

Power Electronics

Film Capacitors

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Arcotronics reserves the right, at any time, to make any changes to the components, parts and accessories both for technical and commercial purposes without reprinting this catalogue.

For further information please refer to Arcotronics' Internet web site:

<http://www.Arcotronics.com>

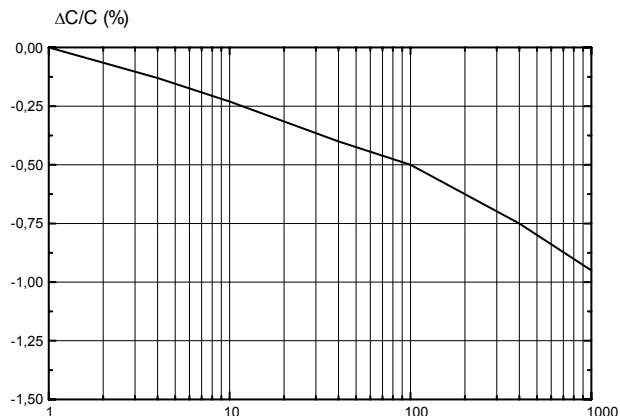
PRODUCT SELECTION GUIDE

Axials capacitors	Snubber	C4C / C4H											
Axials capacitors	Switching	C4G / C4M											
Alluminium Case	General Purpose	C44A											
Alluminium Case	AC Filtering	C44E											
Single and Three Phase		C44P											
		C20A											
		C44H											
		C9T											
Alluminium Case	DC Link	C44U											
Alluminium Case	Snubber	C44B / C20B											
Plastic Box	Wire Terminals	DC Link	C4AE										
Plastic Box	Wire Terminals	Snubber	C4AS										
Plastic Box	Wire Terminals	Switching	C4AT										
Plastic Box	Lug Terminals	Snubber	C4BS										
Plastic Box	Lug Terminals	Switching	C4BT										
FLAT Execution	GTO Snubber		C4DC										
FLAT Execution	DC Link		C4DE										
FLAT Execution	GTO Clamper		C4DR										
Applications													
Snubber					•		•		•		•		•
Clamper			•		•	•	•	•		•		•	•
Commutation											•	•	
DC Ripple Filter / Energy Storage			•	•		•		•		•		•	
Resonance					•		•		•		•		•
Pulse					•		•		•		•		•
Harmonic Filters						•		•		•		•	
Power Factor Correction											•		
Blocking						•	•	•				•	•
Coupling / Decoupling							•	•				•	•

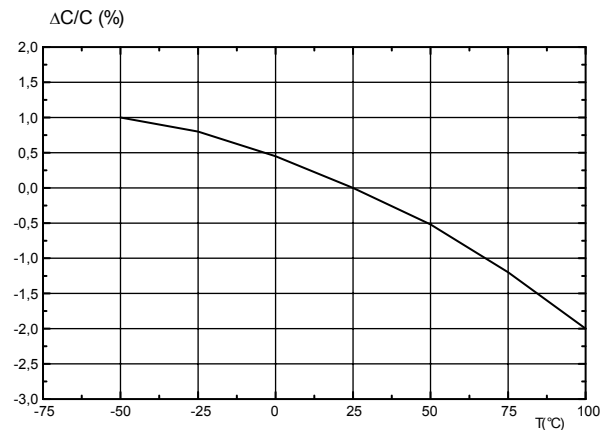
Polypropylene Typical Dielectric Features

The selection of Polypropylene as a dielectric is due to the following inherent properties:

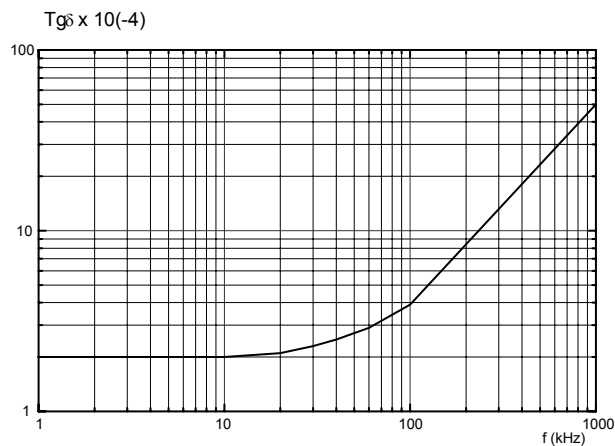
- ☐ Very low dissipation factor
- ☐ High insulation resistance
- ☐ High thermal stability
- ☐ Good self-healing features



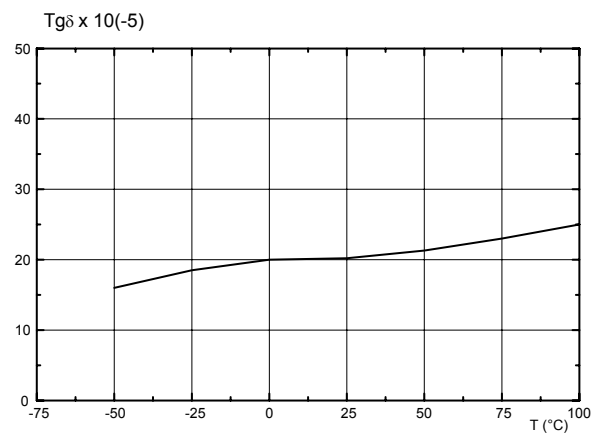
Capacitance change vs. frequency (room temperature)



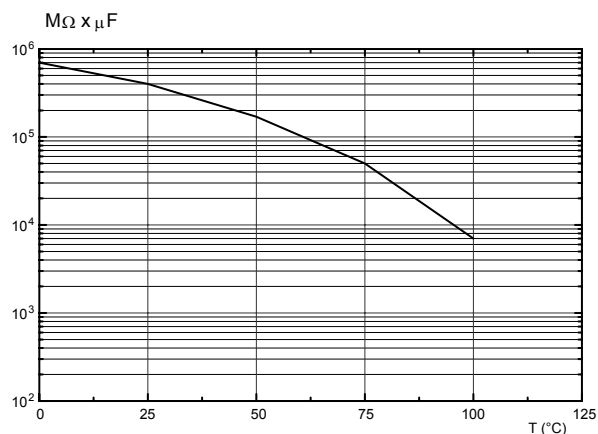
Capacitance change vs. temperature at 1kHz



Dissipation factor vs. frequency (Room temperature)



Dissipation factor vs. temperature at 1kHz



Time constant vs. temperature

Introduction

The technological development of Power semiconductors led to an ever-increasing widespread use of power electronics.

Many of these applications are based on the usage of capacitors specially designed to withstand the electric and thermal stresses required.

Arcotronics developed a wide range of capacitors for power electronics that are shown in this catalogue and suitable to be used in applications like forced commutation, damping, clamping, snubbing, A.C. and D.C. filtering.

These capacitors are wound in such a way to provide low values of stray inductance (ESL), series resistance (ESR) in order to minimize the power dissipation ($Tg\delta$).

With these characteristics the capacitors for power electronics made by Arcotronics allow to operate with high values of RMS and Peak currents producing a negligible temperature rise of the case.

These performances are obtained using low loss dielectrics, which assure high stability of capacitance versus temperature and time.

The metallized electrodes under vacuum assure the self-healing characteristic, this means that voltage transients exceeding the rated voltage can be applied without causing short circuits.

The tight production of the case guarantees a complete protection against humidity and external pollutants.

The capacitors for power electronics shown in this catalogue are the most common models, but many others are normally in production or in development stage.

For particular requirements or custom designed products please contact directly the Arcotronics local office.

QUALITY

Arcotronics capacitors are manufactured with maximum attention to product quality and customer service is our first task. In order to assure high quality and reliability to its products, Arcotronics adopts the most modern worldwide standards and procedures of continuous improvement. Arcotronics quality system is certified by **ISO9001 EN 29001-BS5750** part 2 and **CECC 00114** part 1. The target of Arcotronics quality control is the achievement of zero defects.

TERMINATIONS

The standard terminations of capacitors with aluminum case are made by two M6 tinned brass screws allowing a maximum driving torque of 6 Nm. Upon request it is possible to supply single or double tinned brass 6.35x0.8 mm faston or 2.8x0.5 mm mini faston. The solderability of fastons is guaranteed for a period of 4 months starting from the manufacturing date marked on the case. Axial and Box executions are provided with tinned copper wire terminations.

MARKING

The marking is made in black color. Every product is marked with most of the information that can be fitted on the case depending on its dimensions. The standard marking is the following: Arcotronics trade-Mark, Series number, Capacitance in microfarad, tolerance in %, Rated DC and AC voltages, operating temperature range in degree Centigrade, coded climatic class and reliability data according to DIN 40040, Self-healing property SH, Batch number, year and month of production coded in accordance with DIN 42314 standard shown in the following table:

Year	Letter		Month	Letter
1995	F		January	1
1996	H		February	2
1997	J		March	3
1998	K		April	4
1999	L		May	5
2000	M		June	6
2001	N		July	7
2002	P		August	8
2003	R		September	9
2004	S		October	O
2005	T		November	N
2006	U		December	D
2007	V			
2008	X			

GENERAL TECHNICAL DATA

The capacitive cartridge is wound on high-speed automated machines, in cylindrical shape, non-inductive, self-healing, surge proof and low loss metallized plastic dielectric films.

The terminations are connected to the electrodes through metal-sprayed front ends (Shoopage), assuring a high contact reliability and low values of ESR.

VIBRATION STRENGTH

The vibration strength of Aluminum can capacitors having a diameter ≤ 60 mm and height ≤ 160 mm, corresponds to the test loading according to the standard DIN 40046 page 8, test FC – B1 or IEC Publication 68-2-6 at the following conditions:

Case diameter ≤ 60 mm 65mm

Test duration 6 hours 6 hours

Frequency range..... 10 to 55 Hz 10 to 55 Hz

Amplitude 0.75mm 0.75 mm

Acceleration max 10 g 2 g

Fixing method is very important in order to minimize the Detrimental effects of vibrations.

Specifications and Test Methods

- Capacitance: C (μF)

The rated capacitance measured at 20°C ± 5°C at 1 kHz.

- Tolerance

The maximum admitted deviation from the rated value of Capacitance measured at 20°C, ±5% code J, 610% Code K.

- Capacitance change versus temperature

The capacitance changes from nominal value at 20°C ± 5°C in the specified temperature range. The typical capacitance change versus temperature is shown in the diagrams on Page 4.

- Rated D.C. Voltage: U_n

The U_n voltage refers to the maximum operating peak recurring voltage of either polarity but of the non-reversing type waveform.

- Rated A.C. Voltage: U_{RMS}

The maximum RMS value of the sinusoidal alternating voltage marked on the capacitor.

- Non recurrent surge voltage: U_{PK}

The maximum non-recurrent peak D.C. voltage that can be applied in either polarity for a limited number of times. The application of higher than rated peak voltage U_{PK} may result in premature failure of the dielectric.

- U_{RMS} trapezoidal

The RMS value of trapezoidal A.C. voltage at which the capacitor will provide full rated life.

- Ũ_{MAX} - The maximum repetitive peak DC voltage that can be applied in either polarity.

- Voltage test between terminal: U_{tt}

All capacitors are tested at 20 °C ± 5 °C for 10 s at one or both the following voltages:

D.C. Test Voltage: 2.5 U_n / Ø2

A.C. Test Voltage: 1.5 U_{RMS}

- Voltage test between terminals and case U_{tc}

The standard test conditions are 3 kVRMS sinus at 50 Hz, 20°C ± 5°C for 1 minute, no breakdown discharges are admitted. The maximum operating voltage applied continuously between each terminal and case is:

- 1.25 U_{RMS} for A.C. Applications

- 1.25 U_{PK} for D.C. Applications

- Self-healing: SH

The capacitors for Power Electronics are wound with vacuum metallized films with the self-healing characteristics. Electrical discharges between electrodes may thus occur during operation without damaging dielectric, producing only a negligible capacitance reduction.

- Dissipation Factor DF (tgδ)

Two values may be specified:

1) tgδ max, that represents the max guaranteed value.

2) tgδ typ, that is the typical value of the capacitors.

The tgδ value is measured at 20°C ± 5°C at 1 kHz.

The max error of tgδ measurement is less than ±1x10⁻⁴ ± 10% of the measured value.

Note: the measurements of capacitance and tgδ of capacitors MKP C.44/3 series are carried out at 50 Hz.

- Equivalent Series-Inductance: ESL

The capacitor has a certain inductance due to the length of connections and capacitive element; the sum of these stray inductances represents the Equivalent Series Inductance (ESL). The value indicated is typical and is measured at 20°C ± 5°C at the self-resonance frequency; it is expressed in nano-Henry (nH).

- Equivalent Series Resistance: ESR

The ESR is the equivalent series resistance due to resistivity of electrodes, internal connections and dielectric losses. The ESR is measured in milliohm (mΩ) at 20 °C ± 5 °C and a frequency of 10 kHz.

- Insulation Resistance: I.R.

The insulation resistance between terminals is expressed by means of the discharge time constant R.C. according to DIN 41180. The standard guaranteed value is of RC ≥ 3000 s Measured for 1 minute at 100 Vdc and at 20°C ± 5°C. Climatic category: 40/85/21 according to IEC 68-1.

- I.R. between terminals and case.

Applying a D.C. voltage of 500 V, the capacitor should display a Resistance value higher than 3 x 10⁻⁴ MW.

- Rated insulation Voltage: U_i

The rated insulation voltage is the RMS value of the A.C. Voltage for which the capacitor insulation between terminals and case is designed.

- Operating temperature - Climatic category - Reliability Data

All capacitors for Power Electronics are made in accordance with standard DIN 40040. Metal case execution: DIN 40040 GPD/LS.

G = -40 °C, P = + 85 °C,

D = average humidity ≤ 80 %,

L = Failure quota 300/109 components hours,

S = load duration 30,000 hours.

E = average humidity ≤ 75%. Polyester film coated execution: DIN 40040 GPE/LS.

- Storage temperature

The range over which the capacitor may be stored unenergized, with no degradation is - 55... + 105°C.

Specifications and Test Methods

- Altitude

The maximum allowable altitude is 2200 meters. As the barometric pressure decreases, the terminal arc-over susceptibility increases. Heat generated cannot be properly dissipated operating at high altitude and can result in high RI^2 losses and eventual failure.

