycles

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V

Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

SNAPSIC 105

8 000 h / 105°C

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage / Peak voltage: 16/18 V										
4700	22	25	1	30	65	55	0,5	6,8	1,8	A 705020
6800	22	30	2	30	55	50	0,7	7,8	2,1	A 705021
10000	22	30	2	38	40	33	1,0	9,3	2,5	A 705026
15000	25	40	6	43	35	28	1,4	12	3,2	A 705023
22000	25	40	6	49	30	22	2,1	13	3,5	A 705027
33000	30	40	11	60	25	20	3,0	16	4,2	A 705030
47000	35	40	16	65	17	15	4,5	20	5,6	A 705028
68000	35	50	18	67	12	10	6,5	20	7,3	A 705029
Rated voltage / Peak voltage: 25/29 V										
2200	22	25	1	15	70	45	0,3	7	1,7	A 705040
3300	22	25	1	18	60	42	0,5	7	1,9	A 705048
4700	22	30	2	22	50	40	0,7	7,8	2,2	A 705041
4700	25	25	4	25	60	45	0,7	6,9	2	A 705042
6800	22	40	3	25	35	30	1,0	11	3	A 705043
10000	22	40	3	28	32	25	1,5	12	3,1	A 705046
22000	35	40	16	58	26	20	3,0	17	4,5	A 705045
33000	35	50	18	70	20	18	5,0	20	5,7	A 705047
Rated voltage / Peak voltage: 35/40 V										
2200	22	25	1	15	60	47	0,5	7	1,9	A 705060
3300	22	30	2	16	50	35	0,7	8,3	2,2	A 705065
4700	25	30	3	17	32	22	1,0	12	3,1	A 705061
6800	25	40	6	22	35	25	1,4	12	3,2	A 705066
10000	30	40	11	28	30	25	2,1	14	3,9	A 705067
15000	35	40	16	37	28	23	3,1	16	4,4	A 705068
18000	35	45	17	40	25	21	3,8	18	4,9	A 705070
22000	35	50	18	46	22	19	4,6	20	5,4	A 705069
Rated voltage / Peak voltage: 50/58 V										
1000	22	25	1	10	90	60	0,3	5,7	1,5	A 705080
2200	22	30	2	12	60	42	0,7	7,5	2	A 705081
3300	25	30	5	15	50	35	1,0	9	2,4	A 705085
4700	25	40	6	20	30	22	1,4	13	3,5	A 705082
6800	30	40	11	25	30	22	2,0	14	3,9	A 705086
10000	35	40	16	32	32	23	3,0	15	4,1	A 705083
15000	35	50	18	38	26	18	4,5	18	5	A 705084
22000	35	50	18	46	22	15	6,6	20	5,4	A 705087
Rated voltage / Peak voltage: 63/72 V										
1000	22	25	1	10	110	80	0,4	5,2	1,4	A 705100
1500	22	30	2	10	60	40	0,6	7,6	2	A 705106
2200	22	40	3	10	40	30	0,8	11	2,8	A 705107
2200	25	30	5	10	50	30	0,8	9	2,4	A 705108
3300	25	40	6	12	36	30	1,2	12	3,2	A 705109
4700	30	40	11	15	28	22	1,8	15	4	A 705110
6800	35	40	16	25	30	28	2,6	16	4,2	A 705111
10000	35	50	18	25	25	20	3,0	19	5,1	A 705112
Rated voltage / Peak voltage: 80/92 V										
1000	22	30	2	10	100	65	0,5	5,9	1,6	A 705113
1500	22	40	3	12	70	50	0,7	7,9	2,1	A 705114
2200	25	40	6	15	60	45	1,1	9,2	2,5	A 705115
3300	30	40	11	15	40	30	1,6	13	3,3	A 705116
4700	35	40	16	16	35	25	2,2	15	3,9	A 705117
6800	35	50	18	20	30	25	3,2	17	4,6	A 705118
10000	35	50	18	30	25	22	4,8	19	5,1	A 705119
Rated voltage / Peak voltage: 100/115 V										
330	22	25	1	5	150	90	0,2	4,4	1,2	A 705120
470	22	30	2	5	80	50	0,3	6,6	1,8	A 705121
680	22	30	2	5	70	40	0,4	7	1,9	A 705124
1000	22	40	3	7	50	35	0,6	9,4	2,5	A 705122
1500	25	40	6	10	50	30	0,9	10	2,7	A 705125
2200	30	35	10	10	40	30	1,3	12	3,2	A 705128
2200	35	30	14	11	50	35	1,3	11	2,9	A 705129
3300	35	40	16	12	35	25	2,0	15	3,9	A 705126
4700	35	50	18	15	28	20	2,8	18	4,8	A 705127

SNAPSIK 105

8 000 h / 105°C

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I ~ 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage / Peak voltage: 160/185 V										
100	22	25	1	10	500	250	0,1	2,4	0,6	A 705140
220	25	25	4	10	300	150	0,2	3,4	0,9	A 705141
330	25	30	5	10	200	110	0,3	4,5	1,2	A 705142
470	30	30	9	10	170	120	0,5	5,4	1,4	A 705143
680	30	40	11	10	140	100	0,7	6,7	1,8	A 705144
1000	35	40	16	10	70	50	1,0	10	2,8	A 705145
1500	35	50	18	10	70	50	1,4	11	3,0	A 705146
2200	35	50	18	15	60	40	2,1	12	3,3	A 705147
Rated voltage / Peak voltage: 200/230 V										
150	25	25	4	10	500	300	0,2	2,6	0,7	A 705152
220	22	30	2	10	240	150	0,3	3,8	1,0	A 705151
330	25	30	5	10	200	130	0,4	4,4	1,2	A 705153
470	25	40	6	10	140	80	0,6	6	1,6	A 705154
560	25	40	6	10	130	90	0,7	6,3	1,7	A 705158
680	30	40	11	10	100	70	0,8	7,9	2,1	A 705155
1000	35	40	16	10	90	60	1,2	9,2	2,4	A 705156
1500	35	50	18	10	70	50	1,8	11	3,0	A 705157
1800	35	50	18	11	65	45	2,2	12	3,2	A 705159
Rated voltage / Peak voltage: 250/290 V										
150	22	30	2	10	700	500	0,2	2,2	0,6	A 705163
220	22	40	3	10	450	280	0,3	3,1	0,8	A 705160
330	25	40	6	10	280	180	0,5	4,3	1,1	A 705164
470	30	40	11	10	210	150	0,7	5,5	1,5	A 705161
680	35	40	16	10	140	110	1,0	7,3	2,0	A 705165
1000	35	50	18	11	110	75	1,5	9,1	2,4	A 705166
Rated voltage / Peak voltage: 350/385 V										
68	25	25	4	10	650	340	0,1	2,1	0,6	A 705180
100	25	30	5	10	450	280	0,2	3	0,8	A 705181
150	30	30	9	10	360	240	0,3	3,7	1,0	A 705182
220	30	30	9	10	340	220	0,5	3,8	1,0	A 705185
330	30	40	11	10	210	150	0,7	5,5	1,5	A 705186
470	35	40	16	10	140	115	1,0	7,3	2,0	A 705187
560	35	40	16	10	130	105	1,2	7,6	2,0	A 705189
680	35	50	18	10	120	100	1,4	8,7	2,3	A 705188
Rated voltage / Peak voltage: 400/450 V										
68	22	30	2	10	1000	700	0,7	1,9	0,5	A 705200
100	22	40	3	10	700	450	0,8	2,5	0,7	A 705201
100	25	25	4	10	1100	800	0,8	1,8	0,5	A 705211
150	22	40	3	10	550	350	1,0	2,8	0,8	A 705210
150	30	30	9	10	550	350	1,0	3	0,8	A 705214
220	30	40	11	10	300	210	1,2	4,6	1,2	A 705202
220	35	30	14	10	360	260	1,2	4,1	1,1	A 705203
330	30	40	11	12	300	200	1,5	4,6	1,2	A 705212
330	35	35	15	12	290	200	1,5	4,8	1,3	A 705207
470	35	35	15	12	260	170	1,8	5,1	1,4	A 705215
470	35	40	16	12	180	120	1,8	6,4	1,7	A 705216
470	35	45	17	12	180	130	1,8	6,8	1,8	A 705208
560	35	50	18	12	140	100	1,9	8	2,1	A 705209
680	35	50	18	12	130	100	2,1	8,4	2,2	A 705213
Rated voltage / Peak voltage: 450/500 V										
47	25	25	4	10	1500	1100	0,6	1,8	0,5	A 705220
68	22	30	2	10	1100	1000	0,7	1,8	0,5	A 705227
100	22	40	3	10	1000	800	0,8	2,3	0,6	A 705221
100	25	30	5	10	1100	900	0,8	1,9	0,5	A 705230
150	25	40	6	10	650	450	1,0	2,8	0,7	A 705228
220	30	40	11	10	450	350	1,3	3,8	1,0	A 705225
220	35	35	15	10	420	330	1,3	4	1,1	A 705226
330	35	40	16	10	360	260	1,5	4,5	1,2	A 705229
330	35	50	18	10	290	200	1,5	5,6	1,5	A 705223
470	35	50	18	10	200	130	1,8	6,7	1,8	A 705224

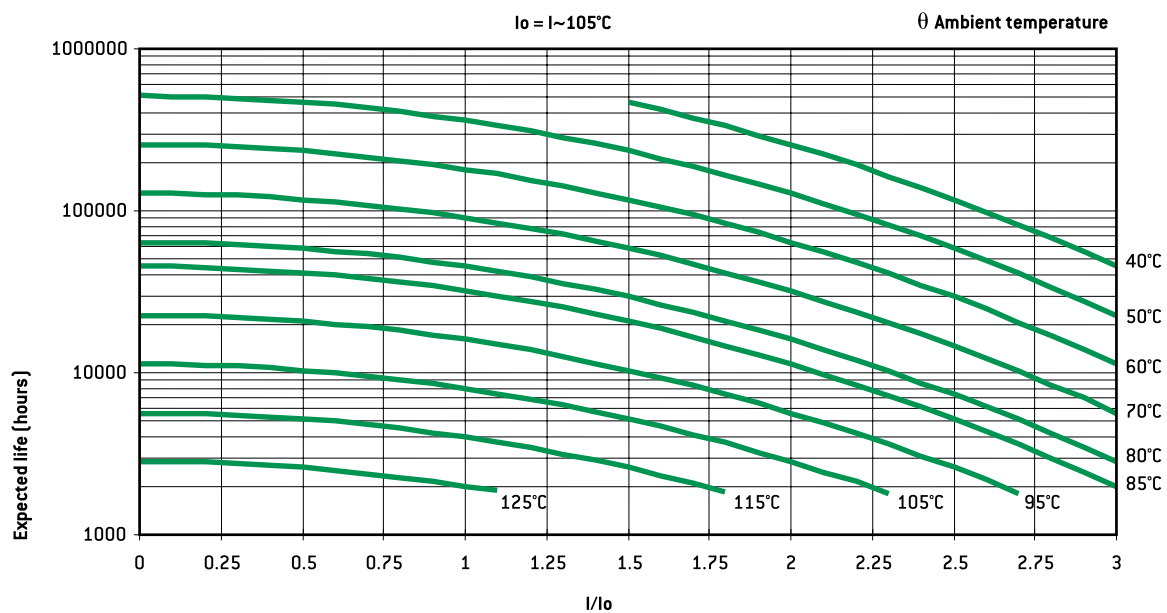
SNAPSIC 105

8 000 h / 105°C

Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 10 kHz +20°C Typic ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage / Peak voltage: 500/550 V										
22	22	30	2	10	3500	2200	0,4	1,1	0,3	A 705240
33	22	30	2	10	2400	1500	0,5	1,2	0,3	A 705245
47	25	40	6	10	1600	1100	0,6	1,9	0,5	A 705241
68	25	40	6	10	1200	900	0,7	2,1	0,6	A 705246
100	30	40	11	10	720	470	0,9	3,4	0,9	A 705247
150	35	40	16	10	480	310	1,1	4	1,1	A 705248
220	35	50	18	10	380	260	1,4	4,7	1,3	A 705249

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f : $I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

SNAPSIC CAPAX

2 500 h / 105°C (up to 250 V)
10 000 h / 85°C (from 350 to 500 V)

25 V ... 250 V	150 µF ... 47 000 µF	Ø 22 mm ... Ø 35 mm	- 55°C + 105°C	Long Life Time
350 V ... 500 V	33 µF ... 1 000 µF		- 55°C + 85°C	



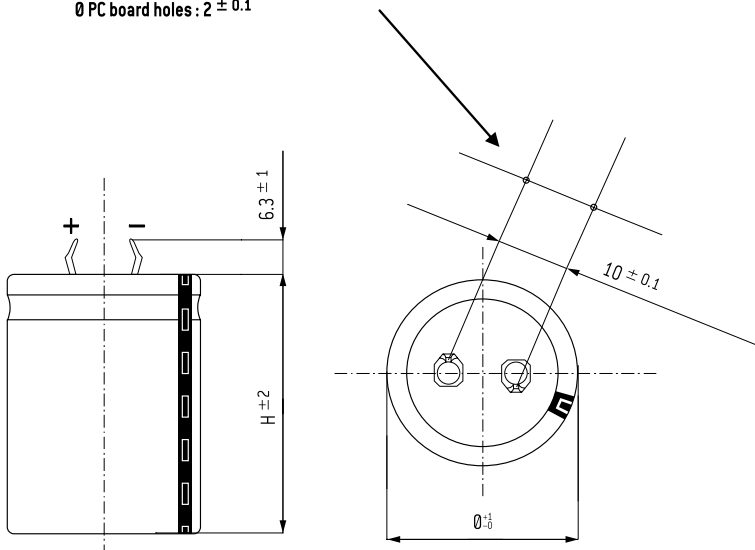
APPLICATIONS

- For solid PC board mounting
- Switch mode power supplies
- Impulse current

Fixing : Printed SNAP-IN pins

Tolerance on capacitance at 20°C : ± 20 %
Operating temperature : U_R ≤ 250 V : - 55°C + 105°C
U_R ≥ 350 V : - 55°C + 85°C

Ø PC board holes : 2 ± 0.1



Can size	Ø (mm)	H (mm)
1	22	25
2	22	30
3	22	40
4	25	25
5	25	30
6	25	40
7*	25	50
8	30	25
9	30	30
10	30	35
11	30	40
12*	30	45
13	30	50
14	35	30
15	35	35
16	35	40
17	35	45
18	35	50

* Out of range

Standard pins can be replaced by 4,5mm max pins on request

SPECIFICATIONS

CECC 30300 Long life
DIN 41 240 - Climatic category and GPF: -55 + 105°C / 56 days
IEC 60 384.4 long life

RESISTANCE TO VIBRATIONS

Frequency : 10 – 500 Hz
Displacement amplitude or : 0,75 mm
Max acceleration : 10 g – 98 m/s²
Duration : 3 x 10 sweep cycles

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 MΩ
Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

SNAPSIC CAPAX

2 500 h / 105°C (up to 250 V)
10 000 h / 85°C (from 350 to 500 V)

Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage 25 V										
4700	22	25	1	24	55	40	0,7	7,2	2,4	A 717022
6800	25	25	4	29	45	35	1	8,6	2,9	A 717025
10000	30	25	8	47	50	40	1,5	9,1	3	A 717028
22000	30	40	11	62	30	25	3	14	4,7	A 717032
33000	35	35	15	75	28	22	5	15	5,1	A 717034
47000	35	45	17	84	22	19	7	19	6,3	A 717036
Rated voltage 35 V										
3300	22	25	1	17	55	42	0,7	7,2	2,4	A 717042
4700	22	30	2	22	40	30	1	9	3	A 717043
4700	25	25	4	22	50	40	1	8,1	2,7	A 717045
6800	22	40	3	22	30	22	1,4	12	4	A 717044
6800	30	25	8	35	55	45	1,4	8,7	2,9	A 717048
10000	25	40	6	24	26	22	2,1	14	4,6	A 717047
10000	30	30	9	34	40	35	2,1	11	3,6	A 717049
15000	30	40	11	45	32	24	3,1	14	4,6	A 717052
22000	35	45	17	47	26	22	4,6	18	5,8	A 717056
33000	35	45	17	65	24	20	6,9	18	6,1	A 717057
Rated voltage 40 V										
2200	22	25	1	13	65	50	0,53	6,6	2,2	A 717062
3300	22	30	2	17	55	38	0,79	7,8	2,6	A 717063
4700	25	30	5	19	45	35	1,1	9,3	3,1	A 717066
5600	25	30	5	21	40	30	1,3	10	3,3	A 717069
5600	30	25	8	30	58	50	1,3	8,5	2,8	A 717068
6800	25	40	6	23	36	28	1,6	12	3,9	A 717067
10000	30	35	10	31	35	24	2,4	12	4,1	A 717070
15000	35	35	15	37	30	20	3,6	15	4,9	A 717074
22000	35	45	17	43	24	17	5,2	18	6,1	A 717076
Rated voltage 50 V										
1500	22	25	1	11	80	55	0,45	6	2	A 717081
2200	22	25	1	14	68	43	0,66	6,5	2,2	A 717082
3300	25	25	4	18	60	36	0,99	7,4	2,5	A 717085
4700	22	40	3	12	28	22	1,4	12	4,1	A 717084
4700	30	25	8	20	50	40	1,4	9,1	3	A 717088
6800	25	40	6	20	32	26	2	12	4,1	A 717087
6800	30	35	10	20	32	26	2	13	4,3	A 717090
10000	30	35	10	26	28	23	3	14	4,6	A 717091
15000	35	40	16	36	26	18	4,5	17	5,6	A 717095
22000	35	50	18	46	22	19	6,6	20	6,6	A 717098
Rated voltage 63 V										
1500	22	25	1	11	80	55	0,57	6	2	A 717101
2200	22	30	2	11	50	32	0,83	8,1	2,7	A 717103
2200	25	25	4	11	55	35	0,83	7,8	2,6	A 717105
3300	22	40	3	15	50	35	1,2	9,2	3,1	A 717104
3300	30	25	8	19	62	48	1,2	8,2	2,7	A 717108
4700	25	40	6	15	35	30	1,8	12	3,9	A 717107
4700	30	35	10	15	35	30	1,8	12	4,1	A 717110
6800	30	40	11	29	50	40	2,6	11	3,7	A 717111
6800	35	30	14	29	50	40	2,6	11	3,6	A 717113
10000	30	50	13	26	25	22	3	17	5,7	A 717112
10000	35	35	15	28	30	25	3	15	4,9	A 717114
10000	35	45	17	26	28	24	3	17	5,6	A 717116
Rated voltage 80 V										
1000	22	25	1	9	100	65	0,48	5,3	1,8	A 717122
1500	25	25	4	11	80	52	0,72	6,4	2,1	A 717125
2200	25	30	5	12	60	45	1,1	8	2,7	A 717126
3300	30	35	10	16	50	42	1,6	10	3,5	A 717130
4700	35	30	14	22	50	40	2,2	11	3,6	A 717133
6800	35	45	17	19	30	20	3,2	16	5,4	A 717136
8200	35	50	18	19	25	18	4	19	6,2	A 717137
10000	35	45	17	17	30	22	4,8	16	5,4	A 717138
Rated voltage 100 V										
470	22	25	1	6	130	75	0,29	4,7	1,6	A 717141
680	22	25	1	7	110	72	0,4	5,1	1,7	A 717142
1000	25	25	4	11	90	70	0,6	6,1	2	A 717145
1500	25	30	5	10	70	45	0,9	7,5	2,5	A 717146
1500	30	25	8	13	90	68	0,9	6,8	2,3	A 717148
2200	30	30	9	13	60	45	1,3	8,9	3	A 717149
3300	30	40	11	12	38	28	2	13	4,2	A 717152
3300	35	30	14	16	52	30	2	11	3,5	A 717153
3300	35	35	15	13	40	32	2	13	4,2	A 717154
4700	35	40	16	15	38	26	2,8	14	4,6	A 717155
6000	35	50	18	16	30	22	3,6	17	5,7	A 717158
6800	35	50	18	16	28	20	4,1	18	5,9	A 717159

SNAPSIC CAPAX

2 500 h / 105°C (up to 250 V)
10 000 h / 85°C (from 350 to 500 V)

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage 160 V										
330	22	25	1	19	600	430	0,32	2,2	0,7	A 717162
470	22	30	2	18	400	300	0,45	2,9	1	A 717163
680	25	30	5	13	200	140	0,66	4,4	1,5	A 717166
680	30	25	8	16	280	200	0,66	4,1	1,4	A 717168
1000	25	40	6	13	180	130	0,96	5,2	1,7	A 717167
1000	30	30	9	20	220	160	0,96	4,7	1,6	A 717169
1500	30	40	11	24	170	120	1,4	6	2,0	A 717172
2200	35	40	16	25	120	80	2,1	7,8	2,6	A 717175
Rated voltage 200 V										
220	22	25	1	12	600	400	0,26	2,2	0,7	A 717182
330	25	25	4	12	350	250	0,39	3,1	1	A 717185
470	25	30	5	10	200	160	0,56	4,4	1,5	A 717186
470	30	25	8	12	250	180	0,56	4,1	1,4	A 717188
680	25	40	6	12	220	170	0,81	4,7	1,6	A 717187
680	30	30	9	13	240	160	0,81	4,5	1,5	A 717189
1000	30	35	10	13	140	100	1,2	6,2	2,1	A 717190
1500	35	40	16	12	70	50	1,8	10	3,4	A 717195
2200	35	50	18	13	60	40	2,6	12	4	A 717198
Rated voltage 250 V										
150	22	25	1	10	650	460	0,22	2,1	0,7	A 717202
220	22	30	2	10	580	400	0,33	2,4	0,8	A 717203
330	25	30	5	10	220	180	0,5	4,2	1,4	A 717206
330	30	25	8	10	300	200	0,5	3,7	1,2	A 717208
470	30	30	9	10	200	120	0,7	4,9	1,6	A 717209
680	30	35	10	10	120	90	1	6,7	2,2	A 717210
1000	30	50	13	10	80	55	1,5	10	3,2	A 717212
1000	35	35	15	10	90	60	1,5	8,5	2,8	A 717214
1500	35	45	17	10	80	55	2,3	10	3,3	A 717216
Rated voltage 350 V										
100	22	25	1	8	700	520	0,21	2	0,7	A 717222
150	25	25	4	8	540	400	0,32	2,5	0,8	A 717225
220	25	30	5	8	350	230	0,46	3,3	1,1	A 717226
330	30	30	9	8	260	170	0,69	4,3	1,4	A 717229
470	30	35	10	8	160	100	1	5,8	1,9	A 717230
680	35	35	15	9	140	120	1,4	6,8	2,3	A 717234
1000	35	50	18	10	80	60	2,1	10	3,5	A 717236
Rated voltage 400 V										
68	22	25	1	8	1200	850	0,65	1,5	0,5	A 717242
100	22	30	2	9	950	650	0,8	1,9	0,6	A 717243
150	30	25	8	10	700	520	1	2,4	0,8	A 717248
220	25	40	6	10	500	400	1,2	3,1	1	A 717247
220	30	30	9	10	500	360	1,2	3,1	1	A 717249
330	30	35	10	10	350	240	1,5	3,9	1,3	A 717251
330	30	40	11	10	320	230	1,5	4,3	1,4	A 717252
470	35	35	15	10	220	160	1,8	5,4	1,8	A 717254
470	35	40	16	10	200	150	1,8	6	2	A 717255
560	35	45	17	10	180	130	1,9	6,7	2,2	A 717256
680	35	50	18	12	150	110	2,1	7,6	2,5	A 717258
Rated voltage 450 V										
33	22	25	1	8	2200	1600	0,7	1,1	0,4	A 717260
47	22	25	1	8	1800	1300	0,8	1,3	0,4	A 717261
68	22	25	1	10	1600	1100	1	1,3	0,4	A 717262
100	25	25	4	13	1400	1000	1,3	0,8	0,3	A 717265
100	25	30	5	11	1200	950	1,3	1,8	0,6	A 717266
150	22	40	3	14	1000	700	1,6	2,1	0,7	A 717264
150	25	30	5	14	1000	700	1,6	2	0,7	A 717267
220	25	40	6	12	600	400	1,9	2	1	A 717268
220	30	30	9	10	500	330	1,9	3,1	1	A 717269
220	30	35	10	10	450	300	1,9	3,5	1,2	A 717270
330	30	40	11	12	400	280	2,3	3,9	1,3	A 717272
330	35	30	14	14	450	310	2,3	3,6	1,2	A 717273
330	35	35	15	12	400	280	2,3	4	1,3	A 717274
470	35	40	16	12	280	200	2,8	5,1	1,7	A 717275
560	35	50	18	12	220	170	3	5,8	1,9	A 717278
680	35	50	18	12	160	120	3,3	7,5	2,5	A 717279

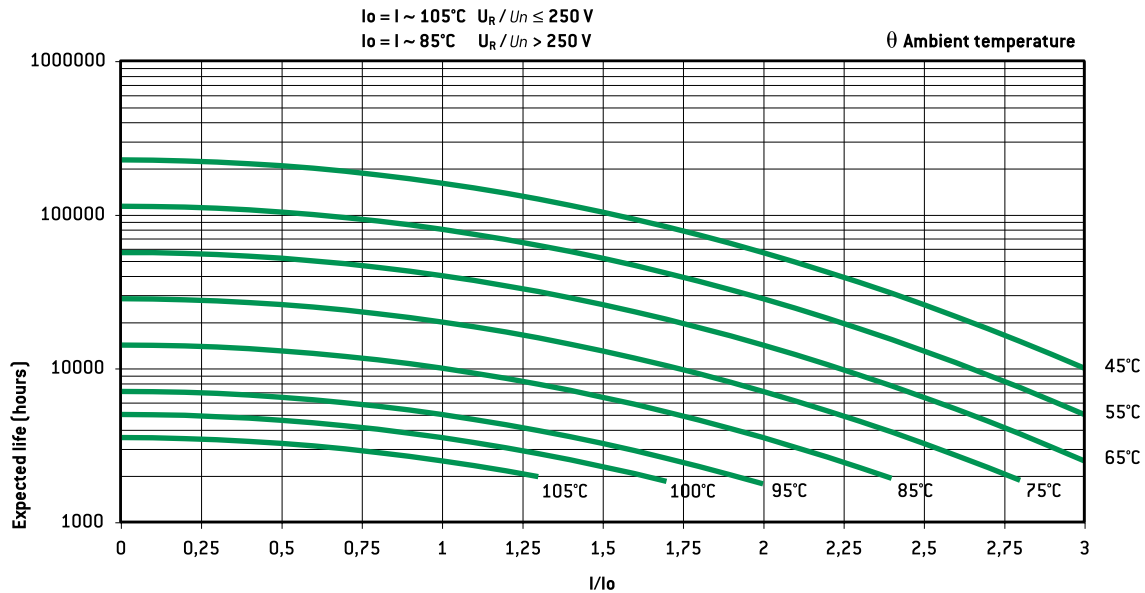
SNAPSIC CAPAX

2 500 h / 105°C (up to 250 V)
10 000 h / 85°C (from 350 to 500 V)

Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 10 kHz +20°C Typic ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+105°C max. (A)	
Rated voltage 500 V										
33	22	25	1	14	4500	3000	0,77	0,8	0,3	A 717282
47	22	30	2	12	2600	1700	0,92	1,1	0,4	A 717283
68	25	30	5	12	1700	1200	1,1	1,5	0,5	A 717286
100	25	40	6	12	1200	700	1,3	2	0,7	A 717287
100	30	30	9	12	1200	700	1,3	2	0,7	A 717289
150	30	35	10	12	900	580	1,6	2,5	0,8	A 717290
220	35	35	15	12	600	450	2	3,3	1,1	A 717294
330	35	45	17	12	360	250	2,4	4,7	1,6	A 717296

EXPECTED LIFE

as a function of temperature and ripple current:



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

$I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

SNAPSIC

10 000 h / 85°C

16 V ... 500 V	22 µF ... 47 000 µF	Ø 22 mm ... Ø 35 mm	- 55°C + 85°C	Long Life Time
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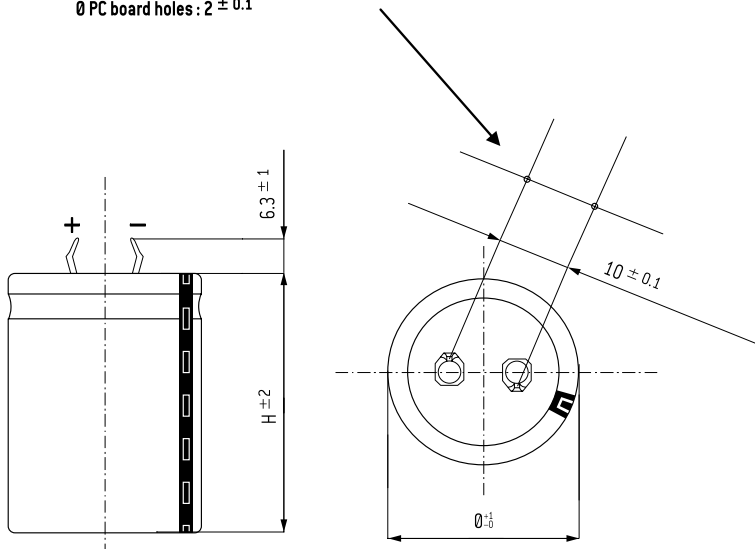
APPLICATIONS

- For solid PC board mounting
- Switch mode power supplies
- Impulse current

Fixing : Printed SNAP-IN pins

Tolerance on capacitance at 20°C : ± 20 %
 Operating temperature : - 55°C + 85°C

Ø PC board holes : 2 ± 0.1



Can size	Ø (mm)	H (mm)
1	22	25
2	22	30
3	22	40
4	25	25
5	25	30
6	25	40
7*	25	50
8*	30	25
9	30	30
10*	30	35
11	30	40
12*	30	45
13	30	50
14	35	30
15*	35	35
16	35	40
17*	35	45
18	35	50

* Out of range

Standard pins can be replaced by 4,5mm max pins on request

SPECIFICATIONS

CECC 30301-811 Issue 1
 DIN 41 240 - Climatic category GPF - 55°C + 85°C / 56 days
 IEC 60 384.4 long life

RESISTANCE TO VIBRATIONS

Frequency : 10 – 500 Hz
 Displacement amplitude or
 Max acceleration : 10 g – 98 m/s²
 Duration : 3 x 10 sweep cycles

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 MΩ.
 Test voltage at 50 Hz 1 min between terminals and mounting hardware
 Fire resistance : self extinguish 15 s (IEC 60 695-2-2).

10 000 h / 85°C

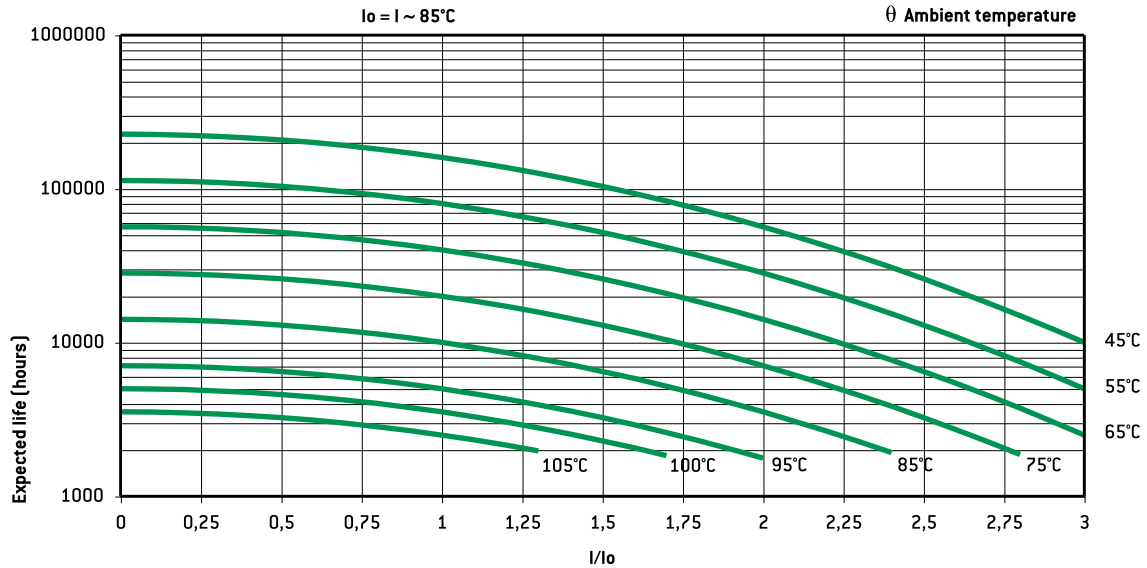
Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	I +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage / Peaked voltage 16/18 V										
4700	22	30	2	20	45	35	0,46	8,7	2,9	A 704020
10000	22	40	3	35	35	30	0,96	11	3,7	A 704022
10000	30	30	9	35	30	30	0,96	13	4,2	A 704023
22000	30	40	11	40	25	25	2,1	16	5,2	A 704026
47000	35	50	18	55	15	15	4,5	20	8	A 704028
Rated voltage 25/30 V										
3300	22	30	2	22	53	40	0,5	7,8	2,6	A 704040
4700	22	30	2	22	50	40	0,7	8,1	2,7	A 704041
4700	25	25	4	25	60	45	0,7	7,5	2,5	A 704042
6800	25	40	6	25	30	25	1	13	4,3	A 704049
6800	30	30	9	25	30	25	1	13	4,2	A 704044
10000	25	40	6	25	28	25	1,5	13	4,4	A 704045
15000	30	40	11	45	28	25	2,3	15	4,9	A 704047
22000	35	50	18	57	24	20	3	19	6,4	A 704048
33000	35	50	18	70	20	18	5	20	7	A 704050
Rated voltage 40/48 V										
2200	22	30	2	10	55	38	0,53	7,8	2,6	A 704060
3300	25	30	5	15	48	40	0,79	9	3	A 704061
4700	22	40	3	15	35	25	1,1	11	3,7	A 704062
4700	30	30	9	18	42	32	1,1	11	3,6	A 704063
6800	30	40	11	20	30	23	1,6	14	4,7	A 704064
10000	30	50	13	23	20	17	2,4	19	6,4	A 704066
10000	35	40	16	31	30	23	2,4	16	5,2	A 704067
15000	35	50	18	34	24	18	3,6	19	6,4	A 704068
Rated voltage 50/58 V										
2200	22	30	2	12	60	42	0,66	7,4	2,5	A 704080
3300	25	30	5	15	50	35	0,99	8,7	2,9	A 704081
4700	25	40	6	20	30	22	1,4	11	3,6	A 704082
10000	35	40	16	32	32	23	3	14	4,8	A 704086
15000	35	50	18	38	26	18	4,5	18	6,1	A 704087
Rated voltage 63/76 V										
1000	22	30	2	7	60	40	0,38	7,4	2,5	A 704100
1500	25	25	4	10	110	80	0,56	5,5	1,8	A 704102
2200	22	40	3	10	40	30	0,83	10	3,4	A 704103
2200	25	30	5	10	50	30	0,83	8,8	2,9	A 704104
3300	25	40	6	12	36	30	1,2	12	3,9	A 704105
3300	30	30	9	15	50	35	1,2	9,8	3,3	A 704106
4700	30	40	11	15	28	22	1,8	15	4,9	A 704107
4700	35	30	14	20	50	35	1,8	11	3,6	A 704108
6800	35	40	16	25	30	28	2,6	16	5,2	A 704110
10000	35	50	18	25	25	20	3	19	6,2	A 704111
Rated voltage 100/115 V										
470	22	30	2	5	80	50	0,29	6,4	2,1	A 704120
680	22	30	2	5	70	40	0,4	6,9	2,3	A 704121
1000	22	40	3	7	50	35	0,6	9,2	3,1	A 704123
1000	25	30	5	7	70	40	0,6	7,4	2,5	A 704124
1500	25	40	6	10	60	40	0,9	9	3	A 704125
1500	30	30	9	10	70	50	0,9	8,3	2,8	A 704126
2200	30	40	11	10	35	25	1,3	13	4,4	A 704127
2200	35	30	14	11	50	35	1,3	11	3,6	A 704129
3300	35	40	16	12	35	27	2	14	4,8	A 704128
Rated voltage 200/230 V										
100	22	30	2	10	600	400	0,12	2,3	0,8	A 704140
150	25	25	4	12	800	500	0,18	2	0,7	A 704141
220	22	30	2	12	400	250	0,26	2,9	1	A 704142
220	25	25	4	12	500	300	0,26	2,6	0,9	A 704143
330	25	30	5	12	250	170	0,39	3,9	1,3	A 704144
470	25	40	6	12	160	110	0,56	5,5	1,8	A 704145
470	30	30	9	12	180	130	0,56	5,2	1,7	A 704146
680	30	40	11	12	150	100	0,81	6,3	2,1	A 704147
680	35	30	14	12	160	110	0,81	6	2	A 704148
1000	35	40	16	14	110	70	1,2	8,1	2,7	A 704149
1500	35	50	18	16	90	60	1,8	9,8	3,3	A 704150