- Thermal Dissipation Coefficient: K

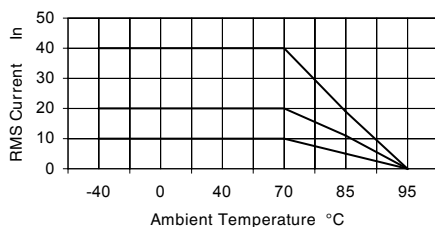
The thermal dissipation coefficient K is the typical value that allows to calculate the temperature rise of capacitor case compared to the ambient temperature in operating conditions.

$$\Delta T = K ESR I_{RMS}^2 \text{ (}^\circ\text{C)}$$

- Rated RMS current: I_{RMS}

The rated RMS current is the highest permissible RMS value of the continuous current flowing through the capacitor at the max temperature of 70 °C. Operating at the rated RMS current, the capacitor produces a case temperature rise of about 15 °C over the ambient due to the resistive losses of dielectrics, plates and conductors. The rated RMS current I_{RMS} must be derated taking into account the ambient temperature and the skin effect due to the duration of peak current time according to the following diagram:

Rated RMS Current versus ambient temperature



- Materials and environment

The selection of materials, used by Arcotronics for the production of capacitors, is the result of a long experience and constant attention to the environment protection. Arcotronics selects its suppliers according to ISO9001 standards and carries out statistical analysis on the materials purchased before acceptance. All materials are, to its present knowledge, non-toxic and free from: Cadmium, Mercury, Chrome and compounds, PCB (Polychlorine Triphenyl), Bromide and Chlorine Dioxins Bromurate Chlorurate, CFC and HCFC, Asbestons.

- Disposal

The capacitors should be disposed of in compliance with the local laws and active regulations according to the following European classifications:

91/156/CEE

91/689 / CEE

- Voltage rise time: dv/dt

This value shows the maximum voltage rise/fall time, it is expressed in volts per microsecond, and cannot be overcome.

- Peak Repetitive Current: I_{PKR}

The peak repetitive current is the maximum value that the peak current can assume.

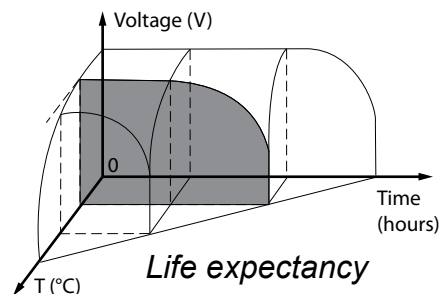
- Peak Non Repetitive Current: I_{PKN}

The peak non-repetitive current is the maximum admissible non-periodic current peak.

- Expected life

Any material or element has a longer or shorter life according to the working conditions to which it is submitted due to its intrinsic properties. The capacitor is subjected to several types of stresses: overvoltage, overheating, pollution, humidity, radiation, and vibrations. The ageing causes an irreversible change of its properties as a result of the application of an external stress. The expected life is the time required by the capacitor to reach the specified limit of reduced value of the electrical parameters. The main stresses are both electric and thermal in origin. It is possible to demonstrate a model of life for each series of capacitors and type of stress in order to estimate the life of the component according to the temperature and voltage applied.

$$L \text{ (hours)} = F(V, T)$$



- Life expectancy versus voltage

The life expectancy of a capacitor subjected to a voltage different from the nominal one, can be approximately calculated with the following simplified formula:

$$L_E = L_N \times (V_N / V)^8$$

L_E = Life expectancy at operating voltage (hours)

L_N = Life expectancy at nominal voltage (hours)

V_N = Nominal voltage U_n (V)

V = Operating voltage (V)

The above formula is valid within $\pm 20\%$ of the nominal Voltage.

- Life expectancy versus temperature

The life expectancy of a capacitor subject to a temperature different from the rated one of 70 °C can be calculated with:

$$L_E = L_{T0} \times 2^{(T_0 - T_{hs}) / 7}$$

L_E = Life expectancy at operating temperature (hours)

L_{T0} = Life expectancy at 70°C (hours)

T_0 = Reference temperature (70°C)

T_{hs} = Hot spot case temperature ($\leq 70^\circ\text{C}$)

7 = Arrhenius coefficient

Capacitors Failure Modes

Plastic dielectric film capacitors can undergo two classic failure modes: opens or shorts. Included in these categories are intermittent opens, shorts or high resistance shorts. In addition to these failures, capacitors may fail due to capacitance drift, instability with temperature, high dissipation factor or low insulation resistance. Failures can be the result of electrical, mechanical or environmental overstress, due to dielectric degradation during operation.

- Dielectric breakdown (Shorts)

The classic capacitor failure mechanism is dielectric breakdown. The dielectric in the capacitor is subjected to the full potential to which the device is charged and, high electrical stresses are common. Dielectric breakdowns may develop after many hours of satisfactory operation. There are several causes that could be associated with operational failures. If the device is operating at or below its maximum rated conditions, most dielectric materials gradually deteriorate with time and temperature to the point of eventual failure. Most of the common dielectric materials undergo a slow ageing process by which they become brittle and are more susceptible to cracking. The higher the temperature is, the more the process is accelerated. Chemical or aqueous cleaning may also have an adverse effect on capacitors. Dielectric breakdown may occur as a result of misapplication of high transients (surges). The capacitor may survive many repeated applications of high voltage transients, however, this may cause a premature failure.

- Open capacitors

Open capacitors usually occur as a result of overstress in application. For instance operation of DC rated capacitors at high AC current levels can cause a localized heating at the end terminations. The localized heating is caused by high RI^2 losses. Continued operation of the capacitor can result in increased end termination resistance, additional heating, and possible failure. The open condition is caused by a separation of the end-connection of the capacitor. Both RMS and Peak currents may cause the open condition when overcome. Mounting capacitors by the leads in high vibration environment may also cause an open condition. The lead wire may fatigue and break at the egress area if a severe resonance is reached. The capacitor body must be fastened into place by use of a clamp or a structural adhesive.

- Environmental considerations

The following list is a summary of most common environmentally critical factors affecting the life of capacitors. The design engineer must take into consideration his own applications and the effects caused by combinations of various environmental factors.

- Service life of a capacitor must be taken into consideration. The service life decreases when the temperature increases (see page 8).

- Capacitance will change up and down with temperature
Due to the dielectric constant and an expansion or Shrinking of the dielectric material (see diagram $\Delta C/T$ on page 5). Capacitance changes can be the result of excessive clamping pressure on non-rigid cases.

- Insulation resistance

When the capacitor temperature increases the insulation resistance decreases. This is due to increased electron activity. Low insulation resistance can also be the result of moisture trapped in the windings, caused by a prolonged exposure to excessive humidity.

- Dissipation factor $tg\delta$

The dissipation factor is a complex function involved with the inefficiency of the capacitor. The $tg\delta$ may change up and down with increased temperature (see diagram $tg\delta/T$ on page 5).

- Dielectric strength

The dielectric strength (dielectric withstanding voltage or "stress" voltage) level decreases as the temperature increases. This is due to chemical activity of the dielectric material that causes a change in the physical or electrical properties of the capacitor.

- Sealing

Hermetically Sealed Capacitors When the temperature increases, the pressure inside the Capacitor increases. If the internal pressure is high enough, it can cause a breach in the capacitor, which can then cause leakage of impregnation or filling fluid or moisture susceptibility.

- Epoxy encased / Wrap and fill capacitors

The epoxy seals on both epoxy encased and wrap and fill Capacitors will withstand short-term exposure to high humidity environments without degradation. Epoxies and plastic tapes will form a pseudo-impervious barrier to humidity and chemicals. These case materials are somewhat porous and through osmosis can cause contaminants to enter the capacitor. The second area of contaminated absorption is the lead-wire / epoxy interface. Since epoxies cannot 100% bond to tinned wires, there can be a path formed, up to the lead wire, into the capacitor section. Aqueous cleaning of circuit boards can aggravate this.

- Vibration, Acceleration and shock

A capacitor can be mechanically destroyed or may malfunction if it is not designed, manufactured, or installed to meet the vibrations, shock or acceleration requirement within a particular application. Movement of the capacitor within the case can cause low insulation resistance, shorts or opens. Fatigue in the leads or mounting brackets can also cause a catastrophic failure.

- Barometric Pressure

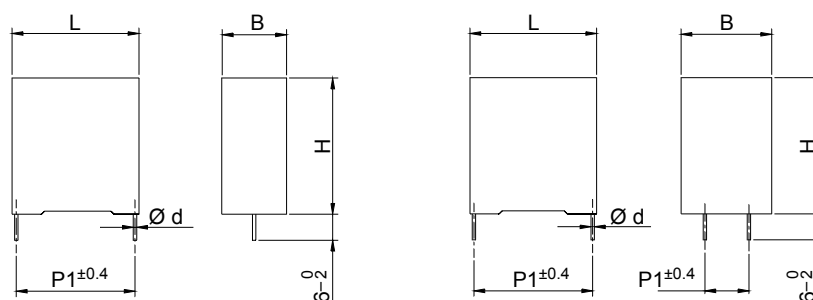
The altitude at which hermetically sealed capacitors have to be operated controls the voltage rating of the capacitor. As the barometric pressure decreases so does the terminal arc over susceptibility increase. Non-hermetic capacitors can be affected by internal stresses due to pressure changes. This can be in the form of capacitance changes or dielectric arc-over as well as low insulation resistance. Heat transfer can also be affected by altitude operation. Heat generated in operation cannot be dissipated properly and can result in high RI^2 losses and eventual failure.

- Radiation

Radiation capabilities of capacitors must be taken into consideration. Electrical degradation in the form of dielectric embitterment can take place causing shorts or opens.

General characteristics

- Self-Healing
- Low losses
- High ripple current
- High contact reliability
- Suitable for high frequency applications



Wire Diameter	0.8 mm 20 AWG	1.2 mm 16 AWG
13 th digit code	1	3

TECHNICAL DATA

General technical data	VDE 0560 - IEC61071 - EN61071
Application class (DIN 40040)	GPD / LS
Temperature range (Case)	-40 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = ± 5 % ; K = ± 10%
Peak non-repetitive max current	$I_{PKR} \times 1.5$
Test voltage terminal to terminal U_{TT}	2 U_n for 10 seconds
Test voltage terminal to case U_{TC}	3kV - 50Hz for 60 seconds
Dissipation factor (tgδ)	$\leq 5 \times 10^{-4}$ at 1 kHz and 20 °C
Permissible relative humidity	Annual average $\leq 95\%$ on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
IEC climatic category	40 / 85 / 56 according to IEC 68-1
Capacitance deviation in the operating temperature range of -40 to +85 °C	±1.5% max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Case components	Solvent resistant plastic case with epoxy resin sealing. Flame retardant execution (UL class 94 V0).
Terminals	Tinned copper 2 or 4 wires (See figure on top)
Installation	Whatever Position
Life Expectancy	≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota	300 / 10 ⁹ components hour