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I ~ 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage 250/290 V										
150	25	25	4	12	500	320	0,22	2,6	0,9	A 704160
220	25	30	5	12	270	170	0,33	3,8	1,3	A 704169
330	30	30	9	12	250	150	0,49	4,3	1,5	A 704163
470	30	40	11	12	150	120	0,7	6,3	2,1	A 704164
470	35	30	14	12	170	140	0,7	5,8	1,9	A 704165
680	30	50	13	12	110	80	1	8,2	2,7	A 704166
680	35	40	16	12	120	90	1	7,8	2,6	A 704167
1000	35	50	18	14	95	65	1,5	9,6	3,2	A 704168
Rated voltage 350/385 V										
100	22	30	2	10	640	410	0,21	2	0,7	A 704180
150	22	40	3	10	320	220	0,31	2,8	0,9	A 704182
220	25	40	6	10	260	180	0,46	3,7	1,2	A 704184
470	35	40	16	10	140	115	0,98	6,5	2,2	A 704187
560	35	50	18	10	130	90	1,2	7,5	2,5	A 704188
Rated voltage 385/425 V										
68	25	25	4	10	1170	800	0,15	1,7	0,6	A 704201
100	25	30	5	10	800	450	0,23	2,2	0,7	A 704202
150	25	40	6	10	530	350	0,35	3	1	A 704203
150	30	30	9	10	530	350	0,35	3	1	A 704204
220	30	40	11	10	320	220	0,5	4,3	1,4	A 704205
220	35	30	14	10	450	340	0,5	3,6	1,2	A 704206
330	30	50	13	10	240	200	0,8	5,5	1,8	A 704207
330	35	40	16	10	240	200	0,8	5,5	1,8	A 704208
470	35	50	18	10	170	150	1,1	7,2	2,4	A 704209
Rated voltage 400/450 V										
47	22	25	1	10	1500	1100	0,55	1,4	0,45	A 704232
68	22	30	2	10	1000	700	0,65	1,8	0,6	A 704220
68	25	25	4	10	1300	900	0,65	1,6	0,5	A 704221
100	22	40	3	10	900	800	0,8	2,2	0,7	A 704222
100	25	30	5	10	1000	700	0,8	2	0,7	A 704223
150	25	40	6	10	530	350	1	3	1	A 704224
220	30	40	11	10	310	220	1,2	4,4	1,5	A 704226
220	35	30	14	10	340	240	1,2	4,1	1,4	A 704227
330	30	50	13	12	230	150	1,5	5,6	1,9	A 704228
330	35	40	16	12	230	150	1,5	5,6	1,9	A 704229
470	35	50	18	12	150	105	1,8	7,6	2,5	A 704230
Rated voltage 450/500 V										
33	22	30	2	10	1800	1300	0,7	1,4	0,5	A 704239
47	25	25	4	10	1500	1100	0,8	1,5	0,5	A 704240
68	22	30	2	10	1400	1000	1	1,5	0,5	A 704241
100	22	40	3	10	1200	950	1,3	1,9	0,6	A 704242
150	30	30	9	10	600	500	1,6	3,1	1	A 704244
220	30	40	11	10	390	280	1,9	3,9	1,3	A 704245
220	35	30	14	10	500	350	1,9	3,4	1,1	A 704248
330	35	50	18	13	280	200	2,3	5,6	1,9	A 704246
470	35	50	18	13	250	170	2,8	5,9	2	A 704247
Rated voltage 500/550 V										
22	22	25	1	10	5000	3400	0,63	0,8	0,3	A 704272
47	25	30	5	10	2200	1500	0,92	1,3	0,4	A 704274
100	30	40	11	10	900	500	1,3	2,6	0,9	A 704276
150	35	40	16	10	600	450	1,6	3,5	1,2	A 704278
220	35	50	18	10	350	240	2	5	1,7	A 704279

10 000 h / 85°C

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f : $I \sim$: permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I \sim$	$I \sim$	$1,2 \times I \sim$	$1,3 \times I \sim$	$1,35 \times I \sim$	$1,5 \times I \sim$	$1,6 \times I \sim$

SNAPSI C 105 4P

8 000 h / 105°C

16 V ... 500 V	330 μF ... 150 000 μF	∅ 35 - 45 mm	- 55°C + 105°C	Long Life Time
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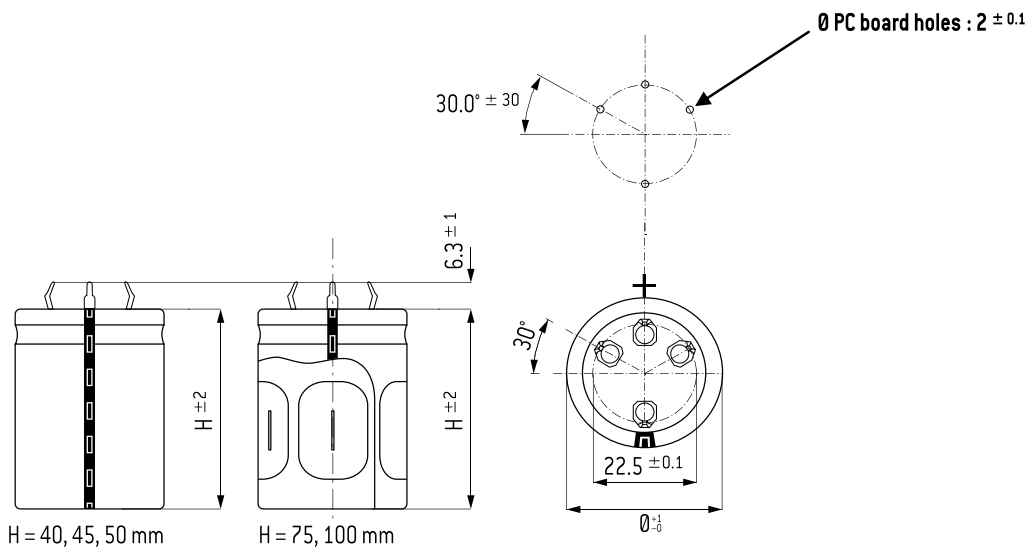
APPLICATIONS

- Printed circuit mounting
- Switch mode power supplies
- Impulse current

Fixing : SNAP-IN pins

Tolerance on capacitance at 20°C : ± 20 %
 Operating temperature : - 55°C + 105°C

4 SNAP-IN terminals



Dummy pins near positive terminal are for mechanical support only.
 They must be electrically insulated from the positive and the negative terminals.

Can size	∅ (mm)	H (mm)
1	35	50
2	35	75
3	35	100
4	40	40
5	40	50
6	40	75
7	40	100
8	45	45
9	45	50
10	45	75
11	45	100

RESISTANCE TO VIBRATIONS

Hb (mm)	H = 40, 45, 50	H = 75, 100 *
f (Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

* and on request for : H = 40, 45, 50

SPECIFICATIONS

CECC 30 300 Long life
 DIN 41 240 - Climatic category: - 55 + 105°C / 56 days
 IEC 60 384.4 long life
 Standard endurance test at U_R : 2000 h 105°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 MΩ
 Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
 Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

SNAPSIC 105 4P

8 000 h / 105°C

Capacitance [μ F]	Dimension		Can size	Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz +20°C Typic [m Ω]	Z 10 kHz +20°C Typic [m Ω]	I +20°C 5 min. max. [mA]	I \sim 100 Hz		Code
	\emptyset [mm]	H [mm]						+40°C max. [A]	+85°C max. [A]	
Rated voltage / Peak voltage: 16/18 V										
47000	35	50	1	55	15	15	4.5	20	6.6	A 715020
47000	40	40	4	55	15	15	4.5	20	7.1	A 715030
68000	35	50	1	67	12	10	6.5	20	7.3	A 715021
100000	35	75	2	82	10	8	9.6	20	9.6	A 715023
100000	45	45	8	82	10	8	9.6	20	8.9	A 715035
150000	40	100	7	122	10	8	14.0	20	12.0	A 715034
Rated voltage / Peak voltage: 25/30 V										
33000	35	50	1	70	20	18	5.0	20	5.7	A 715040
33000	40	40	4	100	38	20	5.0	15	4.1	A 715050
47000	35	75	2	62	15	13	7.1	20	7.8	A 715043
47000	40	50	5	62	15	13	7.1	20	7.1	A 715051
68000	40	75	6	67	12	10	10.0	20	9.4	A 715053
100000	40	100	7	82	10	8	15.0	20	12.0	A 715054
Rated voltage / Peak voltage: 35/40 V										
22000	35	50	1	43	24	17	5.2	19	5.2	A 715060
22000	40	40	4	65	36	24	5.2	16	4.2	A 715070
33000	35	75	2	47	15	13	7.9	20	7.8	A 715063
33000	45	45	8	47	15	13	7.9	20	7.3	A 715075
47000	35	100	3	53	12	10	11.0	20	10.0	A 715064
47000	40	75	6	53	12	9	11.0	20	9.4	A 715073
Rated voltage / Peak voltage: 50/58 V										
15000	35	50	1	38	26	18	4.5	19	5.0	A 715080
15000	40	40	4	38	26	18	4.5	18	4.9	A 715090
22000	35	75	2	40	22	16	6.6	20	6.5	A 715083
22000	40	50	5	48	35	17	6.6	17	4.6	A 715091
33000	40	75	6	48	18	14	9.9	20	7.7	A 715093
47000	40	100	7	57	15	11	14.0	20	9.6	A 715094
Rated voltage / Peak voltage: 63/76 V										
10000	35	50	1	25	25	20	3.0	19	5.1	A 715100
10000	40	40	4	30	35	22	3.0	16	4.2	A 715110
15000	35	75	2	28	22	18	5.7	20	6.5	A 715103
15000	45	45	8	28	22	18	5.7	20	6.0	A 715115
22000	35	100	3	32	18	15	8.3	20	8.2	A 715104
22000	40	75	6	32	18	13	8.3	20	7.7	A 715113
33000	45	75	10	43	16	11	11.0	20	8.7	A 715117
47000	45	100	11	50	13	9	13.0	20	9.7	A 715118
Rated voltage / Peak voltage: 80/92 V										
6800	35	50	1	16	25	20	3.2	19	5.1	A 715120
6800	40	40	4	22	35	25	3.2	16	4.2	A 715130
8200	35	50	1	19	25	18	4.0	19	5.1	A 715121
10000	35	75	2	21	25	21	4.8	20	6.1	A 715123
10000	45	45	8	21	25	21	4.8	20	5.6	A 715135
15000	35	100	3	24	20	16	7.2	20	7.7	A 715124
15000	40	75	6	24	20	13	7.2	20	7.3	A 715133
Rated voltage / Peak voltage: 100/115 V										
4700	35	50	1	11	28	20	2.8	18	4.8	A 715140
4700	40	40	4	15	38	25	2.8	15	4.1	A 715150
6800	35	75	2	19	35	23	4.0	19	5.1	A 715143
6800	45	45	8	19	35	23	4.0	18	4.8	A 715155
10000	35	100	3	24	30	21	6.0	20	6.3	A 715144
10000	40	75	6	24	30	20	6.0	20	6.0	A 715153
Rated voltage 160/185 V										
2200	35	50	1	15	60	40	2.1	13	3.4	A 715160
2200	40	40	4	15	60	40	2.1	12	3.2	A 715170
3300	35	75	2	10	40	30	3.2	18	4.8	A 715163
3300	45	45	8	10	40	30	3.2	17	4.4	A 715175
4700	40	75	6	13	35	27	4.5	20	5.5	A 715173
Rated voltage 200/230 V										
1500	35	50	1	14	90	60	1.8	10.0	2.7	A 715180
2200	35	50	1	14	65	45	2.6	12.0	3.2	A 715181
3300	35	75	2	16	60	40	4.0	15.0	3.9	A 715182
3300	45	45	8	16	60	40	4.0	14.0	3.6	A 715194
4700	40	75	6	20	50	30	5.6	17.0	4.6	A 715192
6800	45	100	11	21	30	20	8.2	20.0	7.2	A 715197

SNAPSIK 105 4P

8 000 h / 105°C

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	I +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage / Peak voltage: 250/290 V										
1500	35	50	1	10	70	50	2.3	11,0	3,0	A 715201
1500	40	40	4	12	90	60	2.3	10,0	2,6	A 715209
2200	35	75	2	12	65	45	3.3	14,0	3,8	A 715202
2200	40	50	5	12	65	45	3.3	13,0	3,4	A 715211
3300	40	75	6	12	45	30	5.0	18,0	4,9	A 715212
4700	45	75	10	13	35	25	7.0	20,0	5,9	A 715217
Rated voltage / Peak voltage: 350/385 V										
680	35	50	1	10	120	80	1.4	8,7	2,3	A 715220
1500	35	75	2	12	70	40	3.2	14,0	3,6	A 715222
1500	45	50	9	12	90	60	3.2	12,0	3,1	A 715235
2200	45	75	10	12	54	33	4.6	18,0	4,8	A 715236
3300	45	100	11	14	45	30	6.9	20,0	5,9	A 715237
Rated voltage / Peak voltage: 400/450 V										
560	35	50	1	12	220	160	1.9	6.4	1.7	A 715260
680	35	75	2	12	170	130	2.1	8.7	2.3	A 715263
680	40	40	4	12	190	140	2.1	6.8	1.8	A 715272
1000	35	75	2	12	130	90	2.5	10.0	2.7	A 715265
1000	35	100	3	12	120	80	2.5	12.0	3.2	A 715264
1000	45	45	8	12	140	100	2.5	8.9	2.4	A 715275
1500	40	100	7	12	90	60	3.1	15.0	3.9	A 715274
1500	45	75	10	14	100	70	3.1	13.0	3.5	A 715276
2200	45	100	11	16	90	60	3.8	16.0	4.2	A 715277
Rated voltage / Peak voltage: 450/500 V										
470	35	50	1	10	200	130	1.8	6,7	1,8	A 715280
470	40	40	4	10	200	130	1.8	6,7	1,8	A 715290
560	40	50	5	10	170	110	2.0	7,9	2,1	A 715291
680	35	75	2	13	140	100	2.2	9,6	2,6	A 715283
680	45	45	8	13	150	110	2.2	8,6	2,3	A 715295
820	45	50	9	13	140	100	2.4	9,3	2,5	A 715296
1000	35	100	3	13	130	90	2.7	11,0	3,0	A 715284
1000	40	75	6	13	140	100	2.7	10,0	2,8	A 715292
1500	40	100	7	13	110	80	3.3	13,0	3,5	A 715293
Rated voltage / Peak voltage: 500/550 V										
330	35	50	1	10	350	250	1.6	5.1	1.4	A 715301
470	40	50	5	13	340	240	1.9	5.6	1.5	A 715308
560	45	45	8	16	340	240	2.1	5.7	1.5	A 715318
680	40	75	6	14	240	200	2.3	7.9	2.1	A 715309
1000	40	100	7	16	190	140	2.8	10.0	2.7	A 715312
1000	45	75	10	16	160	120	2.8	10.0	2.8	A 715319

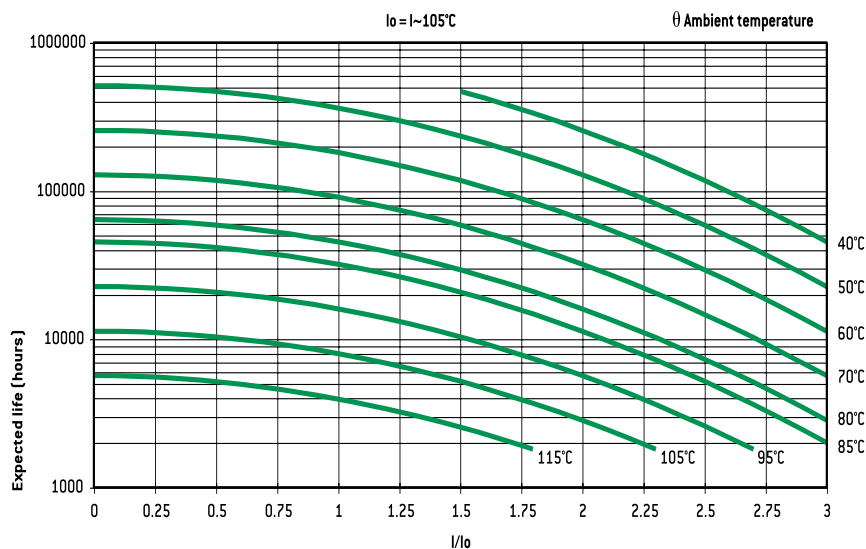
EXPECTED LIFE

as a function of temperature and ripple current

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f : I \sim : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	\geq 50 000
I	0,8 x I \sim	I \sim	1,2 x I \sim	1,3 x I \sim	1,35 x I \sim	1,5 x I \sim	1,6 x I \sim



SNAPSIC 105 LP

8 000 h / 105°C

16 V ... 500 V	330 μ F ... 150 000 μ F	\varnothing 45 mm	- 55°C + 105°C	Long Life Time
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APPLICATIONS

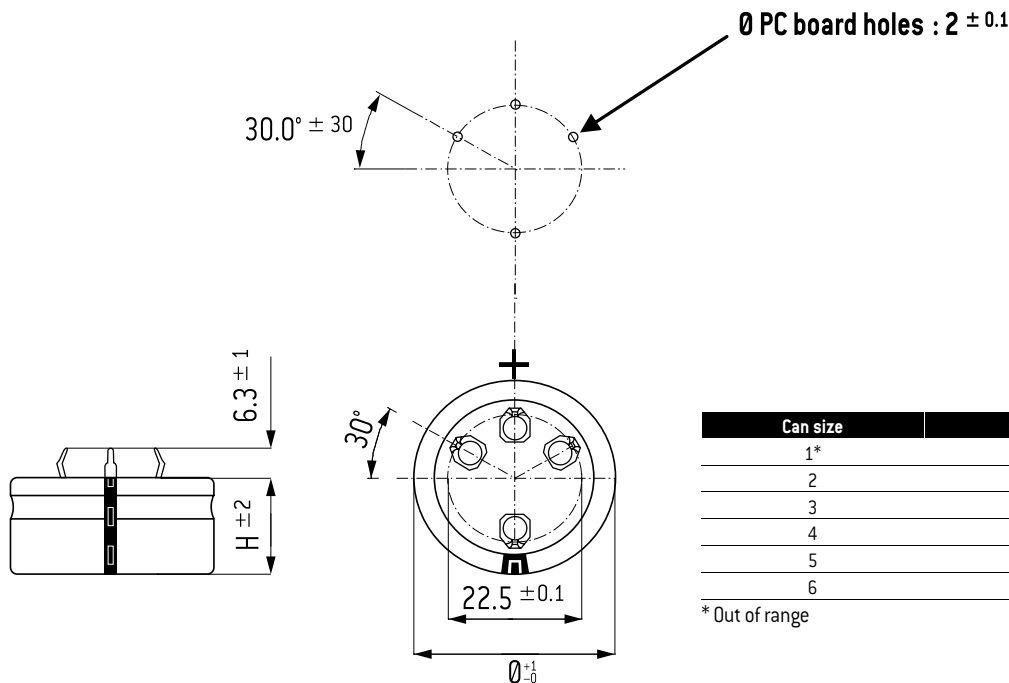
- Printed circuit mounting
- Switch mode power supplies
- Impulse current

Fixing : SNAP-IN pins

Tolerance on capacitance at 20°C : $\pm 20\%$

Operating temperature : - 55°C + 105°C

Low profile 4 SNAP-IN terminals



Can size	\varnothing (mm)	H (mm)
1*	45	16
2	45	21
3	45	25
4	45	30
5	45	35
6	45	40

* Out of range

Standard pins can be replaced by 4.5 mm max pins on request.
 Dummy pins near positive terminal are for mechanical support only.
 They must be electrically insulated from the positive and the negative terminals.