PEAK VOLTAGE TABLE

Un	850 V	1000 V	1200 V	2000 V	3000 V
Ü _{MAX}	1200 V	1300 V	1600 V	2400 V	3500 V

GENERAL CHARACTERISTICS

Code	C µF	Un Vdc	U _{RMS} Vac	dv/dt V/µs	I _{PKR} A	ESR (mΩ) max @ 100kHz			I _{RMS} (A) 100kHz @70°C			DIMENSIONS mm				
						d=0.8	d=1.2	d=1.2	d=0.8	d=1.2	d=1.2	B	H	L	p	p1
						2 wires	2 wires	4 wires	2 wires	2 wires	4 wires					
C4ASMB_3150_A	0.15	850	500	1232	185	14.3	13.6	-	8	8	-	10	20	32	27.5	-
C4ASMB_3220_B	0.22	850	500	1232	271	10.2	9.5	-	9	10	-	13	22	32	27.5	-
C4ASMB_3330_C	0.33	850	500	1232	407	7.6	6.9	6.0	9	13	14	14	28	32	27.5	5.1
C4ASMB_3470_E	0.47	850	500	1232	579	6.2	5.3	4.3	9	14	19	18	33	32	27.5	5.1
C4ASMB_3680_G	0.68	850	500	1232	838	5.2	4.2	3.1	9	14	25	22	37	32	27.5	10.2
C4ASMB_4100_F	1	850	500	758	758	6.2	5.2	4.1	9	14	22	20	40	41.5	37.5	10.2
C4ASMB_4200_H	2	850	500	758	1516	4.6	3.5	2.3	9	14	29	24	44	41.5	37.5	10.2
C4ASMB_4300_M	3	850	500	469	1407	5.6	4.5	3.2	9	14	29	30	45	57.5	52.5	10.2
C4ASMB_4400_M	4	850	500	469	1876	4.9	3.8	2.5	9	14	29	30	45	57.5	52.5	20.3
C4ASMB_4500_N	5	850	500	469	2345	4.7	3.5	2.1	9	14	29	35	50	57.5	52.5	20.3
C4ASNB_3150_A	0.15	1000	600	1344	202	13.3	12.7	-	8	8	-	10	20	32	27.5	-
C4ASNB_3220_B	0.22	1000	600	1344	296	9.7	9.0	8.3	9	11	11	13	22	32	27.5	5.1
C4ASNB_3330_C	0.33	1000	600	1344	444	7.3	6.5	5.6	9	14	15	14	28	32	27.5	5.1
C4ASNB_3470_E	0.47	1000	600	1344	632	6.0	5.1	4.1	9	14	20	18	33	32	27.5	5.1
C4ASNB_3680_G	0.68	1000	600	1344	914	5.0	4.0	3.0	9	14	25	22	37	32	27.5	10.2
C4ASNB_4100_F	1	1000	600	827	827	5.9	5.0	3.9	9	14	22	20	40	41.5	37.5	10.2
C4ASNB_4150_J	1.5	1000	600	827	1241	4.7	3.8	2.7	9	14	29	28	37	42.5	37.5	10.2
C4ASNB_4200_L	2	1000	600	827	1654	4.5	3.4	2.2	9	14	29	30	45	42	37.5	20.3
C4ASNB_4220_L	2.2	1000	600	827	1819	4.4	3.3	2.0	9	14	29	30	45	42	37.5	20.3
C4ASNB_4300_M	3	1000	600	512	1536	5.4	4.3	3.0	9	14	29	30	45	57.5	52.5	20.3
C4ASNB_4400_N	4	1000	600	512	2048	5.0	3.8	2.4	9	14	29	35	50	57.5	52.5	20.3
C4ASNB_4470_N	4.7	1000	600	512	2406	4.7	3.5	2.1	9	14	29	35	50	57.5	52.5	20.3
C4ASPB_3100_A	0.1	1200	630	1568	157	17.4	16.8	-	7	7	-	10	20	32	27.5	-
C4ASPB_3150_B	0.15	1200	630	1568	235	12.2	11.6	-	9	10	-	13	22	32	27.5	-
C4ASPB_3220_C	0.22	1200	630	1568	345	9.2	8.4	7.5	9	12	13	14	28	32	27.5	5.1
C4ASPB_3330_E	0.33	1200	630	1568	517	7.0	6.1	5.1	9	14	18	18	33	32	27.5	5.1
C4ASPB_3470_G	0.47	1200	630	1568	737	5.8	4.8	3.7	9	14	23	22	37	32	27.5	10.2
C4ASPB_3680_F	0.68	1200	630	965	656	7.0	6.0	4.9	9	14	20	20	40	41.5	37.5	10.2
C4ASPB_4100_F	1	1200	630	965	965	5.6	4.6	3.5	9	14	26	20	40	41.5	37.5	10.2
C4ASPB_4120_J	1.2	1200	630	965	1158	5.0	4.0	2.9	9	14	28	28	37	42.5	37.5	10.2
C4ASPB_4200_M	2	1200	630	598	1196	6.2	5.0	3.8	9	14	28	30	45	57.5	52.5	10.2
C4ASPB_4220_M	2.2	1200	630	598	1316	5.9	4.7	3.5	9	14	29	30	45	57.5	52.5	10.2
C4ASPB_4250_M	2.5	1200	630	598	1495	5.5	4.4	3.1	9	14	29	30	45	57.5	52.5	20.3
C4ASPB_4300_N	3	1200	630	598	1794	5.3	4.1	2.7	9	14	29	35	50	57.5	52.5	20.3
C4ASPB_4350_N	3.5	1200	630	598	2093	5.0	3.7	2.4	9	14	29	35	50	57.5	52.5	20.3
C4ASWB_2330_A	0.033	2000	700	2240	74	40.0	39.3	-	5	5	-	10	20	32	27.5	-
C4ASWB_2470_A	0.047	2000	700	2240	105	28.5	27.9	-	6	6	-	10	20	32	27.5	-
C4ASWB_2680_B	0.068	2000	700	2240	152	20.3	19.6	-	8	8	-	13	22	32	27.5	-
C4ASWB_3100_C	0.1	2000	700	2240	224	14.6	13.8	13.0	9	10	11	14	28	32	27.5	5.1
C4ASWB_3150_E	0.15	2000	700	2240	336	10.7	9.8	8.8	9	14	15	18	33	32	27.5	5.1
C4ASWB_3220_E	0.22	2000	700	2240	493	8.0	7.1	6.1	9	14	17	18	33	32	27.5	10.2
C4ASWB_3330_F	0.33	2000	700	1380	455	9.4	8.5	7.4	9	14	16	20	40	41.5	37.5	10.2
C4ASWB_3680_H	0.68	2000	700	1380	937	6.1	5.0	3.8	9	14	25	24	44	41.5	37.5	10.2
C4ASWB_4100_M	1	2000	700	850	850	7.7	6.6	5.3	9	14	24	30	45	57.5	52.5	10.2
C4ASWB_4150_N	1.5	2000	700	850	1280	6.3	5.1	3.7	9	14	29	35	50	57.5	52.5	20.3
C4ASYB_2220_A	0.022	3000	750	3360	74	47.9	47.3	-	5	5	-	10	20	32	27.5	-
C4ASYB_2330_B	0.033	3000	750	3360	111	32.6	31.9	-	7	7	-	13	22	32	27.5	-
C4ASYB_2470_C	0.047	3000	750	3360	158	23.7	22.9	22.0	9	9	9	14	28	32	27.5	5.1
C4ASYB_2680_C	0.068	3000	750	3360	228	17.0	16.2	15.3	9	10	11	14	28	32	27.5	5.1
C4ASYB_3100_E	0.1	3000	750	3360	336	12.4	11.5	10.5	9	13	15	18	33	32	27.5	10.2
C4ASYB_3150_G	0.15	3000	750	3360	504	9.2	8.2	7.2	9	14	19	22	37	32	27.5	10.2
C4ASYB_3220_F	0.22	3000	750	2070	455	10.5	9.4	8.2	9	14	18	20	40	41.5	37.5	10.2
C4ASYB_3330_H	0.33	3000	750	2070	682	7.9	6.8	5.6	9	14	21	24	44	41.5	37.5	10.2
C4ASYB_3470_M	0.47	3000	750	1280	601	10.1	9.0	7.7	9	14	20	30	45	57.5	52.5	10.2
C4ASYB_3820_N	0.82	3000	750	1280	1050	7.2	6.0	4.6	9	14	27	35	50	57.5	52.5	20.3

PEAK VOLTAGE TABLE

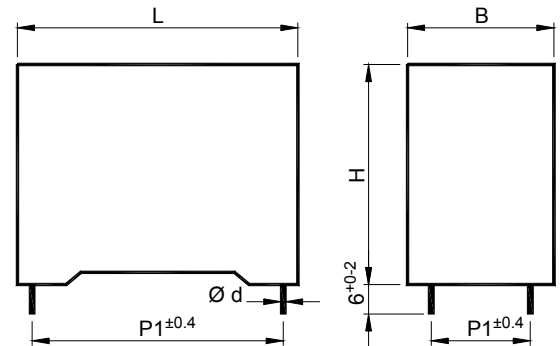
Un	250 V	400 V	450 V	600 V	700 V	850 V
U _{MAX}	400 V	600 V	660 V	800 V	1000 V	1200 V

GENERAL CHARACTERISTICS

Code	C μF	Un Vdc	U _{RMS} Vac	dv/dt V/μs	I _{PKR} A	ESR (mΩ) max @ 100kHz			I _{RMS} (A) 100kHz @70°C			DIMENSIONS mm				
						d=0.8 2 wires	d=1.2 2 wires	d=1.2 4 wires	d=0.8 2 wires	d=1.2 2 wires	d=1.2 4 wires	B	H	L	p	p1
C4ATDB_4100_0_	1	250	160	30	30	23.3	22.6	-	5	5	-	10	20	32	27.5	-
C4ATDB_4220_0_	2.2	250	160	30	66	11.8	11.0	-	7	8	-	10	20	32	27.5	-
C4ATDB_4330_0_	3.3	250	160	30	99	8.7	7.8	-	7	10	-	13	22	32	27.5	-
C4ATDB_4500_0_	5	250	160	30	150	6.8	5.8	-	7	12	-	14	28	32	27.5	-
C4ATDB_5100_0_	10	250	160	30	300	5.2	4.0	3.1	7	12	20	18	33	32	27.5	10.2
C4ATDB_5200_0_	20	250	160	20	400	5.5	4.2	3.1	7	12	22	28	37	42.5	37.5	10.2
C4ATDB_5300_0_	30	250	160	20	600	5.3	3.7	2.6	7	12	22	30	45	42.5	37.5	20.3
C4ATDB_5400_0_	40	250	160	15	600	5.7	4.2	3.1	7	12	22	30	45	57.5	52.5	20.3
C4ATDB_5500_0_	50	250	160	15	750	5.7	4.1	2.8	7	12	22	35	50	57.5	52.5	20.3
C4ATDB_5600_0_	60	250	160	15	900	5.7	3.9	2.6	7	12	22	35	50	57.5	52.5	20.3
C4ATFB_4100_A_	1	400	250	74	74	10.8	10.2	-	8	8	-	10	20	32	27.5	-
C4ATFB_4150_A_	1.5	400	250	74	111	7.7	7.1	-	8	10	-	10	20	32	27.5	-
C4ATFB_4200_B_	2.0	400	250	74	148	6.3	5.6	-	9	11	-	13	22	32	27.5	-
C4ATFB_4330_C_	3.3	400	250	74	244	4.8	4.0	3.1	9	13	18	14	28	32	27.5	5.1
C4ATFB_4400_E_	4	400	250	74	296	4.5	3.6	2.6	9	14	21	18	33	32	27.5	10.2
C4ATFB_4500_E_	5	400	250	74	370	4.0	3.2	2.2	9	14	23	18	33	32	27.5	10.2
C4ATFB_4680_G_	6.8	400	250	74	504	3.8	2.8	1.7	9	14	25	22	37	32	27.5	10.2
C4ATFB_5100_F_	10	400	250	50	502	4.3	3.3	2.2	9	14	28	20	40	41.5	37.5	10.2
C4ATFB_5150_J_	15	400	250	50	753	4	2.9	1.7	9	14	25	28	37	42.5	37.5	10.2
C4ATFB_5200_L_	20	400	250	50	1004	3.7	2.6	1.4	9	14	29	30	45	42	37.5	20.3
C4ATFB_5250_M_	25	400	250	34	846	4.4	3.3	2.0	9	14	29	30	45	57.5	52.5	20.3
C4ATFB_5300_M_	30	400	250	34	1015	4.1	3.0	1.7	9	14	29	30	45	57.5	52.5	20.3
C4ATFB_5350_N_	35	400	250	34	1184	4.2	2.9	1.6	9	14	29	35	50	57.5	52.5	20.3
C4ATFB_5400_N_	40	400	250	34	1350	4.0	2.8	1.4	9	14	29	35	50	57.5	52.5	20.3
C4ATGB_4100_A_	1	450	275	82	82	10.0	9.4	-	8	8	-	10	20	32	27.5	-
C4ATGB_4330_E_	3.3	450	275	82	269	4.8	3.8	2.9	9	14	21	18	33	32	27.5	5.1
C4ATGB_4680_G_	6.8	450	275	82	554	3.6	2.7	1.6	9	14	29	22	37	32	27.5	10.2
C4ATGB_5100_F_	10	450	275	55	552	4.5	3.3	2.1	9	14	29	20	40	41.5	37.5	10.2
C4ATGB_5150_L_	15	450	275	55	828	3.9	2.8	1.6	9	14	29	30	45	42	37.5	20.3
C4ATGB_5200_M_	20	450	275	37	744	4.6	3.5	2.2	9	14	29	30	45	57.5	52.5	10.2
C4ATGB_5330_N_	33	450	275	37	1228	4.1	2.9	1.5	9	14	29	35	50	57.5	52.5	20.3
C4ATHB_3680_A_	0.68	600	350	104	70	11.5	10.9	-	8	8	-	10	20	32	27.5	-
C4ATHB_4100_B_	1	600	350	104	103	8.4	7.7	-	9	10	-	13	22	32	27.5	-
C4ATHB_4200_E_	2	600	350	104	207	5.6	4.7	3.7	9	14	18	18	33	32	27.5	5.1
C4ATHB_4220_E_	2.2	600	350	104	228	5.3	4.4	3.4	9	14	19	18	33	32	27.5	5.1
C4ATHB_4330_G_	3.3	600	350	104	342	4.4	3.5	2.4	9	14	25	22	37	32	27.5	10.2
C4ATHB_4470_F_	4.7	600	350	70	330	5.3	4.4	3.3	9	14	22	20	40	41.5	37.5	10.2
C4ATHB_4500_F_	5	600	350	70	351	5.2	4.2	3.1	9	14	22	20	40	41.5	37.5	10.2
C4ATHB_4680_J_	6.8	600	350	70	477	4.8	3.6	2.4	9	14	28	28	37	42	37.5	10.2
C4ATHB_4900_L_	9	600	350	70	632	4.3	3.2	1.9	9	14	29	30	45	42	37.5	20.3
C4ATHB_5100_L_	10	600	350	70	702	4.1	3.0	1.8	9	14	29	30	45	42	37.5	20.3
C4ATHB_5120_M_	12	600	350	47	568	5.2	4.0	2.8	9	14	29	30	45	57.5	52.5	10.2
C4ATHB_5200_N_	20	600	350	47	947	4.5	3.2	1.9	9	14	29	35	50	57.5	52.5	20.3
C4ATJB_3470_A_	0.47	700	400	119	55	14.3	13.6	-	7	7	-	10	20	32	27.5	-
C4ATJB_4100_D_	1	700	400	119	119	7.9	7.1	6.3	9	12	13	15	24.5	32	27.5	5.1
C4ATJB_4150_E_	1.5	700	400	119	178	6.2	5.3	4.3	9	14	17	18	33	32	27.5	5.1
C4ATJB_4220_E_	2.2	700	400	119	260	4.9	4.0	3.0	9	14	20	18	33	32	27.5	10.2
C4ATJB_4300_G_	3	700	400	119	355	4.4	3.4	2.3	9	14	25	22	37	32	27.5	10.2
C4ATJB_4500_L_	5	700	400	80	400	4.8	3.8	2.8	8	14	27	28	37	42.5	37.5	10.2
C4ATJB_4900_M_	9	700	400	54	487	5.6	4.5	3.2	9	14	29	30	45	57.5	52.5	10.2
C4ATJB_5100_M_	10	700	400	54	540	5.3	4.2	2.9	9	14	29	30	45	57.5	52.5	10.2
C4ATJB_5150_N_	15	700	400	54	811	4.7	3.5	2.1	9	14	29	35	50	57.5	52.5	20.3
C4ATMB_3220_A_	0.22	850	450	148	32.6	23.8	23.1	-	5	5	-	10	20	32	27.5	-
C4ATMB_3470_B_	0.47	850	450	148	69	12.1	11.4	-	8	8	-	13	22	32	27.5	-
C4ATMB_4100_E_	1	850	450	148	148	7.1	6.2	5.2	9	14	16	18	33	32	27.5	5.1
C4ATMB_4150_G_	1.5	850	450	148	222	5.6	4.7	3.6	9	14	21	22	37	32	27.5	10.2
C4ATMB_4330_J_	3.3	850	450	100	331	5.7	4.6	3.3	9	14	24	28	37	42.5	37.5	10.2
C4ATMB_4470_L_	4.7	850	450	100	471	4.8	3.7	2.5	9	14	29	30	45	42	37.5	20.3
C4ATMB_4680_M_	6.8	850	450	68	460	5.8	4.6	3.4	9	14	28	30	45	57.5	52.5	20.3
C4ATMB_5100_N_	10	850	450	68	676	5.1	3.8	2.5	9	14	29	35	50	57.5	52.5	20.3