SPECIFICATIONS

CECC 30 300 Long life
 DIN 41 240 - Climatic category: -55 + 105°C / 56 days
 IEC 60 384.4 long life
 Standard endurance test at U_R : 2000 h 105°C / 56 days

RESISTANCE TO VIBRATIONS

Frequency range 10 - 500 Hz
 Displacement amplitude 0,75 mm
 or max acceleration 10 g - 98 m/s²
 Duration 3 x 2 hours

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 M Ω
 Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
 Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

SNAPSIK 105 LP

8 000 h / 105°C

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I ~ 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage / Peak voltage: 16/18 V										
22000	45	21	2	117	65	48	2.1	14	3.7	A 713020
33000	45	25	3	135	50	38	3.0	17	4.5	A 713021
47000	45	30	4	135	35	26	4.5	20	5.8	A 713022
68000	45	35	5	140	25	19	6.8	20	7.2	A 713023
Rated voltage / Peak voltage: 25/29 V										
15000	45	21	2	80	65	50	2.2	14	3.7	A 713040
22000	45	25	3	90	50	40	3.0	17	4.5	A 713041
33000	45	30	4	93	30	22	5.0	20	6,2	A 713042
47000	45	40	6	115	30	20	7.0	20	7,6	A 713044
Rated voltage / Peak voltage: 35/40 V										
10000	45	21	2	56	68	52	2.1	14	3.7	A 713060
15000	45	25	3	71	58	46	3.1	16	4.2	A 713061
22000	45	30	4	86	48	33	4.6	19	4.9	A 713064
Rated voltage / Peak voltage: 50/58 V										
6800	45	21	2	39	70	53	2.0	14	3.6	A 713080
10000	45	25	3	47	58	45	3.0	16	4.2	A 713081
15000	45	35	5	59	48	33	4.5	20	5.2	A 713083
22000	45	40	6	72	35	25	6.6	20	6.4	A 713084
Rated voltage / Peak voltage: 63/72 V										
4700	45	21	2	28	75	55	1.8	13	3.5	A 713100
6800	45	30	4	33	60	45	2.6	17	4.4	A 713102
10000	45	35	5	41	50	35	3.0	19	5.1	A 713103
15000	45	40	6	54	33	28	5.7	20	6.6	A 713104
Rated voltage / Peak voltage: 80/92 V										
3300	45	21	2	20	75	55	1.6	13	3.5	A 713120
4700	45	30	4	20	60	45	2.2	17	4.4	A 713122
6800	45	35	5	23	40	30	3.2	20	5.7	A 713123
10000	45	40	6	30	32	25	4.8	20	6.7	A 713124
Rated voltage / Peak voltage: 100/115 V										
2200	45	21	2	16	90	70	1.3	12	3.2	A 713140
3300	45	30	4	20	75	60	2.0	15	3.9	A 713142
4700	45	35	5	21	55	45	2.8	18	4.9	A 713143
Rated voltage / Peak voltage: 160/185 V										
680	45	21	2	13	230	190	0.65	7.5	2.0	A 713160
1000	45	21	2	17	210	180	1.0	7.8	2.1	A 713164
1500	45	25	3	24	200	170	1.4	8.5	2.3	A 713165
2200	45	30	4	24	130	100	2.1	11	3.0	A 713166
Rated voltage / Peak voltage: 200/230 V										
680	45	21	2	11	170	130	0,81	8,7	2,3	A 713200
1000	45	21	2	15	160	120	1,2	9	2,4	A 713203
1500	45	30	4	20	140	110	1,8	11	2,9	A 713204
2200	45	35	5	22	120	100	2,6	13	3,5	A 713205
Rated voltage / Peak voltage: 250/290 V										
470	45	21	2	11	250	200	0.70	7,2	1,9	A 713200
680	45	21	2	11	170	130	1.0	8,7	2,3	A 713203
1000	45	25	3	15	160	120	1.5	9,5	2,5	A 713204
1500	45	35	5	20	140	110	2.3	11	3,1	A 713205
2200	45	40	6	22	120	100	3.3	13	3.5	A 713206
Rated voltage / Peak voltage: 350/385 V										
330	45	21	2	10	290	190	0.69	6,7	1,8	A 713220
470	45	25	3	10	220	160	1.0	8,1	2,2	A 713221
680	45	30	4	10	150	120	1.4	10	2,8	A 713225
1000	45	35	5	12	120	100	2.1	12	3,3	A 713226
Rated voltage / Peak voltage: 400/450 V										
220	45	21	2	10	470	360	1.2	5.2	1.4	A 713240
330	45	25	3	12	400	280	1.5	6.0	1.6	A 713241
470	45	30	4	13	300	250	1.8	7.4	2.0	A 713242
680	45	35	5	13	240	200	2.1	8.8	2.3	A 713243
820	45	40	6	13	160	120	2.3	11	3.0	A 713244

SNAPSIC 105 LP

8 000 h / 105°C

Capacitance (μF)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic ($\text{m}\Omega$)	Z 10 kHz +20°C Typic ($\text{m}\Omega$)	II +20°C 5 min. max. (mA)	I \sim 100 Hz		Code
	\emptyset (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage / Peak voltage: 450/500 V										
150	45	21	2	10	600	400	1.00	4,6	1,2	A 713260
220	45	21	2	13	500	350	1.25	5,1	1,4	A 713266
330	45	30	4	13	300	230	1.50	7,4	2,0	A 713262
440	45	30	4	13	280	220	1.70	7,7	2,0	A 713265
470	45	35	5	13	270	210	1.80	8,3	2,2	A 713263
560	45	35	5	13	250	170	2.0	8,6	2,3	A 713267
680	45	40	6	13	220	140	2.2	9,6	2,6	A 713268
Rated voltage / Peak voltage: 500/550 V										
150	45	21	2	15	1200	900	1.1	3.3	0.9	A 713283
220	45	25	3	15	850	690	1.4	4.1	1.1	A 713285
330	45	35	5	15	500	350	1.6	6.1	1.6	A 713286
470	45	40	6	17	430	310	1.9	6,9	1,8	A 713287

CASE BOTTOM CONDUCTION COOLING

with radiator or frame put on the case bottom ripple current I_0 is multiplied by 2 to 3. For more details, contact us.

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

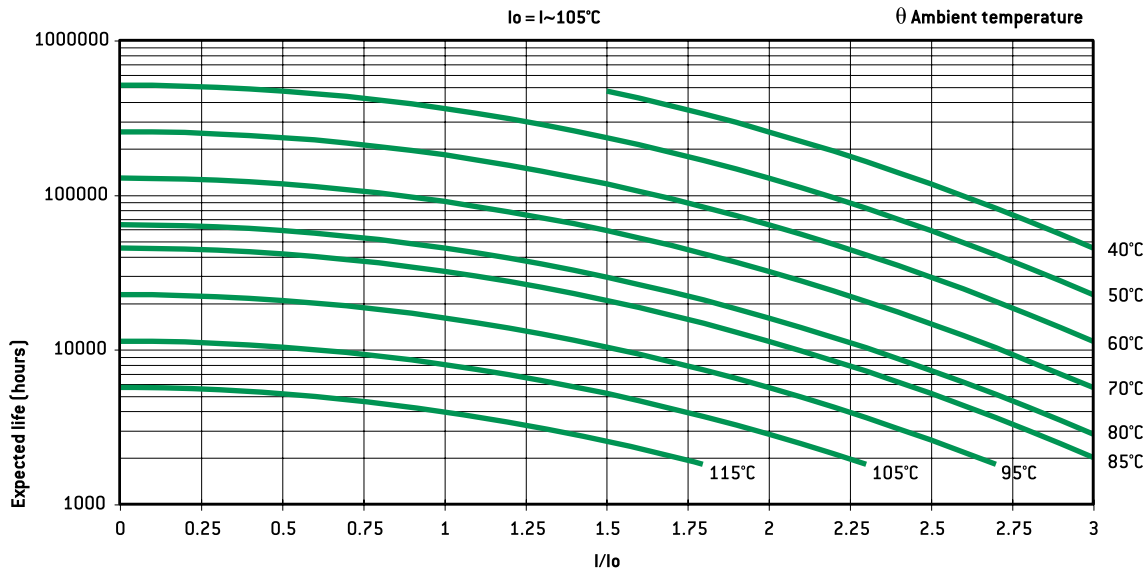
versus frequency f :

I_{\sim} : permissible r.m.s. current at 100 Hz

f [Hz]	50	100	300	600	1 000	10 000	$\geq 50 000$
I_{\sim}	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$

EXPECTED LIFE

as a function of temperature and ripple current



SNAPSIC 4P

10 000 h / 85°C

16 V ... 500 V	330 μ F ... 150 000 μ F	\emptyset 35 mm ... \emptyset 45 mm	-55°C + 85°C	Long Life Time
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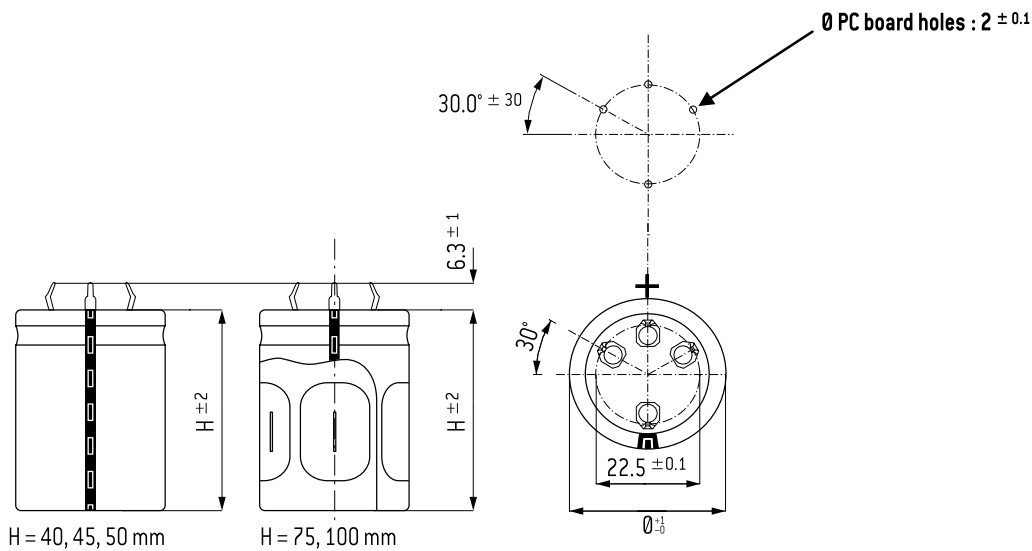
APPLICATIONS

- Printed circuit mounting
- Switch mode power supplies
- Impulse current

Fixing : SNAP-IN pins

Tolerance on capacitance at 20°C : $\pm 20\%$
 Operating temperature : -55°C +85°C

4 SNAP-IN terminals



Dummy pins near positive terminal are for mechanical support only.
 They must be electrically insulated from the positive and the negative terminals.

Can size	\emptyset (mm)	H (mm)
1	35	50
2	35	75
3	35	100
4	40	40
5	40	50
6	40	75
7	40	100
8	45	45
9	45	50
10	45	75
11	45	100

SPECIFICATIONS

CECC 30 300 Long life
 DIN 41 240 - Climatic category FPF - 55°C + 85°C / 56 days
 IEC 60 384.4 long life

RESISTANCE TO VIBRATIONS

Hb (mm)	H = 40, 45, 50	H = 75, 100 *
f (Hz)	10 - 500 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

* and on request for : H = 40, 45, 50

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between pins and mounting hardware : 100 M Ω
 Test voltage at 50 Hz 1 min. between terminals and mounting hardware : 2000 V
 Fire resistance : self extinguish 15 s (IEC 60 695-2-2)

10 000 h / 85°C

Capacitance [μ F]	Dimension		Can size	Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz +20°C Typic [m Ω]	Z 10 kHz +20°C Typic [m Ω]	II +20°C 5 min. max. [mA]	I \sim 100 Hz		Code
	\emptyset [mm]	H [mm]						+40°C max. [A]	+85°C max. [A]	
Rated voltage / Peak voltage: 16/18 V										
47000	35	50	1	55	15	15	4.5	20	8.0	A 714020
47000	40	40	4	55	15	15	4.5	20	7.9	A 714030
68000	35	50	1	67	12	10	6.5	20	9.0	A 714021
100000	35	75	2	82	10	8	9.6	20	12.0	A 714023
100000	45	45	8	82	10	8	9.6	20	11.0	A 714035
150000	40	100	7	122	10	8	14.0	20	14.0	A 714034
Rated voltage / Peak voltage: 25/30 V										
33000	35	50	1	70	20	18	5.0	20	7.0	A 714040
33000	40	40	4	100	38	20	5.0	15	5.0	A 714050
47000	35	75	2	62	15	13	7.1	20	9.6	A 714043
47000	40	50	5	62	15	13	7.1	20	8.7	A 714051
68000	40	75	6	67	12	10	10.0	20	13.0	A 714053
100000	40	100	7	82	10	8	15.0	20	16.0	A 714054
Rated voltage / Peak voltage: 40/48 V										
22000	35	50	1	43	24	17	5.2	19	6.4	A 714060
22000	40	40	4	65	36	24	5.2	15	5.1	A 714070
33000	35	75	2	47	15	13	7.9	20	9.6	A 714063
33000	45	45	8	47	15	13	7.9	20	8.9	A 714075
47000	35	100	3	53	12	10	11.0	20	12.0	A 714064
47000	40	75	6	53	12	9	11.0	20	12.0	A 714073
Rated voltage / Peak voltage: 50/58 V										
15000	35	50	1	38	26	18	4.5	18	6.1	A 714080
15000	40	40	4	38	26	18	4.5	18	6.0	A 714090
22000	35	75	2	40	22	16	6.6	20	7.9	A 714083
22000	40	50	5	48	35	17	6.6	17	5.7	A 714091
33000	40	75	6	48	18	14	9.9	20	9.5	A 714093
47000	40	100	7	57	15	11	14.0	20	12.0	A 714094
Rated voltage / Peak voltage: 63/76 V										
10000	35	50	1	25	25	20	3.0	19	6.2	A 714100
10000	40	40	4	30	35	22	3.0	16	5.2	A 714110
15000	35	75	2	28	22	18	5.7	20	7.9	A 714103
15000	45	45	8	28	22	18	5.7	20	7.4	A 714115
22000	35	100	3	32	18	15	8.3	20	10.0	A 714104
22000	40	75	6	32	18	13	8.3	20	10.0	A 714113
33000	45	75	10	43	16	11	11.0	20	11.0	A 714117
47000	45	100	11	50	13	9	13.0	20	13.0	A 714118
Rated voltage / Peak voltage: 80/92 V										
6800	35	50	1	16	25	20	3.2	19	6.2	A 714120
6800	40	40	4	22	35	25	3.2	16	5.2	A 714130
8200	35	50	1	19	25	18	4.0	19	6.2	A 714121
10000	35	75	2	21	25	21	4.8	20	7.4	A 714123
10000	45	45	8	21	25	21	4.8	20	6.9	A 714135
15000	35	100	3	24	20	16	7.2	20	9.5	A 714124
15000	40	75	6	24	20	13	7.2	20	9.5	A 714133
Rated voltage 100/115 V										
4700	35	50	1	11	28	20	2.8	18	5.9	A 714140
4700	40	40	4	15	38	25	2.8	15	5.0	A 714150
6800	35	75	2	19	35	23	4.0	19	6.3	A 714143
6800	45	45	8	19	35	23	4.0	18	5.8	A 714155
10000	35	100	3	24	30	21	6.0	20	7.7	A 714144
10000	40	75	6	24	30	20	6.0	20	7.7	A 714153
Rated voltage / Peak voltage: 160/185 V										
2200	35	50	1	15	60	40	2.1	13	4.2	A 714160
2200	40	40	4	15	60	40	2.1	12	4.0	A 714170
3300	35	75	2	10	40	30	3.2	18	5.9	A 714163
3300	45	45	8	10	40	30	3.2	16	5.5	A 714175
4700	40	75	6	13	35	27	4.5	20	6.8	A 714173
Rated voltage / Peak voltage: 200/230 V										
1500	35	50	1	11	80	55	1.8	10.0	3.5	A 714180
2200	35	50	1	11	55	40	2.6	13.0	4.2	A 714181
3300	35	75	2	16	60	40	4.0	14.0	4.8	A 714185
3300	45	45	8	16	60	40	4.0	13.0	4.5	A 714196
4700	40	75	6	20	50	30	5.6	17.0	5.7	A 714192
6800	45	100	11	21	30	20	8.2	20	8.9	A 714198