General characteristics

- Self-Healing
- High Capacitance Density
- Low losses
- High ripple current
- High contact reliability
- Suitable for high frequency applications


TECHNICAL DATA

General technical data	VDE 0560-12 – IEC 1071 – EN 61071
Application class (DIN 40040)	GPD / LS
Temperature range (Case)	-40 to + 85 °C
Max ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = ± 5 % ; K = ± 10%
Max repetitive peak Voltage	1.15 x Vn (max 30 min. within one day)
Max non-repeattive max Peak current	$I_{PKR} \times 1.5$
Test voltage terminal to terminal U_{TT}	1,5 Un for 10 seconds at 25°C
Test voltage terminal to case U_{TC}	2kV - 50Hz for 10 seconds
Dissipation factor (tgδ)	$\leq 5 \times 10^{-4}$ at 1 kHz and 20 °C
Permissible relative humidity	Annual average $\leq 70\%$ on 30 days / year randomly distributed throughout the year 85%; dewing not admissible.
IEC climatic category	40 / 85 / 56 according to IEC 68-1
Capacitance deviation in the operating temperature range of -40 to +85 °C	±2% max on capacitance value measured at +25 °C
Change of capacitance versus operating time	-5% after 100.000 hours at Un
Case components	Solvent resistant plastic case with epoxy and polyurethanic resin sealing. Flame retardant execution (UL class 94 V0).
Terminals	Tinned copper 2+2 wires (See figure on top)
Installation	Whatever Position
Life Expectancy	≥ 100.000 hours at Un
Failure quota	300 / 10 ⁹ components hour

PEAK VOLTAGE TABLE

Un	450 V	700 V	900 V	1100 V
$\hat{U}_{MAX}$	660 V	1000 V	1250 V	1500 V

GENERAL CHARACTERISTICS

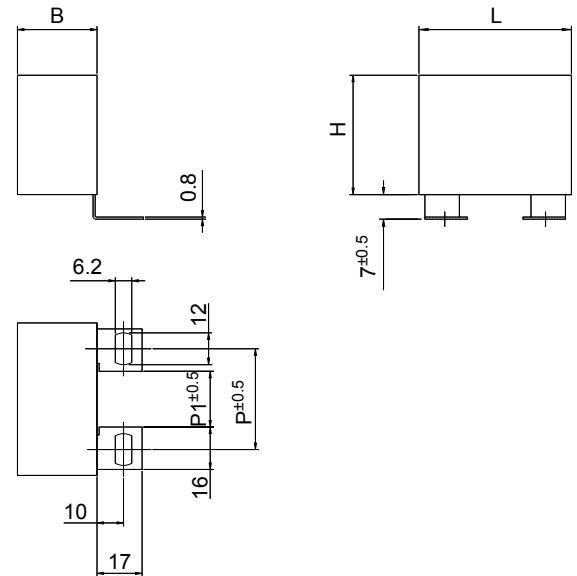
Code	C μF	Un Vdc	dv/dt V/μs	I _{PKR} A	ESL nH	ESR 70°C @ 10kHz mΩ	I _{RMS} 70°C @ 10kHz A	DIMENSIONS mm				
								B	H	L	p	p1
C4AEGBW5300A3FJ	30	450	21	616	30	10.54	8	20	40	41.5	37.5	10.2
C4AEGBW5350A3JJ	35	450	21	719	30	9.05	9	28	37	42.5	37.5	10.2
C4AEGBW5400A3HJ	40	450	21	822	30	7.97	10	24	44	41.5	37.5	10.2
C4AEGBW5500A3LJ	50	450	21	1027	30	6.42	12	30	45	42	37.5	20.3
C4AEGBW5750A3MJ	75	450	14	1039	35	5.45	14	30	45	57.5	52.5	10.2
C4AEGBW6100A3NJ	100	450	14	1368	35	4.17	17	35	50	57.5	52.5	20.3
C4AEJBW5150A3FJ	15	700	13	196	30	6.33	10	20	40	41.5	37.5	5.1
C4AEJBW5200A3JJ	20	700	13	262	30	4.78	12	28	37	42.5	37.5	10.2
C4AEJBW5220A3HJ	22	700	13	287	30	4.39	13	24	44	41.5	37.5	10.2
C4AEJBW5300A3LJ	30	700	13	390	30	3.28	16	30	45	42	37.5	20.3
C4AEJBW5450A3MJ	45	700	10	450	35	3.55	17	30	45	57.5	52.5	20.3
C4AEJBW5550A3NJ	55	700	10	550	35	3.08	21	35	50	57.5	52.5	20.3
C4AEOBW5120A3FJ	12	900	16	196	30	6.38	10	20	40	41.5	37.5	10.2
C4AEOBW5140A3JJ	14	900	16	224	30	5.49	11	28	37	42.5	37.5	10.2
C4AEOBW5160A3HJ	16	900	16	256	30	4.85	13	24	44	41.5	37.5	10.2
C4AEOBW5200A3LJ	20	900	16	327	30	3.93	15	30	45	42	37.5	20.3
C4AEOBW5300A3MJ	30	900	11	330	35	4.23	16	30	45	57.5	52.5	20.3
C4AEOBW5400A3NJ	40	900	11	441	35	3.25	20	35	50	57.5	52.5	20.3
C4AEQBW4800A3FJ	8	1100	20	157	30	8.00	9	20	40	41.5	37.5	10.2
C4AEQBW5100A3JJ	10	1100	20	196	30	6.43	11	28	37	42.5	37.5	10.2
C4AEQBW5120A3LJ	12	1100	20	235	30	5.42	13	30	45	42	37.5	20.3
C4AEQBW5200A3MJ	20	1100	13	265	35	5.26	14	30	45	57.5	52.5	20.3
C4AEQBW5250A3NJ	25	1100	13	331	35	4.27	17	35	50	57.5	52.5	20.3

SINGLE PACKING UNIT

Box dimensions	N° of pieces	Weight kg	Box dimensions	N° of pieces	Weight kg
20x40x41.5	54	3.0	30x45x42	36	3.4
28x37x42.5	36	2.7	30x45x57.5	27	3.2
24x44x41.5	42	3.2	35x50x57.5	23	3.5

General characteristics

- Self-Healing
- Low losses
- High ripple current
- High contact reliability
- Suitable for high frequency applications



TECHNICAL DATA

General technical data	VDE 0560 - IEC61071 - EN61071
Application class (DIN 40040)	GPD / LS
Temperature range (Case)	-40 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = ± 5 % ; K = ± 10%
Peak non-repetitive max current	$I_{PKR} \times 1.5$
Test voltage terminal to terminal U_{TT}	2 U_n for 10 seconds
Test voltage terminal to case U_{TC}	3kV - 50Hz for 60 seconds
Dissipation factor (tgδ)	$\leq 5 \times 10^{-4}$ at 1 kHz and 20 °C
Permissible relative humidity	Annual average $\leq 95\%$ on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
IEC climatic category	40 / 85 / 56 according to IEC 68-1
Capacitance deviation in the operating temperature range of -40 to +85 °C	$\pm 1.5\%$ max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Case components	Solvent resistant plastic case with epoxy resin sealing. Flame retardant execution (UL class 94 V0).
Terminals	Tinned brass lugs
Installation	Whatever Position
Life Expectancy	≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota	300 / 10^9 components hour

PEAK VOLTAGE TABLE

Un	850 V	1000 V	1200 V	2000 V	3000 V
$\hat{U}_{MAX}$	1200 V	1300 V	1600 V	2400 V	3500 V

GENERAL CHARACTERISTICS

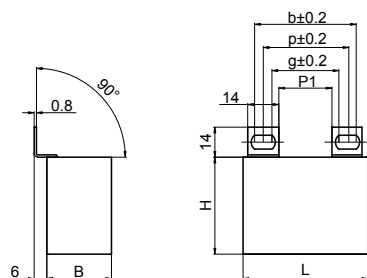
Code	C	Un	U _{RMS}	dV/dt	I _{PKR}	ESR max @ 100 kHz	ESL	I _{RMS} 100 kHz @ 70°C	DIMENSIONS mm		
	μF	Vdc	Vac	V/μs	A	mΩ	nH	A	B	H	L
C4BSMBX3470ZEE	0.47	850	550	1232	579	4.2	36	20	18	33	32
C4BSMBX3470Z_F	0.47	850	550	758	356	8.2	41	16	20	40	41.5
C4BSMBX3680Z_F	0.68	850	550	758	516	5.7	41	19	20	40	41.5
C4BSMBX4100Z_F	1	850	550	758	758	4.0	41	22	20	40	41.5
C4BSMBX4150Z_J	1.5	850	550	758	1138	2.7	36	29	28	37	42.5
C4BSMBX4200Z_L	2	850	550	758	1517	2.1	43	36	30	45	42
C4BSMBX4220Z_L	2.2	850	550	758	1668	1.9	43	37	30	45	42
C4BSMBX4250Z_M	2.5	850	550	469	1174	1.7	45	39	30	45	57.5
C4BSMBX4300Z_M	3	850	550	469	1408	3.0	45	32	30	45	57.5
C4BSMBX4330Z_M	3.3	850	550	469	1549	2.8	45	33	30	45	57.5
C4BSMBX4400Z_N	4	850	550	469	1878	2.3	48	36	35	50	57.5
C4BSMBX4500Z_N	5	850	550	469	2347	1.9	48	42	35	50	57.5
C4BSNBX3470ZEE	0.47	1000	600	1344	632	3.9	36	20	18	33	32
C4BSNBX3470Z_F	0.47	1000	600	827	389	7.6	41	16	20	40	41.5
C4BSNBX3680Z_F	0.68	1000	600	827	563	5.3	41	20	20	40	41.5
C4BSNBX4100Z_F	1	1000	600	827	827	3.7	41	23	20	40	41.5
C4BSNBX4150Z_J	1.5	1000	600	827	1241	2.5	36	30	28	37	42.5
C4BSNBX4200Z_L	2	1000	600	827	1655	2.0	43	36	30	45	42
C4BSNBX4220Z_M	2.2	1000	600	512	1127	3.8	45	29	30	45	57.5
C4BSNBX4250Z_M	2.5	1000	600	512	1280	3.3	45	30	30	45	57.5
C4BSNBX4300Z_M	3	1000	600	512	1536	2.8	45	33	30	45	57.5
C4BSNBX4330Z_M	3.3	1000	600	512	1690	2.6	45	34	30	45	57.5
C4BSNBX4400Z_N	4	1000	600	512	2049	2.2	48	40	35	50	57.5
C4BSPBX3330ZEE	0.33	1200	630	1568	518	5.0	36	19	18	33	32
C4BSPBX3330Z_F	0.33	1200	630	965	319	9.5	41	15	20	40	41.5
C4BSPBX3470Z_F	0.47	1200	630	965	454	6.7	41	18	20	40	41.5
C4BSPBX3680Z_F	0.68	1200	630	965	656	4.7	41	21	20	40	41.5
C4BSPBX4100Z_J	1	1200	630	965	965	3.3	36	27	28	37	42.5
C4BSPBX4120Z_J	1.2	1200	630	965	1158	2.8	36	29	28	37	42.5
C4BSPBX4150Z_L	1.5	1200	630	965	1448	2.3	43	34	30	45	42
C4BSPBX4200Z_M	2	1200	630	598	1195	3.6	45	29	30	45	57.5
C4BSPBX4220Z_M	2.2	1200	630	598	1315	3.3	45	30	30	45	57.5
C4BSPBX4250Z_M	2.5	1200	630	598	1494	2.9	45	32	30	45	57.5
C4BSPBX4300Z_N	3	1200	630	598	1793	2.5	48	37	35	50	57.5
C4BSPBX4330Z_N	3.3	1200	630	598	1972	2.3	48	39	35	50	57.5
C4BSWBX3100ZEE	0.1	2000	700	2241	224	12.9	36	12	18	33	32
C4BSWBX3100Z_F	0.1	2000	700	1379	138	23.3	41	10	20	40	41.5
C4BSWBX3150ZEE	0.15	2000	700	2241	336	8.6	36	15	18	33	32
C4BSWBX3150Z_F	0.15	2000	700	1379	207	15.6	41	12	20	40	41.5
C4BSWBX3220Z_F	0.22	2000	700	1379	303	10.7	41	14	20	40	41.5
C4BSWBX3330Z_F	0.33	2000	700	1379	455	7.2	41	17	20	40	41.5
C4BSWBX3470Z_F	0.47	2000	700	1379	648	5.1	41	20	20	40	41.5
C4BSWBX3680Z_H	0.68	2000	700	1379	938	3.6	43	26	24	44	41.5
C4BSWBX3820Z_L	0.82	2000	700	1379	1131	3.0	43	30	30	45	42
C4BSWBX4100Z_M	1	2000	700	854	854	5.1	45	24	30	45	57.5
C4BSWBX4120Z_M	1.2	2000	700	854	1024	4.3	45	26	30	45	57.5
C4BSWBX4150Z_N	1.5	2000	700	854	1280	3.5	48	31	35	50	57.5
C4BSYBX2470ZEE	0.047	3000	750	3361	158	21.9	36	10	18	33	32
C4BSYBX2470Z_F	0.047	3000	750	2068	97	36.6	41	8	20	40	41.5
C4BSYBX2680ZEE	0.068	3000	750	3361	229	15.2	36	12	18	33	32
C4BSYBX2680Z_F	0.068	3000	750	2068	141	25.4	41	10	20	40	41.5
C4BSYBX3100Z_F	0.1	3000	750	2068	207	17.3	41	12	20	40	41.5
C4BSYBX3220Z_F	0.22	3000	750	2068	455	8.0	41	17	20	40	41.5
C4BSYBX3330Z_L	0.33	3000	750	2068	683	5.4	43	24	30	45	42
C4BSYBX3470Z_M	0.47	3000	750	1280	602	7.5	45	20	30	45	57.5
C4BSYBX3680Z_N	0.68	3000	750	1280	871	5.3	48	23	35	50	57.5
C4BSYBX3820Z_N	0.82	3000	750	1280	1050	4.4	48	28	35	50	57.5