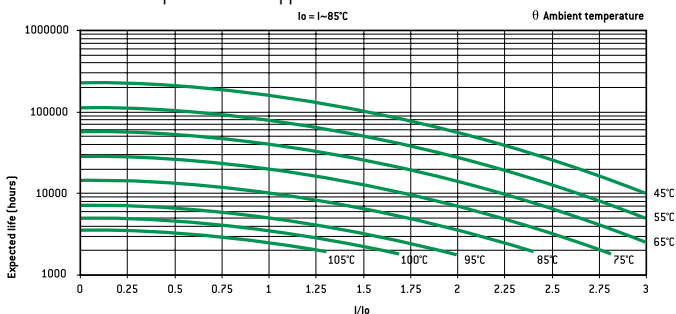
SNAPSIC 4P

10 000 h / 85°C

Capacitance (μ F)	Dimension		Can size	Tan δ 100 Hz +20°C max. (%)	ESR 100 Hz +20°C Typic (m Ω)	Z 10 kHz +20°C Typic (m Ω)	II +20°C 5 min. max. (mA)	I ~ 100 Hz		Code
	\varnothing (mm)	H (mm)						+40°C max. (A)	+85°C max. (A)	
Rated voltage / Peak voltage: 250/290 V										
1500	35	50	1	10	70	50	2.3	11	3,7	A 714201
1500	40	40	4	12	90	60	2.3	9.7	3.2	A 714209
2200	35	75	2	12	65	45	3.3	14.0	4.6	A 714205
2200	40	50	5	12	65	45	3.3	13.0	4.2	A 714211
3300	40	75	6	12	45	30	5.0	18.0	6.0	A 714212
4700	45	75	10	13	35	25	7.0	20.0	7.2	A 714216
Rated voltage / Peak voltage: 350/385 V										
1000	35	50	1	10	80	60	2.1	10,0	3,5	A 714221
1500	35	75	2	12	70	40	3.2	13.0	4.4	A 714222
1500	45	50	9	12	90	60	3,2	11	3,8	A 714236
2200	45	75	10	12	54	33	4.6	17.0	5.8	A 714237
3300	45	100	11	14	45	30	6,9	20	8,0	A 714238
Rated voltage 385/425 V										
560	40	40	4	10	160	100	1.3	7.3	2.4	A 714250
680	35	50	1	10	180	140	1.6	7.0	2.3	A 714241
1000	35	75	2	10	110	80	2.3	11.0	3.5	A 714242
1000	45	45	8	10	110	80	2.3	11.0	3.7	A 714255
1500	40	75	6	10	80	60	3.5	13.0	4.5	A 714252
2200	45	100	11	13	70	50	5.1	17.0	5.8	A 714258
Rated voltage / Peak voltage: 400/450 V										
560	35	50	1	12	220	160	1.9	6.3	2.1	A 714260
680	35	50	1	12	210	150	2.1	6.4	2.1	A 714261
1000	35	75	2	12	120	80	2.5	10.0	3.4	A 714262
1000	45	45	8	12	130	90	2.5	9.1	3.0	A 714275
1200	45	50	9	12	120	80	2,8	10	3,3	A 714276
1500	40	75	6	12	100	70	3.1	12.0	4.0	A 714272
2200	40	100	7	16	90	70	3,8	11	4,8	A 714277
2200	45	100	11	14	80	50	3,8	16.0	5.4	A 714278
Rated voltage / Peak voltage: 450/500 V										
470	35	50	1	13	250	170	2.8	5.9	2.0	A 714280
470	40	40	4	13	250	170	2.8	5.8	1.9	A 714290
560	35	50	1	13	180	120	3.0	7.0	2.3	A 714281
680	35	75	2	13	140	100	3.3	9.4	3.1	A 714283
680	45	45	8	13	150	110	3.3	8.8	2.9	A 714295
820	35	75	2	13	140	90	3.6	9.4	3.1	A 714285
820	45	45	8	13	140	90	3.6	8.8	2.9	A 714296
1000	35	100	3	13	120	90	4.1	12.0	3.9	A 714284
1000	40	75	6	13	120	90	4.1	11.0	3.7	A 714293
1000	45	50	9	13	130	80	4,1	9,5	3,2	A 714299
1500	45	75	10	14	110	80	4.9	12.0	4.1	A 714297
2200	45	100	11	16	90	60	6.0	15,0	5,1	A 714298
Rated voltage / Peak voltage: 500/550 V										
330	35	50	1	13	360	270	2.4	4.9	1.6	A 714301
470	35	75	2	13	320	230	2.9	6.2	2.1	A 714303
470	45	45	8	13	360	260	2.9	5.5	1.8	A 714315
680	40	75	6	13	240	170	3.5	7.8	2.6	A 714313
1000	45	75	10	14	160	120	4.2	10.0	3.4	A 714317
1500	45	100	11	16	130	90	5.2	13.0	4.3	A 714319

EXPECTED LIFE

as a function of temperature and ripple current



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I ~ : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	\geq 50 000
I	0,8 x I~	I~	1,2 x I~	1,3 x I~	1,35 x I~	1,5 x I~	1,6 x I~

AXIAL LEADED



PRORELSIC 145

2 000 h / 145°C

16 V ... 450 V	6,8 μ F ... 25 000 μ F	\varnothing 14 mm ... \varnothing 25 mm	- 55°C + 145°C	Long Life Time
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APPLICATIONS

- Coupling / decoupling
- Smoothing
- Energy storage
- High frequency power supply system
- Telecommunication - Military applications
- Mobile and aircraft installations
- Rated voltage 450 V is specially fit to lamp electronic ballast circuits.

Insulating aluminum case

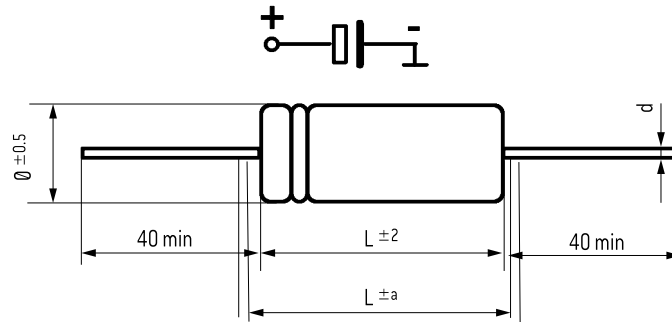
Axial tin coated copper leads

Welded chain providing perfect continuity of the circuit.

Tolerance on capacitance at 20°C : - 10 + 50%

(on request) : - 10 + 30 %

Operating temperature : - 55°C + 145°C (up to 150°C)



\varnothing (mm)	d	a
14 to 18	0,8	4
21	1	4
25	1	8

RESISTANCE TO VIBRATIONS

Hb (mm)	
f (Hz)	10 - 2000 Hz
Amplitude	1,5 mm
Acceleration	20 g - 196 m/s ²
t (h)	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

CECC 30 301-802 Issue 2

IEC 60 384.4 long life

Climatic category GPF: -55°C + 145°C / 56 days

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between leads and mounting hardware : 1000 V

Fire resistance : self extinguish 30 s (IEC 60 695-2-2) without PVC.

PRORELSIC 145

2 000 h / 145°C

Capacitance [μ F]	Case		ESR		Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I ~ 100 Hz +145°C max. [A]	Code
	\emptyset (mm)	L (mm)	Typic [Ω]	Max. [Ω]				
Rated voltage 16 V								
680	14	30	0,25	0,37	0,23	37	0,77	A 708000
1000	16	30	0,17	0,26	0,16	52	1	A 708001
1500	14	30	0,25	0,23	0,23	75	0,77	A 708008
1500	18	30	0,15	0,23	0,16	75	1,14	A 708002
2200	16	30	0,17	0,26	0,16	110	1	A 708009
2200	18	40	0,1	0,15	0,12	110	1,6	A 708003
3300	18	30	0,15	0,23	0,16	160	1,14	A 708010
3300	21	40	0,066	0,1	0,08	160	2,1	A 708004
4700	18	40	0,1	0,15	0,12	230	1,6	A 708011
4700	25	40	0,045	0,07	0,07	230	2,8	A 708005
6800	25	50	0,04	0,06	0,05	330	3,3	A 708006
6800	21	40	0,066	0,1	0,08	330	2,1	A 708012
10000	25	40	0,045	0,07	0,07	480	2,8	A 708013
10000	25	75	0,033	0,05	0,04	480	4,4	A 708007
15000	25	50	0,04	0,06	0,05	720	3,3	A 708014
25000	25	75	0,033	0,05	0,04	1200	4,4	A 708015
Rated voltage 25 V								
470	14	30	0,29	0,44	0,26	39	0,71	A 708020
680	16	30	0,2	0,3	0,23	55	0,92	A 708021
1000	14	30	0,29	0,44	0,26	80	0,71	A 708028
1000	18	30	0,15	0,24	0,14	80	1,14	A 708022
1500	18	40	0,1	0,15	0,1	120	1,59	A 708023
1500	16	30	0,2	0,3	0,23	120	0,92	A 708029
2000	18	30	0,15	0,24	0,14	150	1,14	A 708030
2200	21	40	0,08	0,12	0,08	170	1,93	A 708024
3000	18	40	0,1	0,15	0,1	225	1,59	A 708031
3300	25	40	0,065	0,1	0,06	250	2,4	A 708025
4500	21	40	0,08	0,12	0,08	330	1,93	A 708032
4700	25	50	0,045	0,07	0,05	360	3,1	A 708026
6800	25	40	0,065	0,1	0,06	510	2,4	A 708033
6800	25	75	0,04	0,06	0,04	510	4	A 708027
9000	25	50	0,045	0,07	0,05	670	3,1	A 708034
14000	25	75	0,04	0,06	0,04	1050	4	A 708035
Rated voltage 40 V								
330	14	30	0,32	0,48	0,3	44	0,68	A 708040
470	16	30	0,23	0,34	0,25	60	0,86	A 708041
680	14	30	0,32	0,48	0,3	86	0,68	A 708048
680	18	30	0,15	0,23	0,16	86	1,14	A 708042
1000	16	30	0,23	0,34	0,25	120	0,86	A 708049
1000	16	40	0,11	0,17	0,12	120	1,51	A 708043
1200	18	30	0,15	0,23	0,16	140	1,14	A 708050
1500	21	40	0,073	0,11	0,1	180	2	A 708044
2100	18	40	0,11	0,17	0,12	250	1,51	A 708051
2200	25	40	0,053	0,08	0,09	270	2,6	A 708045
3000	21	40	0,073	0,11	0,1	360	2	A 708052
3300	25	50	0,04	0,06	0,05	400	3,3	A 708046
4500	25	40	0,053	0,08	0,09	540	2,6	A 708053
4700	25	75	0,033	0,05	0,05	570	4,4	A 708047
6300	25	50	0,04	0,06	0,05	750	3,3	A 708054
10000	25	75	0,033	0,05	0,05	1200	4,4	A 708055

(1) F = 10 kHz [C > 1000 μ F], F = 100 kHz [C \leq 1000 μ F]

Z typ = Z max / 2

PRORELSIC 145

2 000 h / 145°C

Capacitance [μ F]	Case		ESR		Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I ~ 100 Hz +145°C max. [A]	Code
	\emptyset [mm]	L [mm]	Typic [Ω]	Max. [Ω]				
Rated voltage 63 V								
220	16	30	0,27	0,41	0,3	46	0,8	A 708061
330	18	30	0,2	0,3	0,2	66	0,99	A 708062
470	18	40	0,13	0,2	0,13	93	1,4	A 708063
500	16	30	0,27	0,41	0,3	95	0,8	A 708068
680	21	40	0,1	0,15	0,1	130	1,73	A 708064
700	18	30	0,2	0,3	0,2	130	0,99	A 708069
1000	18	40	0,13	0,2	0,13	190	1,4	A 708070
1000	25	40	0,07	0,11	0,08	190	2,3	A 708065
1500	21	40	0,1	0,15	0,1	290	1,73	A 708071
1500	25	50	0,065	0,1	0,06	290	3	A 708066
2200	25	75	0,06	0,09	0,05	420	3,8	A 708067
2400	25	40	0,07	0,11	0,08	450	2,3	A 708072
3200	25	50	0,065	0,1	0,06	600	3	A 708073
5200	25	75	0,06	0,09	0,05	490	3,8	A 708074
Rated voltage 100 V								
100	16	30	1	1,5	0,77	34	0,41	A 708081
180	16	30	1	1,5	0,77	54	0,41	A 708090
220	18	40	0,4	0,6	0,4	70	0,8	A 708083
310	18	40	0,4	0,6	0,4	90	0,8	A 708091
330	21	40	0,3	0,45	0,3	100	1	A 708084
450	21	40	0,3	0,45	0,3	135	1	A 708092
470	25	40	0,2	0,3	0,25	150	1,35	A 708085
680	25	40	0,2	0,3	0,25	210	1,35	A 708093
680	25	50	0,18	0,27	0,2	210	1,6	A 708086
900	25	50	0,18	0,27	0,2	270	1,6	A 708094
1000	25	75	0,13	0,2	0,12	300	2,2	A 708087
2200	25	75	0,07	0,11	0,08	660	3	A 708089
2600	25	75	0,07	0,11	0,08	780	3	A 708095
Rated voltage 160 V								
22	14	30	2,8	5,6	1,1	25	0,23	A 708100
38	14	30	2,8	5,6	1,1	36	0,23	A 708110
47	18	40	1,1	1,7	0,65	45	0,48	A 708103
68	21	40	0,8	1,2	0,44	65	0,61	A 708104
100	18	40	1,1	1,7	0,65	100	0,48	A 708111
100	25	40	0,4	0,6	0,3	100	0,95	A 708105
150	25	50	0,3	0,5	0,25	140	1,21	A 708106
160	21	40	0,8	1,2	0,44	150	0,61	A 708112
220	25	75	0,2	0,3	0,2	210	1,79	A 708107
250	25	40	0,4	0,6	0,3	240	0,95	A 708113
330	25	50	0,3	0,5	0,25	310	1,21	A 708114
470	25	75	0,12	0,2	0,13	450	2,3	A 708109
530	25	75	0,12	0,2	0,13	500	2,3	A 708115
Rated voltage 250 V								
15	18	30	3,3	5	2	25	0,24	A 708122
33	18	40	1,5	2,3	1	50	0,41	A 708123
40	18	30	3,3	5	2	60	0,24	A 708130
47	25	40	0,9	1,4	0,8	70	0,64	A 708125
62	18	40	1,5	2,3	1	93	0,41	A 708131
68	25	50	0,73	1,1	0,6	100	0,78	A 708126
100	25	75	0,45	0,7	0,3	150	1,2	A 708127
135	25	40	0,9	1,4	0,8	200	0,64	A 708132
180	25	50	0,73	1,1	0,6	270	0,78	A 708133
220	25	75	0,3	0,45	0,25	330	1,45	A 708129
280	25	75	0,3	0,45	0,25	330	1,45	A 708134

(1) F = 10 kHz (C > 1000 μ F), F = 100 kHz (C \leq 1000 μ F)
Z typ = Z max / 2

PRORELSIC 145

2 000 h / 145°C

Capacitance [μF]	Case		ESR		Z F [1] +20°C max. [Ω]	II +20°C 5 min. max. [μA]	I ~ 100 Hz +145°C max. [A]	Code
	0 (mm)	L (mm)	Typic [Ω]	Max. [Ω]				
Rated voltage 450 V								
6,8	14	30	11	17	7	110	0,12	A 708140
10	14	30	7,2	11	5,1	130	0,14	A 708141
15	14	30	7,2	11	5,1	160	0,14	A 708150
15	16	30	4,8	7,2	4	160	0,19	A 708142
22	18	30	3	4,5	2,5	200	0,25	A 708143
33	18	40	1,7	2,5	1,5	250	0,39	A 708144
47	21	40	1,4	2,1	1,3	300	0,46	A 708145
68	25	40	1,3	1,9	1,3	350	0,53	A 708146
75	25	40	1,3	1,9	1,3	370	0,53	A 708151
100	25	50	0,9	1,4	1	430	0,7	A 708147
220	25	75	0,6	0,9	0,7	630	1	A 708149

(1) F = 10 kHz (C > 1000 μF), F = 100 kHz (C \leq 1000 μF)
Z typ = Z max / 2

PEAK VOLTAGE (V)

U_R : rated voltage

U_p : Repetitive standard peak voltage (30 s)

U_s : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

U_R	16 V	25 V	40 V	63 V	100 V	160 V	250 V	450 V
U_p	18	29	46	72	115	184	288	495
U_s						235	340	620

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

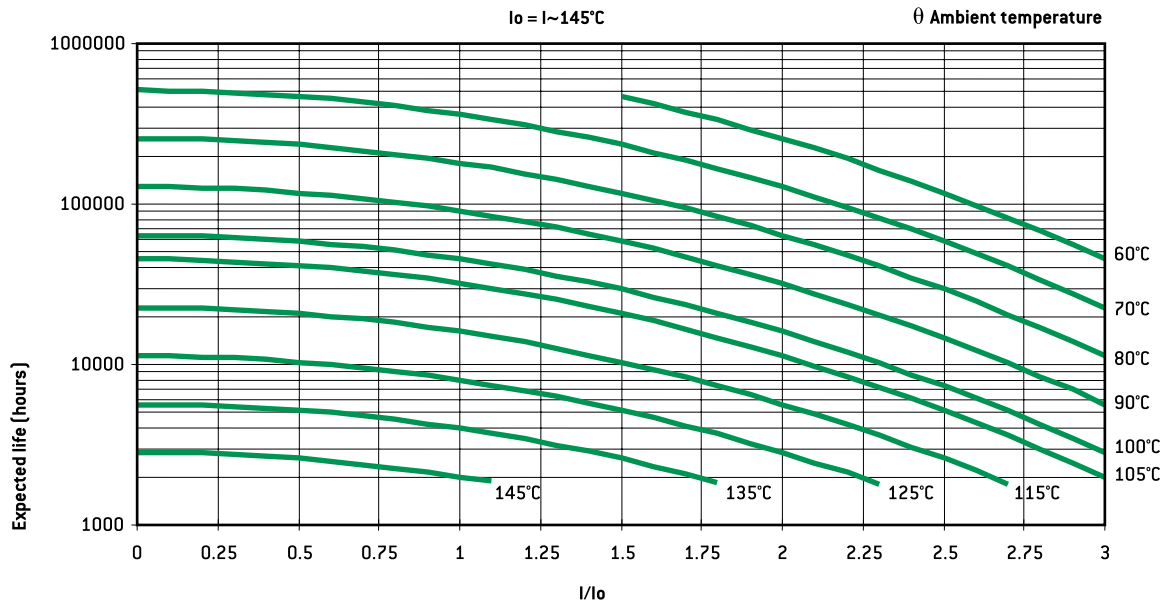
versus frequency f :

I ~ : permissible r.m.s. current at 100 Hz

f [Hz]	50	100	300	600	1 000	10 000	\geq 50 000
I	0,8 x I ~	I ~	1,2 x I ~	1,3 x I ~	1,35 x I ~	1,5 x I ~	1,6 x I ~

EXPECTED LIFE

as a function of temperature and ripple current



VACSIC 150

1 500 h / 150°C

16 V ... 450 V	6.8 μ F ... 3 300 μ F	\varnothing 12 mm ... \varnothing 16 mm	- 55°C + 150°C	Long life time
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APPLICATIONS

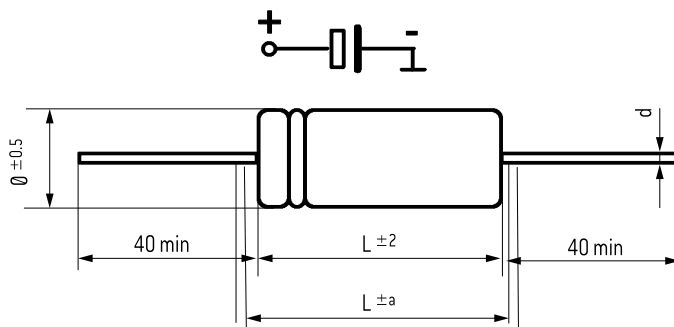
- Coupling / decoupling
- Smoothing
- Energy storage
- High frequency power supply system
- Telecommunication - Military applications
- Mobile and aircraft installations
- Rated voltage 450 V is specially fit to lamp electronic ballast circuits.

Insulating aluminum case

Axial tin coated copper leads

Welded chain providing perfect continuity of the circuit.

Tolerance on capacitance at 20°C	: - 10 + 50%
(on request)	: - 10 + 30%
Operating temperature	: - 55°C + 150°C



\varnothing (mm)	d	a
12 - 16	0,8	4

RESISTANCE TO VIBRATIONS

Hb (mm)	Standard
(Hz)	10 - 2000 Hz
Amplitude	1.5 mm
Acceleration	45 g
t (h)	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

CECC 30 301-802 Issue 2

IEC 60 384.4 long life

Climatic category GPF: -55°C + 150°C / 56 days

Standard endurance test at U_R : 2000 h 145°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between

leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between

leads and mounting hardware : 1000 V

Fire resistance

: self extinguish 30 s
(IEC 60 695-2-2) without PVC.

1 500 h / 150°C

Capacitance (μF)	Case		Tg δ max. (%)	ESR 100 Hz Typic (Ω)	Z 10 kHz +20°C max. (Ω)	I. leak +20°C 5 min. max. (mA)	I \sim 100 Hz +150°C (A)	Code
	\emptyset (mm)	L (mm)						
Rated voltage: 16 V								
1500	12	30	15	0.12	0.15	72	1	A774000
2200	14	30	15	0.08	0.10	106	1.33	A774001
3300	16	30	15	0.05	0.07	158	1.7	A774002
Rated voltage: 25 V								
800	12	30	13	0.19	0.25	60	0.79	A774020
1200	14	30	13	0.13	0.17	90	1.05	A774021
1800	16	30	13	0.08	0.11	135	1.4	A774022
Rated voltage: 40 V								
470	12	30	10	0.26	0.33	56	0.69	A774040
800	14	30	10	0.15	0.19	96	0.98	A774041
1200	16	30	10	0.10	0.13	144	1.3	A774042
Rated voltage: 63 V								
220	12	30	8	0.44	0.57	42	0.53	A774060
470	14	30	8	0.20	0.27	89	0.84	A774061
680	16	30	8	0.14	0.18	129	1.1	A774062
Rated voltage: 100 V								
100	12	30	10	1.22	1.59	30	0.32	A774080
150	14	30	10	0.82	1.06	45	0.42	A774081
220	16	30	10	0.56	0.72	66	0.6	A774082
Rated voltage: 160 V								
33	12	30	8	2.97	3.85	32	0.2	A774100
47	14	30	8	2.08	2.70	45	0.26	A774101
68	16	30	8	1.44	1.87	65	0.3	A774102
Rated voltage: 250 V								
15	12	30	8	6.53	8.48	23	0.13	A774120
22	14	30	8	4.45	5.78	33	0.26	A774121
33	16	30	8	2.97	3.85	50	0.3	A774122
Rated voltage: 450 V								
6.8	12	30	8	14.40	18.72	18	0.09	A774140
15	14	30	8	6.53	8.48	41	0.15	A774141
20	16	30	8	4.90	6.36	54	0.2	A774142

PEAK VOLTAGE (V) U_R : rated voltage U_p : Repetitive standard peak voltage (30 s) U_s : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

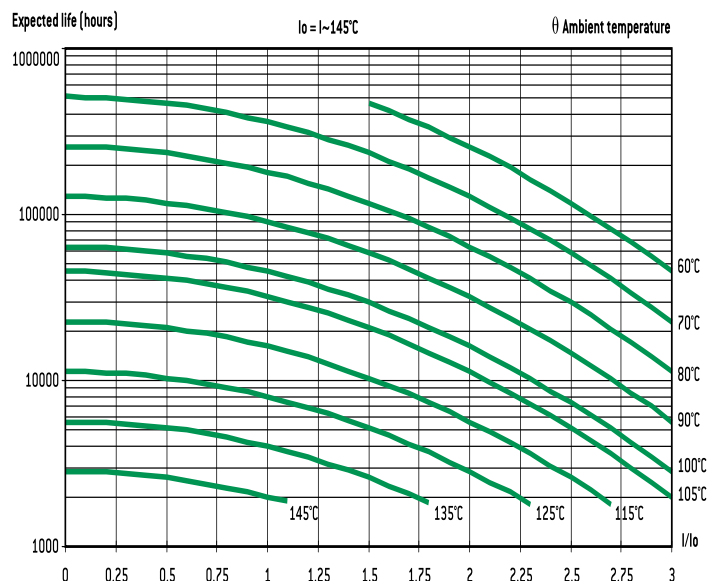
EXPECTED LIFE

as a function of temperature and ripple current

U_R	16 V	25 V	40 V	63 V	100 V	160 V	250 V	450 V
U_p	18	29	46	72	115	184	288	495
U_s						235	340	620

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)versus frequency f : I_{\sim} : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$



PRORELSIC 125

CO 52

5 000 h / 125°C

10V ... 450V	1 μ F ... 25 000 μ F	\emptyset 6,5 mm ... \emptyset 25 mm	- 55°C + 125°C	Long Life Time
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APPLICATIONS

- Coupling / decoupling
- Smoothing
- Energy storage
- High frequency power supply system
- Telecommunication - military applications
- Mobile and aircraft installations

Insulating aluminum case

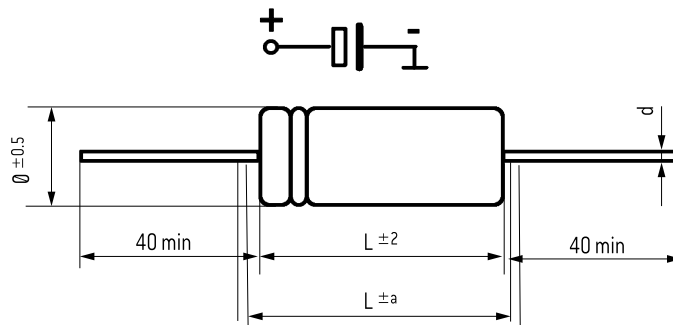
Axial tin coated copper leads

Welded chain, providing perfect continuity of the circuit.

Tolerance on capacitance at 20°C : - 10 + 50 %

(on request) : - 10 + 30 %

Operating temperature : - 55°C + 125°C



\emptyset (mm)	d	a
6,5 - 18	0,8	4
21	1	4
25	1	8

RESISTANCE TO VIBRATIONS

Hb (mm)	
(Hz)	10 - 2000 Hz
Amplitude	1,5 mm
Acceleration	20 g - 196 m/s ²
t (h)	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Model CO 52 - Long life

DIN 40040 FKD

DIN 41 257 - DIN 41 240

CECC 30 301-802 Issue 2

IEC 60 384.4 long life

Climatic category GPF: -55°C + 125°C / 56 days

Standard endurance test at $U_R = 2000$ h / 125°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between leads and mounting hardware : 1000 V

Fire resistance : self extinguish 30 s (IEC 60 695-2-2) without PVC.

PRORELSIC 125

CO 52

5 000 h / 125°C

Capacitance [μF]	Case		ESR		Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μA]	I ~ 100 Hz		Code
	Ø [mm]	L [mm]	Typic [Ω]	Max. [Ω]			+85°C max. [A]	+125°C max. [A]	
Rated voltage 10 V									
47	6,5	15	3,6	5,42	4	5	0,22	0,1	A 701020
68	6,5	19	2,5	3,74	2,8	7	0,29	0,13	A 701021
100	6,5	15	3,6	5,42	4	8	0,22	0,1	A 701029
100	8,5	19	1,5	2,25	1,6	8	0,43	0,19	A 701028
150	6,5	19	2,5	3,74	2,8	9	0,29	0,13	A 701030
150	8,5	19	1,35	2,03	1,1	9	0,46	0,2	A 701022
220	10	19	0,77	1,15	0,8	11	0,66	0,3	A 701023
300	8,5	19	1,35	2,03	1,1	13,5	0,46	0,2	A 701031
330	10	25	0,51	0,77	0,5	14	0,92	0,41	A 701024
420	10	19	0,77	1,15	0,8	16	0,66	0,3	A 701032
470	12	25	0,36	0,54	0,4	18	1,21	0,54	A 701025
600	10	25	0,51	0,77	0,5	19	0,92	0,41	A 701033
680	12	30	0,25	0,37	0,3	24	1,57	0,7	A 701026
800	12	25	0,36	0,54	0,4	24	1,21	0,54	A 701034
1000	14	30	0,21	0,31	0,21	34	1,87	0,84	A 701027
1200	12	30	0,25	0,37	0,3	36	1,57	0,7	A 701035
1500	16	30	0,14	0,21	0,19	50	2,02	0,9	A 703020
1700	14	30	0,21	0,31	0,21	51	1,87	0,84	A 703036
2200	18	30	0,11	0,17	0,14	70	3	1,33	A 703021
2400	16	30	0,14	0,21	0,19	72	2,02	0,9	A 703024
3100	18	30	0,11	0,17	0,14	93	3	1,33	A 703025
3300	18	40	0,09	0,13	0,1	100	3,7	1,7	A 703022
4700	21	40	0,06	0,09	0,08	150	5	2,2	A 703023
4800	18	40	0,09	0,13	0,1	150	3,7	1,7	A 703026
6800	25	40	0,05	0,07	0,06	200	6	2,7	A 703500
7000	21	40	0,06	0,09	0,08	210	5	2,2	A 703027
10000	25	40	0,05	0,07	0,06	300	6	2,7	A 703028
10000	25	50	0,033	0,05	0,05	300	8,2	3,7	A 703501
14000	25	50	0,033	0,05	0,05	420	8,2	3,7	A 703029
15000	25	75	0,027	0,04	0,04	450	10	4,9	A 703502
25000	25	75	0,027	0,04	0,04	660	10	4,9	A 703030
Rated voltage 16 V									
33	6,5	15	4,2	6,27	4	5	0,2	0,09	A 701040
47	6,5	19	2,9	4,4	3	8	0,27	0,12	A 701041
68	8,5	19	2	3,04	1,9	8	0,37	0,17	A 701042
100	6,5	15	4,2	6,27	4	9	0,2	0,09	A 701049
100	8,5	19	1,4	2,07	1,1	9	0,45	0,2	A 701043
150	6,5	19	2,9	4,4	3	11	0,27	0,12	A 701050
150	10	19	0,92	1,38	0,8	11	0,61	0,27	A 701044
220	10	25	0,63	0,94	0,6	15	0,83	0,37	A 701045
300	8,5	19	1,4	2,07	1,1	17	0,45	0,2	A 701052
330	12	25	0,41	0,62	0,4	20	1,14	0,51	A 701046
420	10	19	0,92	1,38	0,8	23	0,61	0,27	A 701053
470	12	30	0,33	0,5	0,3	27	1,37	0,61	A 701047
600	10	25	0,63	0,94	0,6	28	1,83	0,37	A 701054
680	14	30	0,25	0,37	0,23	37	1,71	0,77	A 701048
800	12	25	0,41	0,62	0,4	38	1,14	0,51	A 701055
1000	16	30	0,17	0,26	0,16	52	2,24	1	A 703040
1200	12	30	0,33	0,5	0,3	57	1,37	0,61	A 701056
1500	18	30	0,15	0,23	0,16	75	2,5	1,14	A 703041
1700	14	30	0,25	0,37	0,23	81	1,71	0,77	A 701057
2200	18	40	0,1	0,15	0,12	110	3,5	1,6	A 703042
2400	16	30	0,17	0,26	0,16	115	2,24	1	A 703044
3300	21	40	0,066	0,1	0,08	160	4,8	2,1	A 703043
4700	25	40	0,045	0,07	0,07	230	6,4	2,8	A 703510
6800	25	50	0,04	0,06	0,05	330	7,4	3,3	A 703511
10000	25	75	0,033	0,05	0,04	480	9,8	4,4	A 703512

(1) F = 10 kHz [C > 1000 μF], F = 100 kHz [C ≤ 1000 μF]

Z typ = Z max / 2

PRORELSIC 125

CO 52

5 000 h / 125°C

Capacitance (μF)	Case		ESR		Z F(1) +20°C max. (Ω)	II +20°C 5 min. max. (μA)	I~ 100 Hz		Code
	\emptyset (mm)	L (mm)	Typic (Ω)	Max. (Ω)			+85°C max. (A)	+125°C max. (A)	
Rated voltage 25 V									
15	6,5	15	6,4	10,61	4	4	0,16	0,07	A 701060
22	6,5	19	4,3	7,23	3	6	0,22	0,1	A 701061
47	8,5	19	1,7	2,85	1,6	8	0,26	0,11	A 701068
63	6,5	15	6,4	10,61	4	19	0,16	0,07	A 701069
68	10	19	1,4	2,34	1,2	9	0,44	0,2	A 701062
90	6,5	19	4,3	7,23	3	11	0,22	0,1	A 701070
100	10	19	0,95	1,59	0,8	12	0,6	0,27	A 701063
120	10	19	1,4	2,34	1,2	13	0,44	0,2	A 701072
150	10	25	0,63	1,06	0,6	15	0,83	0,37	A 701064
170	8,5	19	1,7	2,85	1,6	16	0,26	0,11	A 701071
220	12	25	0,48	0,72	0,48	21	1,05	0,47	A 701065
240	10	19	0,95	1,59	0,8	21	0,6	0,27	A 701073
330	12	30	0,32	0,48	0,36	29	1,39	0,62	A 701066
350	10	25	0,63	1,06	0,6	29	0,83	0,37	A 701074
460	12	25	0,48	1,72	0,48	39	1,05	0,47	A 701075
470	14	30	0,29	0,44	0,26	39	1,59	0,71	A 701067
680	16	30	0,2	0,3	0,23	55	2,1	0,92	A 703060
700	12	30	0,32	0,48	0,36	55	1,39	0,62	A 701076
1000	18	30	0,15	0,24	0,14	80	2,5	1,14	A 703061
1500	18	40	0,1	0,15	0,1	120	3,5	1,59	A 703062
2200	21	40	0,066	0,1	0,08	170	4,8	2,1	A 703063
3300	25	40	0,045	0,07	0,06	250	6,4	2,8	A 703520
3600	21	40	0,066	0,1	0,08	250	4,8	2,1	A 703064
4700	25	50	0,04	0,06	0,05	360	7,4	3,3	A 703521
6800	25	75	0,033	0,05	0,04	510	9,8	4,4	A 703522
Rated voltage 40 V									
10	6,5	15	8	12,7	5,2	4	0,15	0,07	A 701080
15	6,5	19	5,3	8,49	3,9	6	0,2	0,09	A 701081
32	6,5	15	8	12,7	5,2	8	0,15	0,07	A 701089
33	8,5	19	2,4	3,86	2	8	0,34	0,15	A 701082
44	6,5	19	5,3	8,49	3,9	10	0,2	0,09	A 701090
44	8,5	19	2,4	3,86	2	10	0,34	0,15	A 701091
47	8,5	19	1,7	2,71	1,4	10	0,41	0,18	A 701083
68	10	19	1,2	1,87	1	12	0,53	0,24	A 701084
85	8,5	19	1,7	2,71	1,4	14	0,41	0,18	A 701092
100	10	25	0,8	1,27	0,78	16	0,73	0,33	A 701085
120	10	19	1,2	1,87	1	17	0,53	0,24	A 701093
150	12	25	0,53	0,84	0,52	22	1	0,44	A 701086
170	10	25	0,8	1,27	0,78	22	0,73	0,33	A 701094
220	12	30	0,36	0,57	0,38	30	1,31	0,59	A 701087
230	12	25	0,53	0,84	0,52	30	1	0,44	A 701095
330	14	30	0,32	0,48	0,3	44	1,51	0,68	A 701088
340	12	30	0,36	0,57	0,38	44	1,31	0,59	A 701096
470	16	30	0,23	0,34	0,25	60	1,9	0,86	A 703080
680	18	30	0,15	0,23	0,16	86	2,5	1,14	A 703081
1000	18	40	0,11	0,17	0,12	120	3,4	1,51	A 703082
1500	21	40	0,073	0,11	0,1	180	4,5	2	A 703083
2200	25	40	0,053	0,08	0,06	270	5,9	2,6	A 703530
3300	25	50	0,04	0,06	0,05	400	7,4	3,3	A 703531
4700	25	75	0,033	0,05	0,04	570	9,8	4,4	A 703532

[1] F = 10 kHz (C > 1000 μF), F = 100 kHz (C \leq 1000 μF)

Z typ = Z max / 2

PRORELSIC 125

CO 52

5 000 h / 125°C

Capacitance [μ F]	Case		ESR		Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I ~ 100 Hz		Code
	Ø (mm)	L (mm)	Typic [Ω]	Max. [Ω]			+85°C max. [A]	+125°C max. [A]	
Rated voltage 63 V									
4,7	6,5	15	9	18	4	3	0,12	0,06	A 701100
10	6,5	19	6,4	11,1	3	6	0,18	0,08	A 701101
15	8,5	19	2,9	5,24	1,6	9	0,31	0,14	A 701102
21	6,5	15	9	18	4	9	0,12	0,06	A 701108
22	8,5	19	2,1	4,2	1,2	9	0,36	0,16	A 701103
28	6,5	19	6,4	11,1	3	9	0,18	0,08	A 701109
28	8,5	19	2,9	5,24	1,6	9	0,31	0,14	A 701110
33	10	19	1,1	2,2	0,8	10	0,56	0,24	A 701104
47	10	25	0,9	1,8	0,6	13	0,69	0,31	A 701105
56	8,5	19	2,1	4,2	1,2	14	0,36	0,16	A 701111
68	10	25	0,7	1,4	0,5	17	0,78	0,35	A 701106
78	10	19	1,1	2,2	0,8	18	0,56	0,24	A 701112
100	12	30	0,4	0,8	0,3	23	1,24	0,56	A 701107
110	10	25	0,7	1,4	0,5	24	0,78	0,35	A 701113
220	16	30	0,27	0,41	0,3	46	1,78	0,8	A 703100
220	12	30	0,4	0,8	0,3	46	1,24	0,56	A 701114
330	18	30	0,2	0,3	0,2	66	2,2	0,99	A 703101
470	18	40	0,13	0,2	0,13	93	3,1	1,4	A 703102
550	16	30	0,27	0,41	0,3	100	1,78	0,8	A 703104
680	21	40	0,1	0,15	0,1	130	3,9	1,73	A 703103
1000	25	40	0,07	0,11	0,08	190	5,1	2,3	A 703540
1500	25	50	0,05	0,08	0,06	290	6,6	3	A 703541
2200	25	75	0,045	0,07	0,05	420	8,4	3,8	A 703542
Rated voltage 100 V									
2,2	6,5	15	15	30	8	2	0,11	0,05	A 701120
4,7	6,5	19	9	15	4,5	5	0,15	0,07	A 701121
6,8	8,5	19	6	10	3	7	0,22	0,1	A 701122
8	6,5	15	15	30	8	8	0,11	0,05	A 701129
10	8,5	19	5,1	8,8	2,3	10	0,23	0,1	A 701123
12	6,5	19	9	15	4,5	10	0,15	0,07	A 701130
15	10	19	3,6	6,5	2	10	0,31	0,14	A 701124
22	10	19	2,5	4,4	1,4	11	0,37	0,16	A 701125
22	8,5	19	5,1	8,8	2,3	11	0,23	0,1	A 701131
33	10	19	2,5	4,4	1,4	14	0,37	0,16	A 701132
33	12	25	1,6	2,8	1,2	14	0,58	0,26	A 701126
47	12	30	1,2	1,8	1	18	0,72	0,32	A 701127
61	12	25	1,6	2,8	1,2	19	0,58	0,26	A 701133
68	14	30	0,9	1,4	0,7	24	0,9	0,4	A 701128
92	12	30	1,2	1,8	1	27	0,72	0,32	A 701134
100	16	30	0,5	0,75	0,5	34	1,31	0,58	A 703120
140	14	30	0,9	1,4	0,7	42	0,9	0,4	A 701135
150	16	30	0,4	0,6	0,4	49	1,46	0,65	A 703123
220	18	40	0,2	0,3	0,2	70	2,5	1,12	A 703121
220	16	30	0,4	0,6	0,4	70	1,46	0,65	A 703124
310	18	40	0,2	0,3	0,2	100	2,5	1,12	A 703125
330	21	40	0,15	0,22	0,15	100	3,2	1,41	A 703122
370	21	40	0,15	0,22	0,15	111	3,2	1,41	A 703126
470	25	40	0,12	0,18	0,12	150	3,9	1,74	A 703550
670	25	40	0,12	0,18	0,12	200	3,9	1,74	A 703127
680	25	50	0,1	0,15	0,1	200	4,7	2,1	A 703128
900	25	50	0,1	0,15	0,1	270	4,7	2,1	A 703130
1000	25	75	0,07	0,1	0,06	300	6,8	3	A 703552
1100	25	75	0,07	0,1	0,06	330	6,8	3	A 703131
2200	25	75	0,04	0,06	0,04	660	8,9	4	A 703553