PEAK VOLTAGE TABLE

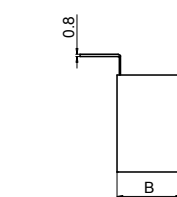
Un	250 V	400 V	600 V	700 V	850 V
Û _{MAX}	400 V	600 V	800 V	1000 V	1200V

GENERAL CHARACTERISTICS

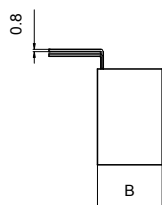
Code	C	Un	U _{RMS}	dv/dt	I _{PKR}	ESR max @ 100 kHz	ESL	I _{RMS} 100 kHz @ 70°C	DIMENSIONS mm		
	µF	Vdc	Vac	V/µs	A	mΩ	nH	A	B	H	L
C4BTDBX4470ZEE	4.7	250	160	59	279	2.6	36	22	18	33	32
C4BTDBX4680ZEE	6.8	250	160	59	403	1.9	36	26	18	33	32
C4BTDBX5100Z_F	10	250	160	40	402	2.6	41	27	20	40	41.5
C4BTDBX5150Z_F	15	250	160	40	602	1.8	41	32	20	40	41.5
C4BTDBX5200Z_J	20	250	160	40	803	1.4	36	39	28	37	42.5
C4BTDBX5250Z_H	25	250	160	40	1004	1.2	43	43	24	44	42
C4BTDBX5300Z_L	30	250	160	40	1205	1.0	43	50	30	45	42
C4BTDBX5400Z_M	40	250	160	27	1082	1.5	45	46	30	45	57.5
C4BTDBX5500Z_N	50	250	160	27	1353	1.2	48	54	35	50	57.5
C4BTDBX5600Z_N	60	250	160	27	1624	1.1	48	58	35	50	57.5
C4BTFBX4330ZEE	3.3	400	250	74	245	3.0	36	21	18	33	32
C4BTFBX4400ZEE	4	400	250	74	296	2.5	36	23	18	33	32
C4BTFBX4400Z_F	4	400	250	50	201	4.9	41	19	20	40	41.5
C4BTFBX4500ZEE	5	400	250	74	370	2.0	36	25	18	33	32
C4BTFBX4500Z_F	5	400	250	50	251	4.0	41	22	20	40	41.5
C4BTFBX4680Z_F	6.8	400	250	50	341	3.0	41	25	20	40	41.5
C4BTFBX5100Z_F	10	400	250	50	502	2.1	41	30	20	40	41.5
C4BTFBX5125Z_J	12.5	400	250	50	627	1.7	36	35	28	37	42.5
C4BTFBX5150Z_J	15	400	250	50	753	1.5	36	38	28	37	42.5
C4BTFBX5200Z_L	20	400	250	50	1004	1.2	43	46	30	45	42
C4BTFBX5250Z_M	25	400	250	34	846	1.8	45	41	30	45	42
C4BTFBX5300Z_M	30	400	250	34	1015	1.6	45	45	30	45	42
C4BTFBX5350Z_N	35	400	250	34	1184	1.4	48	52	35	50	57.5
C4BTFBX5400Z_N	40	400	250	34	1353	1.2	48	54	35	50	57.5
C4BTHBX4250ZEE	2.5	600	330	104	259	2.9	36	21	18	33	32
C4BTHBX4250Z_F	2.5	600	330	70	176	5.7	41	18	20	40	41.5
C4BTHBX4300Z_F	3	600	330	70	211	4.8	41	20	20	40	41.5
C4BTHBX4400Z_F	4	600	330	70	281	3.6	41	23	20	40	41.5
C4BTHBX4500Z_F	5	600	330	70	351	2.9	41	25	20	40	41.5
C4BTHBX4680Z_J	6.8	600	330	70	478	2.2	41	31	28	37	42.5
C4BTHBX4800Z_H	8	600	330	70	562	1.9	43	34	24	44	42
C4BTHBX5100Z_L	10	600	330	70	703	1.6	43	40	30	45	42
C4BTHBX5125Z_M	12.5	600	330	47	592	2.5	45	35	30	45	57.5
C4BTHBX5150Z_M	15	600	330	47	710	2.1	45	38	30	45	57.5
C4BTHBX5200Z_N	20	600	330	47	947	1.7	48	47	35	50	57.5
C4BTJBX4150ZEE	1.5	700	400	119	178	4.2	36	18	18	33	32
C4BTJBX4150Z_F	1.5	700	400	80	120	8.2	41	15	20	40	41.5
C4BTJBX4200ZEE	2	700	400	119	237	3.2	36	20	18	33	32
C4BTJBX4200Z_F	2	700	400	80	161	6.2	41	17	20	40	41.5
C4BTJBX4220Z_F	2.2	700	400	80	177	5.7	41	18	20	40	41.5
C4BTJBX4300Z_F	3	700	400	80	241	4.2	41	21	20	40	41.5
C4BTJBX4400Z_F	4	700	400	80	321	3.2	41	24	20	40	41.5
C4BTJBX4500Z_J	5	700	400	80	402	2.6	36	29	28	37	42
C4BTJBX4800Z_L	8	700	400	80	642	1.7	43	38	30	45	57.5
C4BTJBX5100Z_M	10	700	400	54	541	2.7	45	34	30	45	57.5
C4BTJBX5150Z_N	15	700	400	54	812	1.9	48	44	35	50	57.5
C4BTMBX4100ZEE	1	850	450	148	148	5.1	36	16	18	33	32
C4BTMBX4100Z_F	1	850	450	100	100	9.9	41	14	20	40	41.5
C4BTMBX4150Z_F	1.5	850	450	100	151	6.7	41	17	20	40	41.5
C4BTMBX4200Z_F	2	850	450	100	201	5.1	41	19	20	40	41.5
C4BTMBX4300Z_F	3	850	450	100	301	3.4	41	23	20	40	41.5
C4BTMBX4400Z_H	4	850	450	100	402	2.6	43	29	24	44	42
C4BTMBX4500Z_L	5	850	450	100	502	2.2	43	34	30	45	42
C4BTMBX4800Z_N	8	850	450	68	541	2.8	48	37	35	50	57.5
C4BTMBX5100Z_N	10	850	450	68	677	2.3	48	40	35	50	57.5



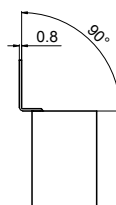
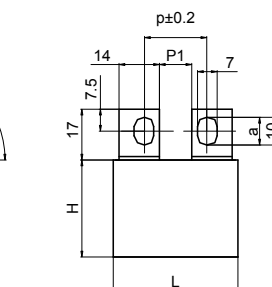
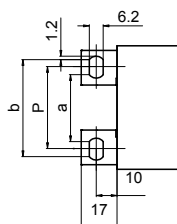
Style	L	P	a	b	P1
A	41.5	25.5	21.5	29.5	10.5
A	42	25.5	21.5	29.5	10.5
A	42.5	25.5	21.5	29.5	10.5
A	57.5	41	37	45	25



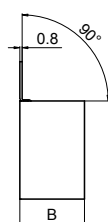
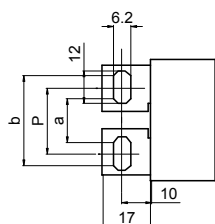
Style	L	P	a	b	P1
B	41.5	22	16	28	6
B	42	22	16	28	6
B	42.5	22	16	28	6
B	57.5	37	31	43	21



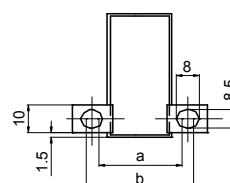
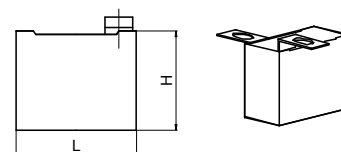
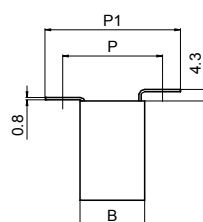
Style	L	P	a	b	P1
F	41.5	22	16	28	6
F	42	22	16	28	6
F	42.5	22	16	28	6
F	57.5	37	31	43	21



Style	L	P	a	b	P1
G	41.5	22	4	/	10.5
G	42	22	4	/	10.5
G	42.5	22	4	/	10.5
G	57.5	37	4	/	25



Style	L	P	a	b	P1
H	41.5	25.5	21.5	29.5	10.5
H	42	25.5	21.5	29.5	10.5
H	42.5	25.5	21.5	29.5	10.5
H	57.5	41	37	45	25



Style	B	P	P1	a	b
E	18	31	44	29	33
E	20	33	46	31	35
E	22	35	48	33	37
E	24	37	50	35	39
E	28	41	54	39	43
E	30	43	56	41	45

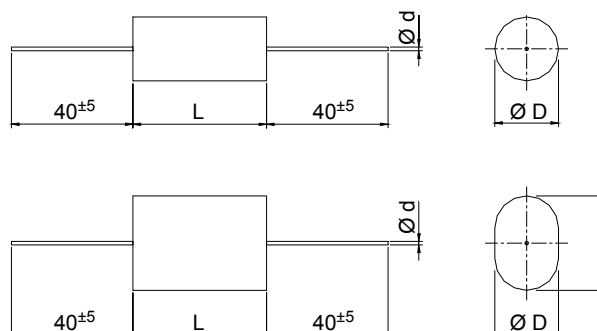
SINGLE PACKAGE UNIT

Box dimensions	N° of pieces	Weight kgr	Box dimensions	N° of pieces	Weight kgr
20x40x41.5	54	3.0	30x45x42	36	3.4
28x37x42.5	36	2.7	30x45x57.5	27	3.2
24x44x41.5	42	3.2	35x50x57.5	23	3.5

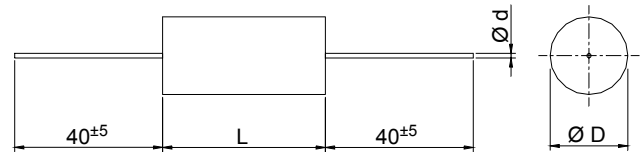
General characteristics

- Self-Healing
- Low losses
- High ripple current
- High contact reliability
- Suitable for high frequency applications

D	< 10 mm	10 mm ÷ 22mm	> 22 mm
d	0.8 mm 20 AWG	1 mm 18 AWG	1.2 mm 16 AWG

**TECHNICAL DATA**

General technical data		VDE 0560 - IEC61071 - EN61071
Application class (DIN 40040)		GPE / LS
Temperature range (Case)		-40 °C to + 85 °C
Max permissible ambient temperature		+70 °C
Capacitance tolerance code (15 th digit)		J = ± 5% ; K = ± 10%
Peak non-repetitive max current		$I_{PKR} \times 1.5$
Test voltage terminal to terminal U_{TT}		2 U_n for 10 seconds
Insulation resistance test conditions		Temperature : +25 °C ± 5% Voltage charge time : 1 minute Test voltage : 100 Vdc Typical value ($R_{is} \times C$) : 3000 seconds
Test voltage terminal to case U_{TC}		3kV _{DC} 50Hz for 60 seconds
Dissipation factor ($tg\delta$)		$\leq 5 \times 10^{-4}$ at 1 kHz and 20 °C
Damp heat test -	Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days Capacitance change : $\leq \pm 5\%$ $tg\delta$ change : $\leq 50\%$ of nominal value at 1 kHz Insulation resistance : $\leq 50\%$ of limit value
	Performances	
IEC climatic category		40 / 85 / 56 according to IEC 68-1
Capacitance deviation in the operating temperature range of -40 to +85 °C		±1.5% max on capacitance value measured at +20 °C
Change of capacitance versus operating time		-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Protection		Polyester wrapping with epoxy resin fill
Flame retardant (IEC 384-1)		Standard execution: not flame retardant 4 th digit code A On request flame retardant execution category C, 4 th digit code S
Leads		Tinned copper (medium lead content 5%)
Installation		Whatever Position
Life Expectancy		≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota		300 / 10 ⁹ components hour
Vibration strength		DIN 40040 , Table 6 , Class V