(1) F = 10 kHz (C > 1000 μ F), F = 100 kHz (C \leq 1000 μ F)

Z typ = Z max / 2

PRORELSIC 125

CO 52

5 000 h / 125°C

Capacitance [μ F]	Case		ESR		Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I~ 100 Hz		Code
	\emptyset [mm]	L [mm]	Typic [Ω]	Max. [Ω]			+85°C max. [A]	+125°C max. [A]	
Rated voltage 160 V									
1	6,5	15	53	105	18	2	0,06	0,03	A 701140
2	6,5	15	53	105	18	4	0,06	0,03	A 701149
2,2	6,5	19	24	48	12	4	0,09	0,04	A 701141
3	6,5	19	24	48	12	5	0,09	0,04	A 701150
3,3	8,5	19	15	30	6,6	5	0,14	0,06	A 701142
4,7	10	19	8	16	4,6	8	0,2	0,09	A 701143
6	8,5	19	15	30	6,6	10	0,14	0,06	A 701151
6,8	10	25	6	12	3,2	11	0,27	0,12	A 701144
8	10	19	8	16	4,6	12	0,2	0,09	A 701152
10	12	25	5	10	2,4	14	0,33	0,15	A 701145
11	10	25	6	12	3,2	14	0,27	0,12	A 701153
15	12	25	5	10	2,4	18	0,33	0,15	A 701154
15	12	30	3,5	7	1,8	18	0,42	0,19	A 701146
22	12	30	3,5	7	1,8	25	0,42	0,19	A 701155
22	14	30	2,8	5,6	1,1	25	0,51	0,23	A 701147
33	14	30	1,8	2,7	1	36	0,64	0,29	A 701148
47	18	40	1,1	1,7	0,65	45	1,07	0,48	A 703140
68	21	40	0,8	1,2	0,44	65	1,38	0,61	A 703141
100	25	40	0,4	0,6	0,3	100	2,1	0,95	A 703560
150	25	50	0,3	0,5	0,25	140	2,7	1,21	A 703561
220	25	75	0,2	0,3	0,2	210	4	1,79	A 703562
470	25	75	0,12	0,2	0,13	450	5,2	2,3	A 703563
Rated voltage 250 V									
15	18	30	3,3	5	2	25	0,54	0,24	A 703160
22	18	30	2,5	3,8	1,5	37	0,62	0,28	A 703165
33	18	40	1,5	2,3	1	50	0,92	0,41	A 703161
47	25	40	0,9	1,4	0,8	70	1,42	0,64	A 703570
68	25	50	0,73	1,1	0,6	100	1,75	0,78	A 703571
100	25	75	0,45	0,7	0,3	150	2,7	1,2	A 703572
Rated voltage 350 V									
10	18	30	4,2	6,3	3,9	120	0,48	0,22	A 703181
15	18	30	3	4,5	2,7	140	0,57	0,25	A 703184
22	18	40	2	2,9	1,8	180	0,79	0,35	A 703182
30	18	30	3	4,5	2,7	200	0,57	0,25	A 703185
33	21	40	1,3	1,9	1	210	1,07	0,48	A 703183
41	18	40	2	2,9	1,8	230	0,79	0,35	A 703186
47	25	40	1,1	1,7	0,8	250	1,3	0,57	A 703580
100	25	40	1,1	1,7	0,8	450	1,3	0,57	A 703187
Rated voltage 450 V									
6,8	16	30	15	23	5	110	0,24	0,11	A 703210
6,8	18	30	8	12	5	110	0,34	0,16	A 703201
10	16	30	5,5	8,5	4	130	0,39	0,18	A 703211
10	18	30	5,5	8,5	4	130	0,42	0,19	A 703203
15	16	30	15	23	5	160	0,24	0,11	A 703212
15	18	40	4	6	2,7	160	0,56	0,25	A 703204
22	18	30	5,5	8,5	4	200	0,42	0,19	A 703213
22	18	40	3,3	5	2	200	0,62	0,28	A 703208
22	21	40	2,7	4,1	2	200	0,74	0,33	A 703205
33	18	40	4	6	2,7	250	0,56	0,25	A 703214
33	25	40	1,7	2,5	1,5	250	1,03	0,46	A 703590
47	25	40	1,1	1,7	1	300	1,3	0,57	A 703591
50	21	40	2,7	4,1	2	330	0,74	0,33	A 703215

[1] F = 10 kHz [C > 1000 μ F], F = 100 kHz [C \leq 1000 μ F]
 $Z_{typ} = Z_{max} / 2$

5 000 h / 125°C

PEAK VOLTAGE (V) U_R : rated voltage U_p : Repetitive standard peak voltage (30 s) U_s : Repetitive surge voltage (0,1 s)

Do not overstep this value without damage.

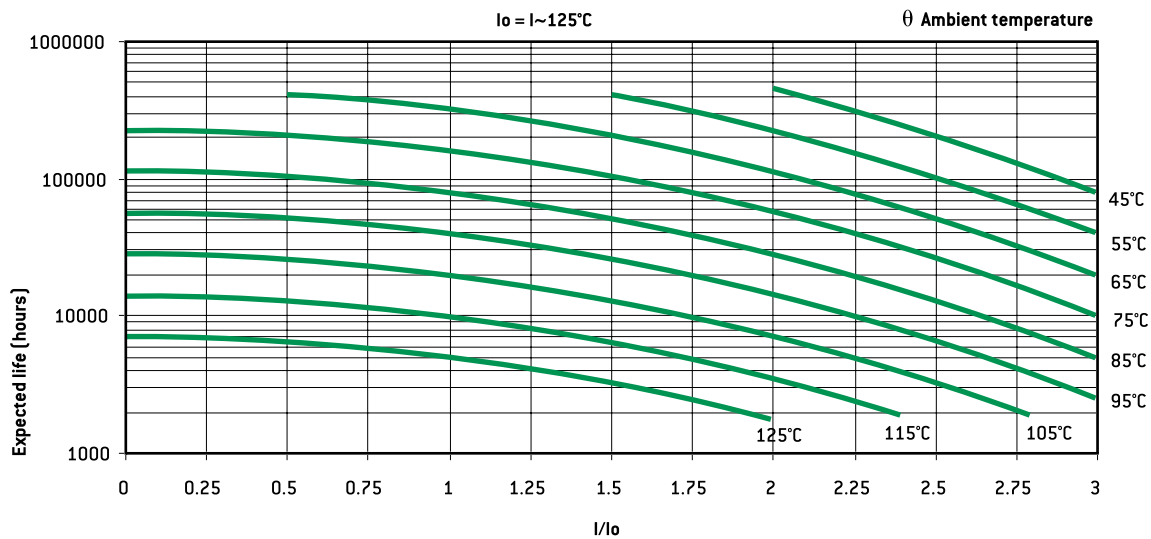
U_R	10 V	16 V	25 V	40 V	63 V	100 V	160 V	250 V	350 V	450 V
U_p	12	18	29	46	72	115	184	288	385	495
U_s							235	340	540	620*

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)versus frequency f : I_{\sim} : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I_{\sim}	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$

EXPECTED LIFE

as a function of temperature and ripple current

For $\varnothing = 6,5$ mm half life time values are applicable.

SICAL CO42 - SICAL

CO 42

2 500 h / 105°C

10 V ... 630 V	2,2 μ F ... 47 000 μ F	\varnothing 6,5 mm ... \varnothing 25 mm	- 55°C + 105°C	Long Life Time
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APPLICATIONS

- Coupling/decoupling
- Filtering
- Circuits with time constant
- Switch mode power supplies

Insulating aluminum case

Axial tin-coated copper leads

Welded chain providing perfect continuity of the circuit.

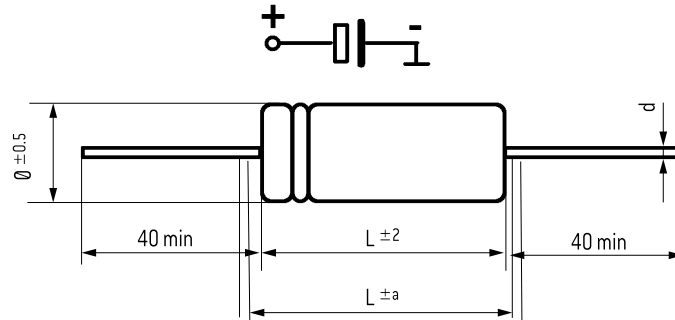
Tolerance on capacitance at 20°C :

- 10 + 50 % (SICAL CO 42)

- 20 + 20 % (SICAL)

Operating temperature

: - 55°C + 105°C



\varnothing (mm)	d	a
6,5 - 21	0,8	4
25	1	8

RESISTANCE TO VIBRATIONS

Hb (mm)	Standard	On request
f (Hz)	10 - 55 Hz	10 - 2000 Hz
Amplitude	0,75 mm	1,5 mm
Acceleration	10 g - 98 m/s ²	20 g - 196 m/s ²
t (h)	3 x 2 h	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

DIN 41 240 - Climatic category GPF - 55°C + 85°C / 56 days

CECC 30 301-019 (SICAL CO 42)

CECC 30 300 (SICAL)

IEC 60 384.4 - Long life

Standard endurance test U_R : 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulating resistance at 20°C between leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between leads and mounting hardware : 1000 V

Fire resistance : self extinguish 30 s (IEC 60 695-2-2) without PVC

SICAL C042 - SICAL

C0 42

2 500 h / 105°C

Capacitance [μ F]	Case		Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz Typic [Ω]	Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I~ 100 Hz +85°C max. [A]	Code
	Ø [mm]	L [mm]						
Rated voltage / Peak voltage: 10/12 V								
100	6,5	19	13	1,5	1,1	10	0,2	A 748201
220	8,5	19	15	0,75	0,5	17	0,33	A 748203
270	6,5	19	13	0,60	0,5	18	0,26	A 748208
330	10	19	17	0,45	0,4	24	0,48	A 748204
470	10	19	17	0,35	0,3	32	0,54	A 748205
510	8,5	19	15	0,36	0,4	31	0,39	A 748209
730	10	19	17	0,30	0,3	44	0,47	A 748210
1000	10	25	17	0,18	0,2	60	0,85	A 748207
2200	16	30	17	0,07	0,09	135	1,9	A 749000
3300	18	30	17	0,05	0,07	200	2,4	A 749001
4700	16	30	17	0,07	0,09	285	1,9	A 749003
4700	18	40	17	0,04	0,05	285	3,1	A 749002
6300	18	30	17	0,05	0,07	370	2,4	A 749004
9400	18	40	17	0,04	0,05	560	3,1	A 749005
4700	14	30	23	0,05	0,06	285	2,1	A 749500
6800	16	30	24	0,04	0,05	410	2,5	A 749502
10000	18	40	26	0,03	0,04	600	3,5	A 749501
Rated voltage / Peak voltage: 16/18 V								
47	6,5	19	9	1,5	1,1	8	0,2	A 748219
68	6,5	19	12	1,3	0,8	10	0,22	A 748222
100	6,5	19	12	1	0,75	14	0,25	A 748220
150	6,5	19	12	1,3	0,8	18	0,22	A 748229
150	8,5	19	12	0,8	0,7	18	0,32	A 748223
220	6,5	19	12	1	0,75	25	0,25	A 748230
220	8,5	19	14	0,55	0,6	25	0,39	A 748224
280	8,5	19	12	0,8	0,7	27	0,32	A 748231
330	10	19	15	0,5	0,5	35	0,45	A 748225
420	8,5	19	14	0,55	0,6	40	0,39	A 748232
470	10	19	15	0,4	0,45	49	0,5	A 748226
590	10	19	15	0,4	0,45	57	0,5	A 748233
680	10	25	15	0,17	0,22	65	0,87	A 748227
840	10	25	15	0,17	0,22	81	0,87	A 748234
1000	12	30	15	0,13	0,13	100	1,2	A 748228
1500	16	30	15	0,11	0,11	145	1,5	A 749021
1700	12	30	15	0,13	0,13	160	1,2	A 748235
2200	18	30	15	0,05	0,05	215	2,4	A 749022
3800	16	30	15	0,11	0,11	365	1,5	A 749024
4700	21	40	15	0,03	0,04	455	3,9	A 749023
5100	18	30	15	0,05	0,05	490	2,4	A 749025
7900	21	40	15	0,03	0,04	760	3,9	A 749026
2200	14	30	16	0,08	0,11	215	1,7	A 749508
3300	16	30	16	0,06	0,08	320	2,1	A 749509
4700	18	30	16	0,04	0,05	455	2,7	A 749510
10000	21	40	29	0,03	0,03	960	3,9	A 749511
22000	25	40	36	0,02	0,02	2100	5,2	A 749513
47000	25	75	50	0,013	0,015	4500	8,6	A 749514

SICAL C042 - SICAL

CO 42

2 500 h / 105°C

Capacitance [μ F]	Case		Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz Typic [Ω]	Z F(1) +20°C max. [Ω]	I +20°C 5 min. max. [μ A]	I \sim 100 Hz +85°C max. [A]	Code
	\emptyset [mm]	L [mm]						
Rated voltage / Peak voltage: 25/30 V								
22	6,5	19	8	2,2	1,6	6	0,15	A 748239
47	6,5	19	12	1,9	1,5	11	0,16	A 748242
100	8,5	19	12	1	0,9	19	0,29	A 748243
140	6,5	19	12	1,9	1,5	21	0,16	A 748249
150	8,5	19	12	0,8	0,7	27	0,32	A 748246
220	10	19	11	0,6	0,6	37	0,41	A 748244
270	8,5	19	12	0,8	0,7	41	0,32	A 748250
330	10	19	11	0,4	0,4	54	0,5	A 748247
380	10	19	11	0,4	0,4	57	0,5	A 748251
470	10	25	10	0,2	0,25	75	0,8	A 748245
540	10	25	10	0,2	0,25	81	0,8	A 748252
680	12	30	10	0,13	0,15	105	1,2	A 748248
1000	16	30	10	0,09	0,08	150	1,7	A 749041
1100	12	30	10	0,13	0,15	165	1,2	A 748253
1500	18	30	10	0,06	0,06	225	2,2	A 749042
2200	18	40	10	0,04	0,04	330	3,1	A 749043
2500	16	30	10	0,09	0,08	375	1,7	A 749044
3300	18	30	10	0,06	0,06	495	2,2	A 749045
4700	25	40	10	0,02	0,03	700	5,2	A 749047
5000	18	40	10	0,04	0,04	750	3,1	A 749046
5100	25	40	10	0,02	0,03	765	5,2	A 749048
1500	14	30	12	0,09	0,09	225	1,6	A 749520
2200	16	30	12	0,06	0,06	330	2,1	A 749521
3300	18	30	12	0,05	0,05	495	2,4	A 749522
4700	18	40	12	0,04	0,04	700	3,1	A 749523
6800	21	40	18	0,03	0,04	1020	3,9	A 749524
10000	25	40	21	0,02	0,03	1500	5,2	A 749515
15000	25	75	24	0,02	0,02	2250	6,9	A 749516
22000	25	75	36	0,02	0,02	3300	6,9	A 749517
Rated voltage / Peak voltage: 40/48 V								
33	6,5	19	10	2,2	2	11	0,17	A 748262
47	8,5	19	9	2	1,6	15	0,2	A 748263
63	6,5	19	10	2,2	2	15	0,17	A 748269
68	8,5	19	10	1,5	1,2	20	0,24	A 748261
100	10	19	10	0,85	0,8	28	0,35	A 748264
120	8,5	19	10	1,5	1,2	29	0,24	A 748270
170	10	19	10	0,85	0,8	41	0,35	A 748271
220	10	25	9	0,35	0,3	55	0,61	A 748266
330	10	25	10	0,27	0,25	83	0,69	A 748267
470	12	30	10	0,2	0,15	115	0,96	A 748268
680	16	30	8	0,08	0,07	165	1,8	A 749061
1000	18	30	9	0,07	0,07	240	2	A 749062
1100	16	30	8	0,08	0,07	264	1,8	A 749064
1500	18	30	9	0,07	0,07	360	2	A 749065
2200	21	40	10	0,04	0,04	530	3,4	A 749063
2900	21	40	10	0,04	0,04	700	3,4	A 749066
1000	14	30	10	0,08	0,08	240	1,7	A 749530
1500	16	30	10	0,08	0,08	360	1,8	A 749533
2200	18	40	10	0,04	0,04	530	3,1	A 749531
3300	18	40	12	0,03	0,03	800	3,5	A 749534
4700	21	40	13	0,025	0,03	1130	4,2	A 749532
10000	25	50	16	0,02	0,02	2400	5,8	A 749535
15000	25	75	23	0,02	0,02	3600	6,9	A 749537

SICAL C042 - SICAL

C0 42

2 500 h / 105°C

Capacitance [μ F]	Case		Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz Typic [Ω]	Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μ A]	I~ 100 Hz +85°C max. [A]	Code
	0 [mm]	L [mm]						
Rated voltage / Peak voltage: 63/75 V								
10	6,5	19	8	4,1	4	6	0,12	A 748279
15	6,5	19	8	3,8	3,2	10	0,13	A 748286
22	8,5	19	7	2,8	2	12	0,17	A 748287
26	6,5	19	8	4,1	4	6	0,12	A 748280
33	8,5	19	8	2	1,3	16	0,2	A 748288
39	6,5	19	8	3,8	3,2	10	0,13	A 748281
47	8,5	19	7	2,8	2	22	0,17	A 748282
47	10	19	8	1,4	1,1	22	0,27	A 748289
68	10	19	8	1,2	0,9	30	0,29	A 748290
73	8,5	19	8	2	1,3	16	0,2	A 748283
100	10	19	8	1,2	0,9	40	0,29	A 748284
100	10	25	8	0,8	0,6	40	0,4	A 748291
150	10	25	8	0,8	0,6	50	0,4	A 748285
150	12	30	8	0,4	0,35	50	0,68	A 748292
220	12	30	10	0,4	0,35	85	0,68	A 748293
290	12	30	10	0,4	0,35	85	0,68	A 748294
330	16	30	8	0,17	0,15	125	1,2	A 749081
470	18	30	8	0,11	0,1	180	1,6	A 749082
660	16	30	8	0,17	0,15	125	1,2	A 748290
890	18	30	8	0,11	0,1	180	1,6	A 748291
1000	21	40	6	0,06	0,07	380	2,7	A 749083
2100	21	40	6	0,06	0,07	380	2,7	A 748292
2200	25	50	8	0,04	0,04	835	4,1	A 749086
4100	25	50	8	0,04	0,04	835	4,1	A 748293
4700	25	75	12	0,025	0,03	1780	5,6	A 749087
6700	25	75	12	0,025	0,03	1780	5,6	A 748294
Rated voltage / Peak voltage: 100/115 V								
680	14	30	8	0,14	0,12	260	1,3	A 749544
1000	16	30	9	0,12	0,11	380	1,5	A 749540
1500	18	40	9	0,09	0,08	570	2	A 749541
2200	21	40	9	0,05	0,04	835	3	A 749545
3300	25	40	11	0,04	0,03	1250	3,7	A 749546
4700	25	50	12	0,03	0,03	1780	4,7	A 749543
6800	25	75	12	0,02	0,02	2570	6,9	A 749547
Rated voltage / Peak voltage: 100/115 V								
4,7	6,5	19	7	9,4	5	5	0,08	A 748299
6,8	6,5	19	7	7,8	4,3	8	0,09	A 748301
10	6,5	19	7	6	3,8	10	0,1	A 748302
15	6,5	19	7	4,2	3,1	13	0,12	A 748303
22	8,5	19	7	2,6	2	17	0,18	A 748304
33	10	19	7	1,8	1,3	24	0,24	A 748307
47	10	25	7	1,2	0,7	32	0,33	A 748306
68	12	30	7	0,8	0,6	45	0,48	A 748309
100	14	30	5	0,35	0,3	60	0,74	A 749100
150	14	30	7	0,3	0,25	94	0,86	A 749105
220	18	30	5	0,18	0,16	135	1,3	A 749101
470	21	40	7	0,1	0,1	285	2,1	A 749102
1000	25	50	7	0,05	0,04	600	3,6	A 749104
Rated voltage / Peak voltage: 100/115 V								
220	14	30	6	0,3	0,25	135	0,86	A 749550
330	16	30	7	0,25	0,2	200	1	A 749554
470	18	30	7	0,12	0,11	285	1,6	A 749551
680	21	40	8	0,1	0,1	400	2,1	A 749555
1000	21	40	8	0,07	0,07	600	2,5	A 749552
1500	25	50	8	0,06	0,06	900	3,3	A 749557
1800	25	50	8	0,05	0,05	1080	3,6	A 749558
2200	25	75	8	0,035	0,035	1320	5,2	A 749559
3300	25	75	8	0,03	0,03	1980	5,6	A 749556

SICAL C042 - SICAL

CO 42

2 500 h / 105°C

Capacitance [μF]	Case		Tanδ 100 Hz +20°C max. [%]	ESR 100 Hz Typic [Ω]	Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μA]	I~ 100 Hz +85°C max. [A]	Code
	Ø [mm]	L [mm]						
Rated voltage / Peak voltage: 160/180 V								
2,2	6,5	19	7	26	27	5	0,05	A 748320
4,1	6,5	19	7	26	27	8	0,05	A 748325
4,7	8,5	19	7	12	13	8	0,08	A 748321
8,1	8,5	19	7	12	13	8	0,08	A 748326
10	10	19	8	9	8	14	0,11	A 748322
22	12	25	7	2,1	2,1	25	0,28	A 748323
33	12	30	7	1,8	1,8	35	0,32	A 748324
47	16	30	7	1,4	1,3	49	0,43	A 749121
75	16	30	7	1,4	1,3	72	0,43	A 749125
100	18	40	7	0,45	0,6	100	0,92	A 749122
150	18	40	7	0,45	0,6	140	0,92	A 749126
220	25	40	7	0,25	0,3	215	1,5	A 749124
350	25	40	7	0,25	0,3	340	1,5	A 749127
47	14	30	10	1,3	1,2	49	0,41	A 749563
100	18	40	10	0,7	0,7	100	0,61	A 749560
150	18	30	10	0,6	0,6	148	0,7	A 749568
220	18	40	10	0,5	0,5	215	0,87	A 749561
330	21	40	10	0,3	0,3	321	1,2	A 749564
470	25	40	8	0,2	0,2	450	1,7	A 749565
1000	25	75	8	0,1	0,1	960	3,1	A 749567
Rated voltage / Peak voltage: 250/275 V								
10	10	19	8	11	10	19	0,1	A 748342
15	10	25	10	8,5	8,5	27	0,12	A 748343
22	14	30	6	2,5	2,3	37	0,3	A 749140
33	16	30	6	1,7	1,6	54	0,39	A 749141
47	18	30	6	1,1	1,1	74	0,52	A 749142
100	21	40	6	0,5	0,5	154	0,95	A 749143
22	12	25	7	3,4	3,8	37	0,22	A 748344
33	12	30	7	2	2,2	54	0,3	A 748345
47	14	30	7	1,5	1,5	74	0,38	A 749570
68	16	30	7	1,1	1,1	106	0,48	A 749573
100	18	30	7	0,7	0,7	154	0,64	A 749571
150	18	40	7	0,7	0,7	229	0,73	A 749574
220	21	40	7	0,5	0,50	334	0,95	A 749572
330	25	40	7	0,5	0,5	499	1	A 749575
470	25	75	7	0,1	0,1	709	3,1	A 749576
680	25	75	7	0,08	0,08	1020	3,50	A 749577
1000	25	75	7	0,07	0,07	1500	3,7	A 749578
Rated voltage / Peak voltage: 350/385 V								
6,8	10	19	7	10	10	18	0,1	A 748362
10	10	25	7	6	6	25	0,15	A 748363
15	14	30	6	3,2	3,2	36	0,26	A 749160
22	16	30	6	2,3	2,3	50	0,33	A 749161
33	18	30	6	1,2	1,2	73	0,49	A 749162
47	18	40	6	0,9	0,8	103	0,64	A 749163
15	12	25	6	3,8	3,8	36	0,2	A 748364
22	12	30	6	2,7	2,8	50	0,26	A 748365
33	14	30	6	2	2	73	0,33	A 749580
47	16	30	6	1,2	1,2	103	0,46	A 749581
100	21	40	6	0,5	0,5	214	0,94	A 749582
220	25	40	9	0,4	0,4	466	1,2	A 749585
470	25	75	9	0,3	0,3	991	1,8	A 749586

SICAL C042 - SICAL

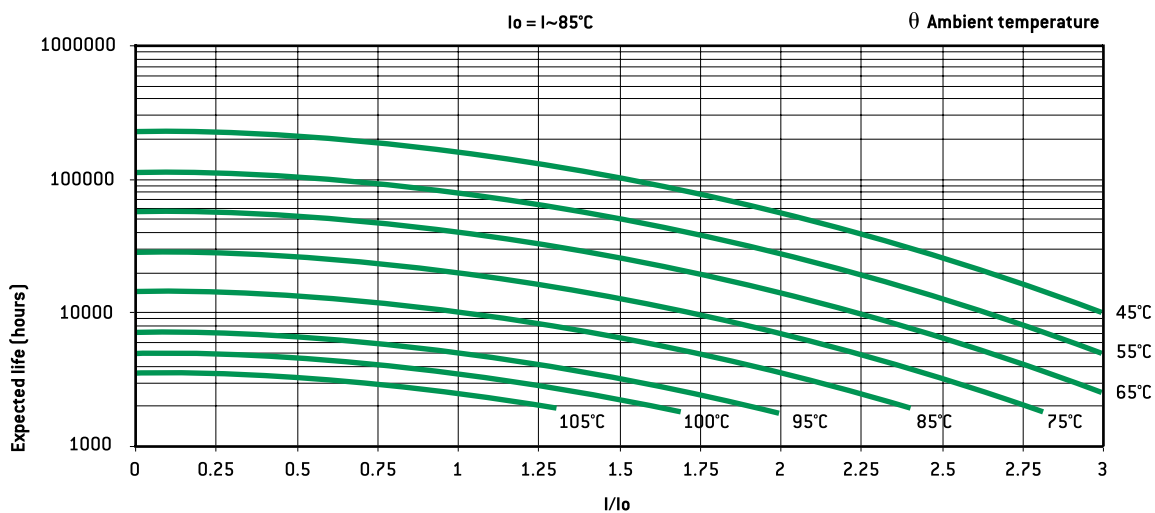
C0 42

2 500 h / 105°C

Capacitance [μF]	Case		Tan δ 100 Hz +20°C max. [%]	ESR 100 Hz Typic [Ω]	Z F(1) +20°C max. [Ω]	II +20°C 5 min. max. [μA]	I~ 100 Hz +85°C max. [A]	Code
	Ø [mm]	L [mm]						
Rated voltage / Peak voltage: 385/420 V								
6,8	10	19	10	20	22	20	0,07	A 748382
10	10	25	10	10,5	13	27	0,11	A 748383
15	12	25	10	4,5	5,5	39	0,19	A 748384
22	14	30	10	3,5	3,5	55	0,25	A 749590
33	16	30	10	1,9	1,9	80	0,37	A 749591
47	18	30	10	1,7	2	113	0,42	A 749592
100	21	40	10	0,8	1,1	235	0,75	A 749593
150	25	40	10	0,7	0,9	351	0,88	A 749597
220	25	50	10	0,5	0,9	512	1,2	A 749598
330	25	75	10	0,4	0,8	766	1,5	A 749599
Rated voltage / Peak voltage: 450/500 V								
6,8	10	19	13	24	26	330	0,07	A 748402
10	12	25	8	4,7	5,7	400	0,18	A 748403
10	14	30	8	5,5	4,5	400	0,2	A 749606
15	12	30	8	4	5	490	0,22	A 748405
15	14	30	8	4	3,5	490	0,24	A 749607
22	14	30	8	3,5	3,5	600	0,25	A 749600
33	16	30	9	3	3	730	0,29	A 749601
47	18	30	8	1,8	1,8	870	0,4	A 749602
100	21	40	9	0,9	0,9	1300	0,71	A 749603
150	25	40	10	0,7	0,7	1600	0,88	A 749608
220	25	50	10	0,5	0,5	1900	1,2	A 749609
330	25	75	10	0,4	0,4	2350	1,5	A 749610
Rated voltage / Peak voltage: 550/605 V								
15	18	40	7	3,5	3,5	540	0,33	A 749620
22	21	40	7	2,3	2,3	660	0,44	A 749621
33	25	40	7	1,5	1,5	810	0,6	A 749623
Rated voltage / Peak voltage: 630/695 V								
15	18	40	20	11	9	780	0,19	A 749640
22	21	40	20	7,5	5,8	940	0,24	A 749641
33	25	40	20	5,1	5,3	1150	0,33	A 749643

EXPECTED LIFE

as a function of temperature and ripple current
For Ø = 6,5 mm half life time values are applicable.



PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I~ : permissible r.m.s. current at 100 Hz

f [Hz]	50	100	300	600	1 000	10 000	≥ 50 000
I	0,8 x I~	I~	1,2 x I~	1,3 x I~	1,35 x I~	1,5 x I~	1,6 x I~

VACSIC 105

2 500 h / 105°C

10 V ... 350 V	15 μ F ... 4 700 μ F	\varnothing 12 mm ... \varnothing 16 mm	- 55°C + 105°C	Long life time
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APPLICATIONS

- Coupling / decoupling
- Filtering
- Switch mode power supplies
- Circuits with time constant
- Circuits with impulse current

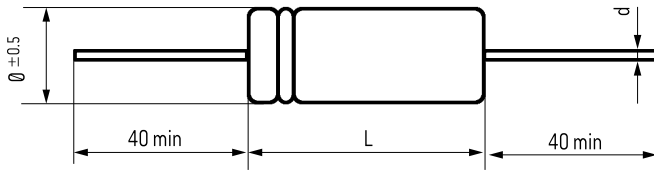
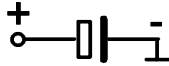
Insulating aluminum case

Axial tin coated copper leads

Welded chain providing perfect continuity of the circuit

Tolerance on capacitance at 20°C : - 10 + 50 %

Operating temperature : - 55°C + 105°C



\varnothing (mm)	d	a
12 - 16	0,8	4

RESISTANCE TO VIBRATIONS

Hb (mm)	Standard
(Hz)	10 - 2000 Hz
Amplitude	1.5 mm
Acceleration	45 g
t (h)	3 x 2 h

SPECIFICATIONS

NFC 83 110 - Long life

DIN 41 240 - Climatic category GPF: -55°C + 105°C / 56 days

IEC 60 384.4 - Long life

Standard endurance test U_R : 5000 h / 85°C

WITHSTAND STRENGTH OF INSULATING SLEEVE

Insulation resistance at 20°C between

leads and mounting hardware : 100 M Ω

Test voltage at 50 Hz 1 min. between

terminals and mounting hardware : 1 000 V

Fire resistance

: self extinguish 30 s
(IEC 60 695-2-2) without PVC

VACASIC 105

2 500 h / 105°C

Capacitance (μF)	Case		$T_g \delta$ 100 Hz +20°C max (%)	ESR 100 Hz +20°C typic (Ω)	Z +20°C max. (Ω)	I. leak +20°C 5 min. max. (mA)	I \sim 100 Hz +105°C (A)	Code
	\emptyset (mm)	L (mm)						
Rated voltage: 10 V								
2200	12	30	17	0.061	0.062	135	1.42	A775000
3300	14	30	17	0.041	0.041	200	1.9	A775001
4700	16	30	17	0.029	0.029	280	2.4	A775002
Rated voltage: 16 V								
2200	12	30	15	0.054	0.055	210	1.52	A775020
3300	14	30	15	0.036	0.036	310	2.02	A775021
4700	16	30	15	0.025	0.025	450	2.6	A775022
Rated voltage: 25 V								
1000	12	30	10	0.080	0.081	150	1.25	A775040
2200	14	30	10	0.036	0.037	330	2	A775041
2700	16	30	10	0.029	0.030	405	2.4	A775042
Rated voltage: 40 V								
470	12	30	10	0.169	0.172	110	0.86	A775060
1000	14	30	10	0.080	0.081	240	1.35	A775061
1200	16	30	10	0.066	0.067	280	1.6	A775062
Rated voltage: 63 V								
330	12	30	8	0.193	0.199	120	0.8	A775080
600	14	30	8	0.106	0.109	220	1.18	A775081
800	16	30	8	0.080	0.082	300	1.5	A775082
Rated voltage: 100 V								
150	12	30	7	0.37	0.386	90	0.58	A775100
220	14	30	7	0.25	0.263	130	0.77	A775101
330	16	30	7	0.17	0.175	200	1	A775102
Rated voltage: 160 V								
33	12	30	7	1.69	1.755	30	0.27	A775120
68	14	30	7	0.82	0.852	65	0.42	A775121
75	16	30	7	0.74	0.772	72	0.5	A775122
Rated voltage: 250 V								
22	12	30	6	2.17	2.287	33	0.24	A775140
47	14	30	6	1.02	1.070	70	0.38	A775141
60	16	30	6	0.80	0.838	90	0.5	A775142
Rated voltage: 350 V								
15	12	30	6	3.18	3.355	30	0.2	A775160
22	14	30	6	2.17	2.287	46	0.26	A775161
33	16	30	6	1.45	1.525	69	0.3	A775162

EXPECTED LIFE

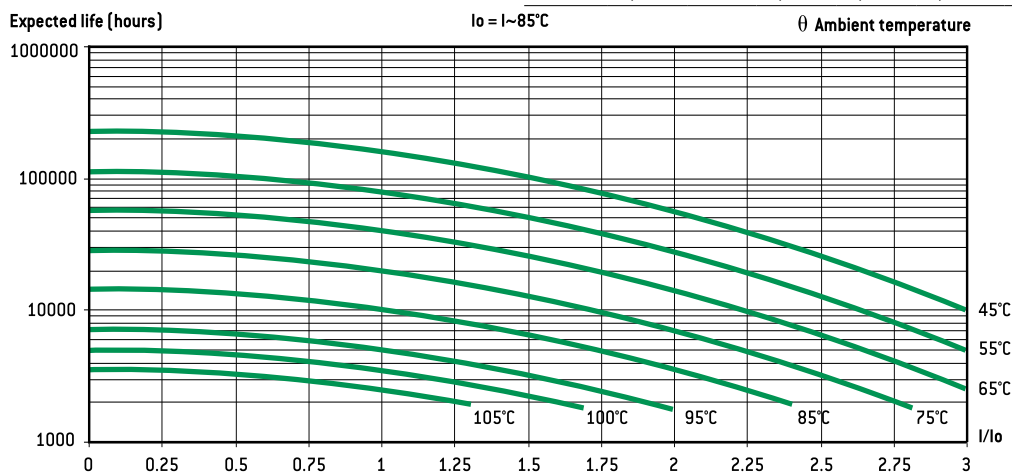
as a function of temperature and ripple current

PERMISSIBLE RIPPLE CURRENT I (R.M.S. VALUE)

versus frequency f :

I \sim : permissible r.m.s. current at 100 Hz

f (Hz)	50	100	300	600	1 000	10 000	$\geq 50 000$
I	$0,8 \times I_{\sim}$	I_{\sim}	$1,2 \times I_{\sim}$	$1,3 \times I_{\sim}$	$1,35 \times I_{\sim}$	$1,5 \times I_{\sim}$	$1,6 \times I_{\sim}$



OTHER KIND OF CUSTOM DESIGNS

Company informations		
	Examples	Informations
Company name		
Contact name		
Tel.		
E-mail		

Characteristics		
	Examples	Informations
Set	UPS, Car, etc.	
Application	Storage, smoothing, etc.	
Style	Snap in, Screw type, etc.	
Rated Voltage	250V	
Rated Capacitance	5000 μ F	
Operating voltage range	100-200V	
Dimensions	\emptyset X L	
Temperature Range	from -55°C to 105°C	
ESR	20 m Ω	
Lifetime	8000 hours	
Other conditions	weight, etc.	

Production informations		
	Examples	Informations
Planning	Prototype, Production	
Target Price	Prototype, Production	

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