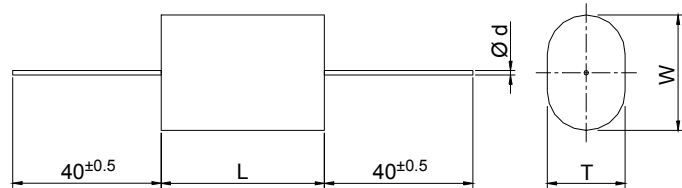


PEAK VOLTAGE TABLE

Un	850 V	1200 V	2000 V	3000 V
U _{MAX}	1200 V	1600 V	2400 V	3500 V

GENERAL CHARACTERISTICS

Code	C	Un	URMS	dv/dt	IPKR	ESR	IRMS	Max Dimensions		
	µF	Vdc	Vac	V/µs	A	Max @100kHz mΩ	100kHz @ 70°C A	D	L	d
C4CAMUB3100AA0J	0.1	850	450	450	45	16.6	5	10.5	33	0.8
C4CAMUB3150AA0J	0.15	850	450	450	68	11.5	7	12.5	33	0.8
C4CAMUC3220AA0J	0.22	850	450	450	99	8.1	9	15.5	33	1.0
C4CAMUC3330AA0J	0.33	850	450	450	149	5.8	9	18.5	33	1.0
C4CAMUC3470AA0J	0.47	850	450	450	212	4.6	9	21.5	33	1.0
C4CAMUC3680AA1J	0.68	850	450	300	204	5.1	9	21	44	1.0
C4CAMUD4100AA1J	1	850	450	300	300	3.8	12	25	44	1.2
C4CAMUD4150AA1J	1.5	850	450	300	450	3.1	12	30.5	44	1.2
C4CAMUD4200AA3J	2	850	450	200	400	3.8	12	28.5	58	1.2
C4CAMUD4220AA3J	2.2	850	450	200	440	3.7	12	29.5	58	1.2
C4CAMUD4250AA3J	2.5	850	450	200	500	3.5	12	31.5	58	1.2
C4CAPUB2470AA0J	0.047	1200	500	700	33	27.1	4	10	33	0.8
C4CAPUB2680AA0J	0.068	1200	500	700	48	19.1	5	12	33	0.8
C4CAPUB3100AA0J	0.1	1200	500	700	70	13.4	7	14	33	0.8
C4CAPUC3150AA0J	0.15	1200	500	700	105	9.2	9	17.5	33	1.0
C4CAPUC3220AA0J	0.22	1200	500	700	154	6.8	9	20.5	33	1.0
C4CAPUC3330AA1J	0.33	1200	500	450	149	7.2	9	20	44	1.0
C4CAPUC3470AA1J	0.47	1200	500	450	212	5.6	9	23	44	1.0
C4CAPUD3680AA1J	0.68	1200	500	450	306	4.2	12	27.5	44	1.2
C4CAPUD4100AA1J	1	1200	500	450	450	3.5	12	33	44	1.2
C4CAPUD4120AA3J	1.2	1200	500	275	330	4.5	12	29	58	1.2
C4CAPUD4150AA3J	1.5	1200	500	275	413	4	12	32	58	1.2
C4CAWUB2220AA0J	0.022	2000	630	1150	25	48.2	3	10.5	33	0.8
C4CAWUB2330AA0J	0.033	2000	630	1150	38	32.5	4	12.5	33	0.8
C4CAWUC2470AA0J	0.047	2000	630	1150	54	23	6	15	33	1.0
C4CAWUC2680AA0J	0.068	2000	630	1150	78	16.3	7	17.5	33	1.0
C4CAWUC3100AA0J	0.1	2000	630	1150	115	11.6	9	20.5	33	1.0
C4CAWUC3150AA1J	0.15	2000	630	700	105	11.3	9	19.5	44	1.0
C4CAWUD3220AA1J	0.22	2000	630	700	154	8	12	23.5	44	1.2
C4CAWUD3330AA1J	0.33	2000	630	700	231	5.9	12	28.5	44	1.2
C4CAWUD3470AA1J	0.47	2000	630	700	329	4.8	12	33.5	44	1.2
C4CAWUD3560AA3J	0.56	2000	630	400	224	6.1	12	29	58	1.2
C4CAWUD3680AA3J	0.68	2000	630	400	272	5.4	12	32	58	1.2
C4CAYUB1680AA0J	0.0068	3000	750	2100	14.5	132	2	10	33	0.8
C4CAYUB2100AA0J	0.01	3000	750	2100	21	90.3	3	12	33	0.8
C4CAYUC2150AA0J	0.015	3000	750	2100	32	60.5	4	14.5	33	1.0
C4CAYUC2220AA0J	0.022	3000	750	2100	46	41.6	5	17	33	1.0
C4CAYUC2330AA0J	0.033	3000	750	2100	69	28.3	6	20.5	33	1.0
C4CAYUC2470AA1J	0.047	3000	750	1250	59	25.7	7	19	44	1.0
C4CAYUC2680AA1J	0.068	3000	750	1250	85	18.3	9	22.5	44	1.0
C4CAYUD3100AA1J	0.1	3000	750	1250	125	12.8	12	27	44	1.2
C4CAYUD3150AA1J	0.15	3000	750	1250	188	9.2	12	32	44	1.2
C4CAYUD3220AA3J	0.22	3000	750	750	165	9.5	12	31	58	1.2

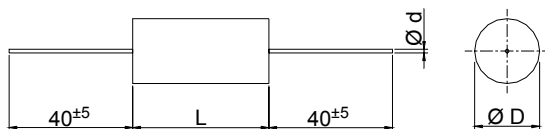


PEAK VOLTAGE TABLE

Un	850 V	1200 V	2000 V	3000 V
U _{max}	1200 V	1600 V	2400 V	3500 V

GENERAL CHARACTERISTICS

Code	C μF	Un Vdc	URMS Vac	dv/dt V/μs	IPKR A	ESR Max @ 100kHz mΩ	IRMS 100kHz @70° A	MAX DIMENSIONS (mm)			
								T	W	L	d
C4HAMUB3100AA0J	0.1	850	450	450	45	16.7	5	8	12	33	0.8
C4HAMUB3150AA0J	0.15	850	450	450	68	11.5	6	10	14	33	0.8
C4HAMUC3220AA0J	0.22	850	450	450	99	8.1	9	11	17.5	33	1.0
C4HAMUC3330AA0J	0.33	850	450	450	149	5.8	9	14.5	20.5	33	1.0
C4HAMUC3680AA1J	0.68	850	450	300	204	5.1	9	17	23	44	1.0
C4HAMUD4100AA3J	1	850	450	190	190	6.1	12	16.5	22.5	58	1.2
C4HAPUB2470AA0J	0.047	1200	500	700	33	27.2	4	7.5	11.5	33	0.8
C4HAPUB2680AA0J	0.068	1200	500	700	48	19.1	5	9.5	13.5	33	0.8
C4HAPUB3100AA0J	0.1	1200	500	700	70	13.5	6	11.5	15.5	33	0.8
C4HAPUC3150AA0J	0.15	1200	500	700	105	9.2	9	13	19.5	33	1.0
C4HAPUC3220AA0J	0.22	1200	500	700	154	6.8	9	16.5	22.5	33	1.0
C4HAPUC3330AA1J	0.33	1200	500	450	149	7.2	9	15.5	22	44	1.0
C4HAPUC3470AA1J	0.47	1200	500	450	212	5.6	9	19	25.5	44	1.0
C4HAPUD3680AA3J	0.68	1200	500	270	184	6.6	12	18	24	58	1.2
C4HAWUB2220AA0J	0.022	2000	630	1150	25	48.3	3	8	11.5	33	0.8
C4HAWUB2330AA0J	0.033	2000	630	1150	38	32.6	4	9.5	13.5	33	0.8
C4HAWUC2470AA0J	0.047	2000	630	1150	54	23.1	5	10.5	17	33	1.0
C4HAWUC2680AA0J	0.068	2000	630	1150	78	16.3	7	13	19.5	33	1.0
C4HAWUC3100AA0J	0.1	2000	630	1150	115	11.6	9	16.5	22.5	33	1.0
C4HAWUC3150AA1J	0.15	2000	630	700	105	11.3	9	15.5	22	44	1.0
C4HAWUD3220AA1J	0.22	2000	630	700	154	8	12	19.5	25.5	44	1.2
C4HAWUD3330AA3J	0.33	2000	630	410	135	9.2	12	18.5	25	58	1.2
C4HAYUB1680AA0J	0.0068	3000	750	2100	14.5	133	2	7.5	11.5	33	0.8
C4HAYUB2100AA0J	0.001	3000	750	2100	21	90.5	2	9	13	33	0.8
C4HAYUC2150AA0J	0.015	3000	750	2100	32	60.6	3	10.5	16.5	33	1.0
C4HAYUC2220AA0J	0.022	3000	750	2100	46	41.7	4	13	19	33	1.0
C4HAYUC2330AA0J	0.033	3000	750	2100	69	28.3	5	16	22.5	33	1.0
C4HAYUC2470AA1J	0.047	3000	750	1250	59	25.7	6	15	21	44	1.0
C4HAYUC2680AA1J	0.068	3000	750	1250	85	18.3	9	18	24.5	44	1.0
C4HAYUD3100AA3J	0.1	3000	750	750	75	18.9	10	17	23.5	58	1.2

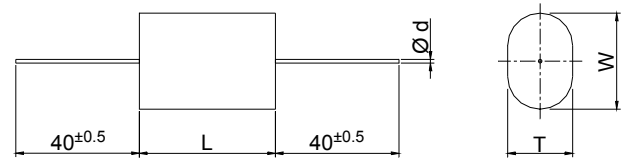


PEAK VOLTAGE TABLE

Un	250 V	400 V	600 V	700 V	850 V
Ūmax	400 V	600 V	800 V	1000 V	1200 V

GENERAL CHARACTERISTICS

Code	C	Un	URMS	dv/dt	IPKR	ESR	IRMS	MAX DIMENSIONS		
	μF	Vdc	Vac	V/μs	A	Max @ 100kHz mΩ	100kHz @ 70°C A	D	L	d
C4GADUB4100AA4J	1	250	160	60	60	6.7	6	11	20.5	0.8
C4GADUB4220AA0J	2.2	250	160	30	66	10.9	6	11.5	33	0.8
C4GADUB4250AA0J	2.5	250	160	30	75	9.8	7	12	33	0.8
C4GADUC4300AA0J	3	250	160	30	90	8.2	8	13.5	33	1.0
C4GADUC4330AA0J	3.3	250	160	30	99	7.5	9	14	33	1.0
C4GADUC4400AA0J	4	250	160	30	120	6.4	9	15.5	33	1.0
C4GADUC4500AA0J	5	250	160	30	150	5.4	9	17	33	1.0
C4GADUC4680AA0J	6.8	250	160	30	204	4.4	9	19.5	33	1.0
C4GADUC5100AA1J	10	250	160	20	200	5.3	9	20	44	1.0
C4GADUD5150AA1J	15	250	160	20	300	3.9	12	24.5	44	1.2
C4GADUD5200AA1J	20	250	160	20	400	3.4	12	28	44	1.2
C4GADUD5250AA1J	25	250	160	20	500	3.1	12	31	44	1.2
C4GADUD5300AA3J	30	250	160	15	450	4	12	29	58	1.2
C4GADUD5400AA3J	40	250	160	15	600	3.5	12	33.5	58	1.2
C4GAFUB3470AA5J	0.47	400	250	60	28	11.1	6	9.5	28	0.8
C4GAFUB3680AA0J	0.68	400	250	45	31	11.7	6	10	33	0.8
C4GAFUB4100AA0J	1	400	250	45	45	8.3	7	12	33	0.8
C4GAFUC4150AA0J	1.5	400	250	45	68	5.8	9	14.5	33	1.0
C4GAFUC4200AA0J	2	400	250	45	90	4.7	9	16.5	33	1.0
C4GAFUC4220AA0J	2.2	400	250	45	99	4.4	9	17.5	33	1.0
C4GAFUC4250AA0J	2.5	400	250	45	113	4	9	18.5	33	1.0
C4GAFUC4300AA0J	3	400	250	45	135	3.6	9	20	33	1.0
C4GAFUC4330AA1J	3.3	400	250	30	99	5.2	9	18	44	1.0
C4GAFUC4400AA1J	4	400	250	30	120	4.6	9	19.5	44	1.0
C4GAFUC4470AA1J	4.7	400	250	30	141	4.1	9	21	44	1.0
C4GAFUC4500AA1J	5	400	250	30	150	4	9	21.5	44	1.0
C4GAFUD4680AA1J	6.8	400	250	30	204	3.2	12	25	44	1.2
C4GAFUD5100AA1J	10	400	250	30	300	2.7	12	30	44	1.2
C4GAFUD5150AA3J	15	400	250	20	300	4.8	12	31.5	58	1.2
C4GAFUD5200AA3J	20	400	250	20	400	4	12	35	58	1.2
C4GAHUB3470AA0J	0.47	600	330	60	28	13.1	6	11	33	0.8
C4GAHUB3680AA0J	0.68	600	330	60	41	9.4	7	13	33	0.8
C4GAHUC4100AA0J	1	600	330	60	60	6.6	9	15.5	33	1.0
C4GAHUC4200AA1J	2	600	330	40	80	6.3	9	18.5	44	1.0
C4GAHUC4220AA1J	2.2	600	330	40	88	5.2	9	19.5	44	1.0
C4GAHUC4300AA1J	3	600	330	40	120	4.8	9	22.5	44	1.0
C4GAHUC4330AA1J	3.3	600	330	40	132	4.3	12	23.5	44	1.2
C4GAHUD4400AA1J	4	600	330	40	160	3.8	12	25.5	44	1.2
C4GAHUD4470AA1J	4.7	600	330	40	188	3.5	12	27.5	44	1.2
C4GAHUD4500AA1J	5	600	330	40	200	3.4	12	28.5	44	1.2
C4GAHUD4680AA3J	6.8	600	330	30	204	6.8	12	28.5	58	1.2
C4GAHUD5100AA3J	10	600	330	30	300	5.3	12	34.5	58	1.2
C4GAJUC3470AA0J	0.47	700	400	80	38	9.5	8	14.5	33	1.0
C4GAHUB3680AA0J	0.68	700	400	80	55	7	9	17	33	1.0
C4GAJUC4100AA0J	1	700	400	80	80	5.2	9	20.5	33	1.0
C4GAJUC4150AA1J	1.5	700	400	60	90	6.4	9	20.5	44	1.0
C4GAJUD4200AA1J	2	700	400	60	120	5	12	23.5	44	1.2
C4GAJUD4220AA1J	2.2	700	400	60	132	4.7	12	24.5	44	1.2
C4GAJUD4300AA1J	3	700	400	60	180	3.9	12	28.5	44	1.2
C4GAJUD4330AA1J	3.3	700	400	60	198	3.7	12	30	44	1.2
C4GAJUD4400AA1J	4	700	400	60	240	3.5	12	33	44	1.2
C4GAJUD4470AA3J	4.7	700	400	40	188	7.9	12	29.5	58	1.2
C4GAJUD4500AA3J	5	700	400	40	200	7.5	12	30.5	58	1.2
C4GAJUD4680AA3J	6.8	700	400	40	272	6.1	12	35	58	1.2
C4GAMUB3150AA0J	0.15	850	450	210	32	14.5	5	10	33	0.8
C4GAMUB3220AA0J	0.22	850	450	210	46	10.3	7	12	33	0.8
C4GAMUC3330AA0J	0.33	850	450	210	69	7.1	9	14.5	33	1.0
C4GAMUC3470AA0J	0.47	850	450	210	99	5.4	9	17	33	1.0
C4GAMUC3680AA0J	0.68	850	450	210	143	4.2	9	20.5	33	1.0
C4GAMUC4100AA1J	1	850	450	140	140	4.7	9	20.5	44	1.0
C4GAMUD4150AA1J	1.5	850	450	140	210	3.5	12	24.5	44	1.2
C4GAMUD4200AA1J	2	850	450	140	280	3.1	12	28.5	44	1.2
C4GAMUD4220AA1J	2.2	850	450	140	308	3	12	29.5	44	1.2
C4GAMUD4250AA1J	2.5	850	450	140	350	2.9	12	31.5	44	1.2
C4GAMUD4300AA3J	3	850	450	90	270	3.6	12	28	58	1.2
C4GAMUD4330AA3J	3.3	850	450	90	297	3.5	12	29.5	58	1.2
C4GAMUD4400AA3J	4	850	450	90	360	3.2	12	32.5	58	1.2



PEAK VOLTAGE TABLE

Un	250 V	400 V	600 V	700 V	850 V
$\hat{U}_{MAX}$	400 V	600 V	800 V	1000 V	1200 V

GENERAL CHARACTERISTICS

Code	C μF	Un Vdc	URMS Vac	dv/dt V/ μs	IPKR A	ESR Max @ 100kHz m Ω	IRMS 100kHz @ 70°C A	MAX DIMENSIONS (mm)			
								T	W	L	d
C4MADUB4100AA4J	1	250	160	60	60	6.7	6	8.5	12.5	20.5	0.8
C4MADUB4220AA0J	2.2	250	160	30	66	11	6	9	13	33	0.8
C4MADUB4250AA0J	2.5	250	160	30	75	9.9	7	9.5	13.5	33	0.8
C4MADUC4300AA0J	3	250	160	30	90	8.2	8	9.5	16	33	1.0
C4MADUC4330AA0J	3.3	250	160	30	99	7.6	9	10	16.5	33	1.0
C4MADUC4400AA0J	4	250	160	30	120	6.5	9	11.5	17.5	33	1.0
C4MADUC4500AA0J	5	250	160	30	150	5.4	9	13	19.5	33	1.0
C4MADUC4680AA0J	6.8	250	160	30	204	4.4	9	15.5	22	33	1.0
C4MADUC5100AA1J	10	250	160	20	200	5.4	9	16	22.5	44	1.0
C4MADUD5150AA3J	15	250	160	15	225	6.4	12	17	23	58	1.2
C4MADUD5200AA3J	20	250	160	15	300	5.1	12	20	26.5	58	1.2
C4MAFUB3470AA5J	0.47	400	250	60	28	11.2	5	7	11	28	0.8
C4MAFUB3680AA0J	0.68	400	250	45	31	11.8	6	7.5	11.5	33	0.8
C4MAFUB4100AA0J	1	400	250	45	45	8.4	7	10	14	33	0.8
C4MAFUC4150AA0J	1.5	400	250	45	68	5.8	9	11	17.5	33	1.0
C4MAFUC4200AA0J	2	400	250	45	90	4.7	9	13	19.5	33	1.0
C4MAFUC4220AA0J	2.2	400	250	45	99	4.4	9	13.5	19.5	33	1.0
C4MAFUC4250AA0J	2.5	400	250	45	113	4	9	14.5	20.5	33	1.0
C4MAFUC4300AA0J	3	400	250	45	135	3.6	9	16	22.5	33	1.0
C4MAFUC4330AA1J	3.3	400	250	30	99	5.2	9	14	20.5	44	1.0
C4MAFUC4400AA1J	4	400	250	30	120	4.6	9	15.5	22	44	1.0
C4MAFUC4470AA1J	4.7	400	250	30	141	4.2	9	17	23.5	44	1.0
C4MAFUC4500AA1J	5	400	250	30	150	4	9	18	24	44	1.0
C4MAFUD4680AA3J	6.8	400	250	20	136	8.5	12	17.5	24	58	1.2
C4MAHUB3470AA0J	0.47	600	330	60	28	13.2	6	8.5	12.5	33	0.8
C4MAHUB3680AA0J	0.68	600	330	60	41	9.5	7	10.5	14.5	33	0.8
C4MAHUC4100AA0J	1	600	330	60	60	6.7	9	12	18	33	1.0
C4MAHUC4200AA1J	2	600	330	40	80	6.4	9	14.5	21	44	1.0
C4MAHUC4220AA1J	2.2	600	330	40	88	5.9	9	15.5	22	44	1.0
C4MAHUC4300AA1J	3	600	330	40	120	4.8	9	18.5	25	44	1.0
C4MAHUD4330AA3J	3.3	600	330	30	99	12.6	11	16.5	22.5	58	1.2
C4MAHUD4400AA3J	4	600	330	30	120	10.6	12	18	24.5	58	1.2
C4MAHUD4470AA3J	4.7	600	330	30	141	9.3	12	20	26	58	1.2
C4MAJUC3470AA0J	0.47	700	400	80	38	9.6	8	10.5	17	33	1.0
C4MAJUC3680AA0J	0.68	700	400	80	55	7	9	13.5	19.5	33	1.0
C4MAJUC4100AA0J	1	700	400	80	80	5.3	9	16.5	23	33	1.0
C4MAJUC4150AA1J	1.5	700	400	60	90	6.5	9	16.5	23	44	1.0
C4MAJUD4200AA3J	2	700	400	40	80	16.4	10	16	22	58	1.2
C4MAJUD4220AA3J	2.2	700	400	40	88	15	11	16.5	23	58	1.2
C4MAJUD4300AA3J	3	700	400	40	120	11.4	12	20	26	58	1.2

ORDERING CODES - Axial Series C4C, C4G, C4H, C4M

Digits	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Series															
Degree of protection															
Nominal Voltage Un															
Case															
Terminals															
Capacitance value															
Execution															
Total length of capacitor															
Tolerance %															

Digits 1-2-3: Series

C4C	Axials cylindrical MKP capacitors for snubber applications
C4G	Axials cylindrical MKP capacitors for switching applications
C4H	Axials ovoidal MKP capacitors for snubber applications
C4M	Axials ovoidal MKP capacitors for switching application

Digit 4: Degree of protection:

A	Standard execution not flame retardant
S	Standard execution flame retardant

Digit 5: Nominal D.C. Voltage Un

A = 550 Vdc	B = 160 Vdc	C = 200 Vdc	D = 250 Vdc
E = 300 Vdc	F = 400 Vdc	G = 450 Vdc	H = 600 Vdc
I = 630 Vdc	J = 700 Vdc	K = 750 Vdc	L = 500 Vdc
M = 850 Vdc	N = 1000 Vdc	P = 1200 Vdc	R = 1400 Vdc
S = 1500 Vdc	T = 1600 Vdc	U = 1700 Vdc	V = 1800 Vdc
W = 2000 Vdc	X = 2400 Vdc	Y = 3000 Vdc	Z = Special voltage

Digit 6: Case

0	Capacitor unprotected.
U	Capacitor protected with tape and resin.
Z	Capacitor protected with a special executions.

Digit 7: Terminals

0	Without terminals	A	Tinned copper wire D 0.6 mm
B	Tinned copper wire D 0.8 mm	C	Tinned copper wire D 1.0 mm
D	Tinned copper wire D 1.2 mm	Z	Special terminals

Digits 8-9-10-11: Capacitance

The nominal capacitance is exponential: the digits 9, 10, 11 show the first 3 significative numbers of capacitance, the digit 8 defines the exponent on 10 base to obtain the nominal capacitance in pF, example $\Rightarrow 2330 = 0,033 \mu F \Rightarrow 330 \times 10^2 \Rightarrow 330 \times 100 \Rightarrow 33000 \text{ pF} = 0,033 \mu F$

Digits 12-13: Execution

The standard execution is coded as AA, all the others are not standard.

Digit 14: Total Length of Capacitor

0 = H max 33 mm (tape H=31.5 mm)	1 = H max 44 mm (tape H=42 mm)
2 = H max 46 mm (tape H=44 mm)	3 = H max 58 mm (tape H=56 mm)
4 = H max 20.5 mm (tape H = 19 mm)	5 = H max 28 mm (tape H=26.5 mm)
6 = H max 38 mm (tape H = 36 mm)	

Digit 15: Tolerance

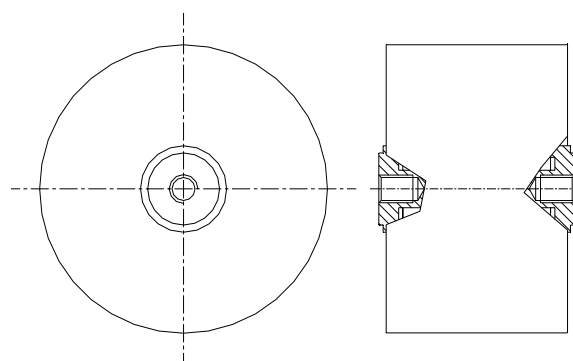
According to IEC 1968, this code defines the tolerance on nominal capacitance of the capacitor.

J = $\pm 5\%$ K = $\pm 10\%$ X = Special tolerance

The capacitors of C4D Series are designed with reinforced metallized polypropylene dielectric film.

These capacitors are suitable to withstand the heavy current pulses usually met in GTO protection.

The axial connections allow to reduce series inductance and provide strong mechanical mounting reliable electrical contact and good thermal dissipation of heat produced during service.



Applications:

- Protection of GTO
- High ripple current D.C. filtering
- Medium frequency tuning
- Pulsed lasers

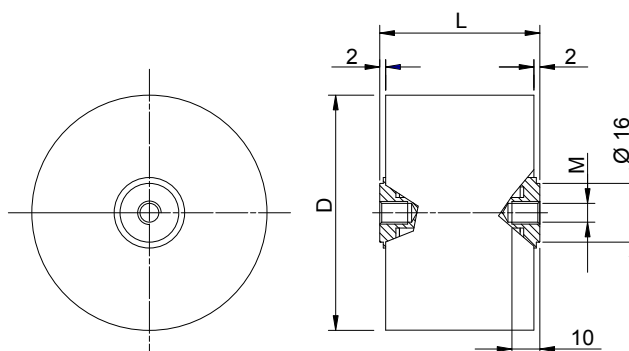
Presentation:

- Cylindrical plastic case
- Mechanical fixing by means of brass connections,
- Hole M8 threaded (M6 on request)

TECHNICAL DATA

General technical data	VDE 0560 - IEC61071 - EN61071
IEC climatic category	40 / 85 / 56
Temperature range (Case)	-40 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code	J = $\pm 5\%$; K = $\pm 10\%$
Capacitance deviation in the operating temperature range of -40 to +85 °C	$\pm 1.5\%$ max on capacitance value measured at +20 °C
Test voltage terminal to case U_{TC}	5kV _{DC} 50Hz for 60 seconds
Dissipation factor (tg δ)	$\leq 3 \times 10^{-4}$ at 1 kHz and 20°C
Permissible relative humidity	Annual average $\leq 95\%$ on 30 days/year, continuously 100% on other days occasionally 100%. Dewing not admissible
Case components	Solvent resistant plastic case with resin sealing.
Terminals	Tinned brass (See figure on top)
Tightening torque	10Nm max for M8 thread and 6Nm max for M6 thread
Installation	Whatever Position
Life Expectancy	≥ 100.000 hours
Failure quota	300 / 10^9 components hour

Rated D.C. Voltage V_{DC}	Test voltage between terminals U_{TT} V_{DC}
850	1700
1000	2000
1400	2800
3000	4500



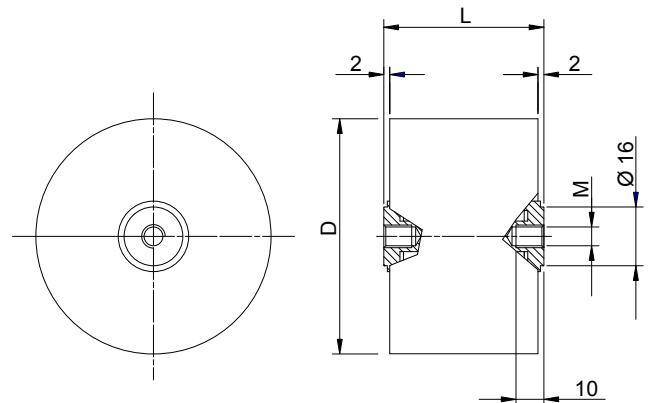
PEAK VOLTAGE TABLE

U_n	850	1000	1400	3000
$\hat{U}_{MAX}$	1200	1400	2000	4000
$\hat{U}_s$	1300	1500	2150	4200

GENERAL CHARACTERISTICS

Code	C	U_n	U_{RMS}	dV/dt	I_{PKR}	ESR Max @ 100kHz	IRMS 100kHz@70°C	K	Dimensions (mm)	
	μF	Vdc	Vac	V/ μs	A	m Ω	A	°W/C	D	L
C4DCMAQ4150AA0J	1.5	850	500	450	675	1.7	40	5.4	60	51
C4DCMAQ4200AA0J	2	850	500	450	900	1.5	43	5.5	60	51
C4DCMAQ4300AA0J	3	850	500	450	1350	1.2	53	4.5	72	51
C4DCMAQ4350AA0J	3.5	850	500	450	1575	1.1	55	4.4	72	51
C4DCMAQ4400AA0J	4	850	500	450	1800	1.1	59	3.8	80	51
C4DCMAQ4500AA0J	5	850	500	450	2250	1.1	62	3.7	80	51
C4DCMAQ4600AA0J	6	850	500	450	2700	1.0	69	3.1	90	51
C4DCNAQ4100AA0J	1	1000	600	525	525	2.1	36	5.5	60	51
C4DCNAQ4200AA0J	2	1000	600	525	1050	1.4	50	4.4	72	51
C4DCNAQ4250AA0J	2.5	1000	600	525	1312	1.3	56	3.6	80	51
C4DCNAQ4300AA0J	3	1000	600	525	1575	1.2	58	3.7	80	51
C4DCNAQ4350AA0J	3.5	1000	600	525	1837	1.1	65	3.1	90	51
C4DCNAQ4400AA0J	4	1000	600	525	2100	1.1	66	3.1	90	51
C4DCRAQ3500AA0J	0.5	1400	700	630	315	3.3	29	5.4	60	51
C4DCRAQ3800AA0J	0.8	1400	700	630	315	2.8	33	5.3	60	51
C4DCRAQ4100AA0J	1	1400	700	630	630	2.0	38	5.2	60	51
C4DCRAQ4100ZA0J	1	1400	700	1000	1000	0.6	70	1.9	90	51
C4DCRAQ4150AA0J	1.5	1400	700	380	570	2.2	38	4.7	60	64
C4DCRAQ4200AA0J	2	1400	700	380	760	1.8	46	3.9	72	64
C4DCRAQ4250AA0J	2.5	1400	700	380	950	1.6	50	3.8	72	64
C4DCRAQ4300AA0J	3	1400	700	380	1140	1.5	56	3.2	80	64
C4DCRAQ4400AA0J	4	1400	700	380	1520	1.3	64	2.8	90	64

Rated D.C. Voltage V_{DC}	Test voltage between terminals U_{TT} V_{DC}
400	600
600	900
700	1050
850	1275
1200	1800



PEAK VOLTAGE TABLE

U_n	400	600	700	850	1200	1500
$\hat{U}_{max}$	560	840	980	1200	1680	2100
$\hat{U}_s$	600	900	1050	1300	1800	2250

GENERAL CHARACTERISTICS

C o d e	C μF	U_n Vdc	U_{RMS} Vac	dv/dt V/ μs	I_{PKR} A	ESR Max @ 100kHz mW	I_{RMS} 100kHz@70°C A	K °W/C	Max Dimensions mm	
									D	L
C4DRFAQ5250AA0J	25	400	160	40	1000	1.8	42	5.1	60	51
C4DRFAQ5300AA0J	30	400	160	40	1200	1.5	49	4.1	72	51
C4DRFAQ5500AA0J	50	400	160	40	2000	1.2	60	3.3	80	51
C4DRFAQ5750AA0J	75	400	160	40	3000	1.1	70	2.8	90	51
C4DRFAQ6100AA0J	100	400	160	25	2500	1.3	70	2.6	90	61
C4DRFAQ6110AA0J	110	400	160	25	2560	1.5	70	2.2	90	61
C4DRFAQ6220AA0J	220	400	160	12	2640	1.8	67	1.8	90	99
C4DRHAQ5120AA0J	12	600	220	50	600	2.2	37	5	60	51
C4DRHAQ5150AA0J	15	600	220	50	750	1.9	44	4.1	72	51
C4DRHAQ5200AA0J	20	600	220	50	1000	1.6	48	4.1	72	51
C4DRHAQ5250AA0J	25	600	220	50	1250	1.5	55	3.4	80	51
C4DRHAQ5330AA0J	33	600	220	50	1650	1.3	64	2.8	90	51
C4DRHAQ5500AA0J	50	600	220	35	1750	1.6	61	2.6	90	61
C4DRHAQ6100AA0J	100	600	220	15	1500	2.4	58	1.8	90	99
C4DRJQA4750AA0J	7.5	700	250	70	525	2.6	34	5	60	51
C4DRJQA5100AA0J	10	700	250	70	700	2.1	42	4	72	51
C4DRJQA5150AA0J	15	700	250	70	1050	1.7	51	3.4	80	51
C4DRJQA5200AA0J	20	700	250	70	1400	1.5	60	2.8	90	51
C4DRJQA5250AA0J	25	700	250	45	1125	2	50	3.1	80	61
C4DRJQA5330AA0J	33	700	250	45	1485	1.7	58	2.6	90	61
C4DRJQA5700AA0J	70	700	250	20	1400	2.6	55	1.9	90	99
C4DRMAQ4400AA0J	4	850	330	90	360	3.6	29	5	60	51
C4DRMAQ4500AA0J	5	850	330	90	450	3	32	4.9	60	51
C4DRMAQ4600AA0J	6	850	330	90	540	2.6	34	5	60	51
C4DRMAQ4750AA0J	7.5	850	330	90	675	2.2	41	4.1	72	51
C4DRMAQ4800AA0J	8	850	330	90	720	2.1	42	4	72	51
C4DRMAQ5100AA0J	10	850	330	90	900	1.9	49	3.3	80	61
C4DRMAQ5150AA0J	15	850	330	90	1350	1.5	49	2.9	80	61
C4DRMAQ5200AA0J	20	850	330	55	1100	2.1	49	3	80	61
C4DRMAQ5250AA0J	25	850	330	55	1375	1.8	57	2.6	90	61
C4DRMAQ5600AA0J	60	850	330	25	1500	2.7	54	1.9	90	99
C4DRPAQ4250AA0J	2.5	1200	440	320	800	1.4	47	4.8	60	51
C4DRPAQ4300AA0J	3	1200	440	320	960	1.3	54	4	72	51
C4DRPAQ4400AA0J	4	1200	440	320	1280	1.1	58	4	72	51
C4DRPAQ4500AA0J	5	1200	440	320	1600	1.1	64	3.3	80	51
C4DRPAQ4600AA0J	6	1200	440	320	1920	1	72	2.8	90	51
C4DRPAQ4800AA0J	8	1200	440	190	1520	1.2	65	3	80	61
C4DRPAQ5100AA0J	10	1200	440	190	1900	1.1	73	2.6	90	61
C4DRPAQ5120AA0J	12	1200	440	190	2190	1.1	74	2.6	90	61
C4DRPAQ5200AA0J	20	1200	440	75	1875	1.5	74	1.9	80	99
C4DRPAQ5250AA0J	25	1200	440	75	1875	1.5	74	1.9	90	99
C4DRSAQ4100AA0J	1	1500	500	400	400	2.3	37	4.8	60	51
C4DRSAQ4200AA0J	2	1500	500	400	800	1.5	51	3.9	72	51
C4DRSAQ4300AA0J	3	1500	500	400	1200	1.3	60	3.3	80	51
C4DRSAQ4400AA0J	4	1500	500	400	1600	1.1	69	2.8	90	51
C4DRSAQ4500AA0J	5	1500	500	250	1250	1.3	61	3	80	61
C4DRSAQ4750AA0J	7.5	1500	500	250	1875	1.2	71	2.5	90	61
C4DRSAQ5150AA0J	15	1500	500	100	1500	1.7	69	1.9	90	99

GENERAL TECHNICAL DATA

Reference Standards: IEC 61071 - EN 61071

Dielectric: Metallized polypropylene film

Winding: Non-inductive type

Case: Self extinguishing plastic case UL94 V0

Terminals: M6 or M8 threaded bolt; also available with threaded female connections

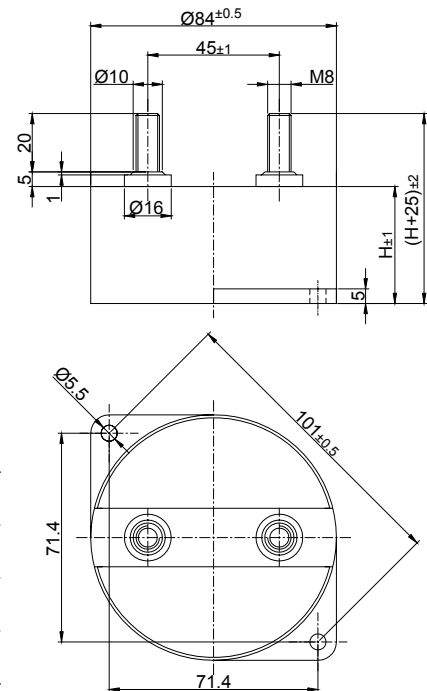
Construction: dry construction, filled by solid resin

IEC climatic category: 40/85/21 according to IEC 68-1

Temperature range

(Case): -40 to +85 °C

Temperature storage: -40 to +105°C

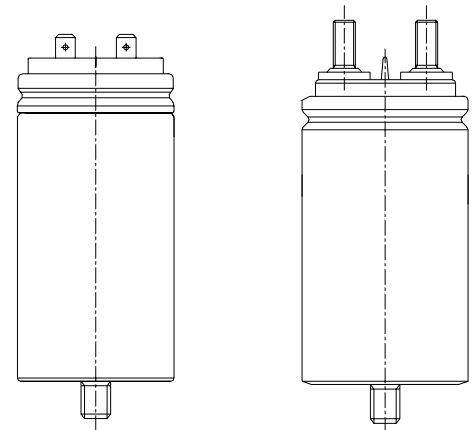
**TEST METHODS AND PERFORMANCES**

Test voltage terminal to terminal (U_{TT})	1.5*Un for 10 s at 25°C
Test voltage terminal to case (U_{TC})	3 KV 50Hz for 2 sec.
Capacitance deviation in temperature range (-25...+85°C)	± 1,5% max on capacitance value at 20°C
Installation	Whatever position

ELECTRICAL CHARACTERISTICS

Capacitance	47 to 380 µF
Tolerance	± 10 %
Rated Voltage	400 to 1000 Vdc
dv/dt	15 to 37 V/µs
Repetitive Peak Current	1739 to 5700 Ap
ESR	0.5 to 1.3 mΩ (at repetition frequency 10KHz)
ESL	25 to 40 nH
Derated Voltage and Lifetime expectancy:	1.2 x Vr @ 85°C ► 1.000 hours 1 x Vr @ 85°C ► 10.000 hours 0.9 x Vr @ 85°C ► 100.000 hours
Derated Temperature and Lifetime expectancy	For working temperature between +85°C and +70°C an increasing factor of 0.67 on the rated Lifetime has to be applied.
Diameter / Packing Unit	84mm / 12pcs

Code	Vdc V	C µF	H mm	ESL nH	ESR @ 10 kHz mΩ	DV/dt V/us	I _{PKR} A	I _{rms} @ 10 kHz Ambient Temperature				Weight gr
								25°C	45°C	65°C	85°C	
C4DEFPQ6175A8TK	400	175	40	25	0.50	25	4375	100	100	80	46	283
C4DEFPQ6260A8TK	400	260	51	32	0.62	20	5200	100	100	77	45	349
C4DEFPQ6380A8TK	400	380	64	40	0.81	15	5700	100	94	73	42	419
C4DEHPQ6100A8TK	600	100	40	25	0.60	30	3000	100	93	72	42	286
C4DEHPQ6150A8TK	600	150	51	32	0.75	25	3750	100	90	70	40	353
C4DEHPQ6220A8TK	600	220	64	40	1.00	20	4400	100	85	65	38	424
C4DEIPQ5680A8TK	800	68	40	25	0.70	35	2380	100	87	68	40	284
C4DEIPQ6100A8TK	800	100	51	32	0.90	30	3000	100	84	65	37	350
C4DEIPQ6140A8TK	800	140	64	40	1.20	25	3500	91	77	60	35	425
C4DENPQ5470A8TK	1000	47	40	25	0.80	37	1739	96	81	63	36	282
C4DENPQ5680A8TK	1000	68	51	32	1.10	32	2176	92	77	60	35	352
C4DENPQ6100A8TK	1000	100	64	40	1.30	27	2700	86	72	56	32	422



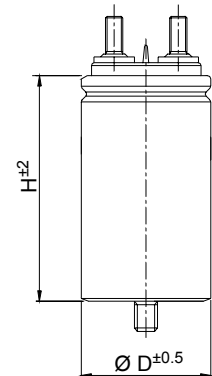
TECHNICAL DATA

General technical data	VDE 0560 , IEC 071 , EN 61071
Application class (DIN 40040)	GPD / LS
Temperature range (Case)	-40 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = $\pm 5\%$; K = $\pm 10\%$
Test voltage terminal to case U_{TT}	1.5 U_{RMS} for 60 seconds
Test voltage terminal to case U_{TC}	3kV - 50Hz for 60 seconds
Rated insulation voltage U_i	700 V - 50 Hz - Insulation group B (VDE 0110 part 1)
Permissible relative humidity	Annual average $\leq 95\%$ on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
IEC climatic category	40 / 85 / 21
Degree of protection	IP00
Capacitance deviation in the operating temperature range of -40 to +85 °C	$\pm 1.5\%$ max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Case components	Aluminium case plus plastic insulating deck flame retardant execution (UL class 94 V1) .
Terminals	Tinned brass fastons or screws (See figure on top)
Installation	Whatever Position
Life Expectancy	≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota	300 / 10 ⁹ components hour

MKP Series
ALUMINIUM CASE CAPACITORS
GENERAL PURPOSE APPLICATION
SCREW TERMINALS

PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
400	600	250
600	800	330

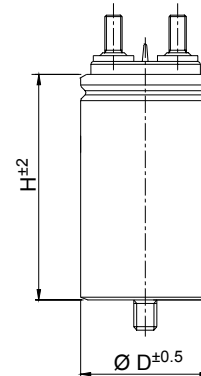


GENERAL CHARACTERISTICS

Code	C μF	Un Vdc	K $^{\circ}\text{C/W}$	Tg $\delta \times 10^{-4}$		ESR Typ. m Ω	dv/dt V/ μs	I _{RMS} A	I _{PKR} A	Case		Approx Weight g
				Max	Typ.					D	H	
C44AFP5150ZA0J	15	400	7.8	10	5	5	30	16	450	45	80	135
C44AFP5200ZE0J	20	400	6.2	10	5	5	30	18	600	45	80	135
C44AFP5220ZA0J	22	400	6.2	12	6	5	30	18	660	45	80	135
C44AFP5250ZA0J	25	400	6.2	12	7	5	30	18	750	45	80	135
C44AFP5300ZA0J	30	400	3.5	20	15	6	20	22	600	50	101	200
C44AFP5400ZA0J	40	400	2.7	20	15	6	20	25	800	50	101	200
C44AFP5500ZE0J	50	400	2.6	20	15	6	20	25	1000	50	101	200
C44AFGP5600ZA0J	60	400	2.6	25	15	6	20	25	1200	60	101	240
C44AFGP5750ZA0J	75	400	3.2	30	20	5	20	30	1500	60	101	240
C44AFGP6100ZG0J	100	400	4.0	30	20	4	15	32	1500	60	138	315
C44AFGP6130ZA0J	130	400	4.0	30	20	4	15	32	2000	65	138	360
C44AFGP6150ZA0J	150	400	4.0	40	30	4	15	32	2250	70	138	530
C44AFGP6200ZE0J	200	400	4.0	40	30	4	10	32	2000	76	138	740
C44AFGR6250ZA0J	250	400	4.0	40	30	4	10	32	2500	85	150	900
C44AFGR6300ZA0J	300	400	1.25	50	40	5	20	50	6000	85	185	1080
C44AFGR6330ZA0J	330	400	1.25	50	40	5	20	50	6000	85	185	1150
C44AHFP5100ZA0J	10	600	7.8	10	5	5	40	16	400	45	80	135
C44AHFP5150ZA0J	15	600	7.7	10	5	4	40	18	600	45	105	160
C44AHFP5200ZB0J	20	600	5.2	15	6	4	30	22	600	45	101	160
C44AHFP5220ZA0J	22	600	5.3	15	6	3	30	25	660	50	101	200
C44AHFP5250ZB0J	25	600	3.5	20	15	6	20	22	600	50	101	200
C44AHFP5300ZC0J	30	600	10.3	15	7	2	30	25	900	50	101	200
C44AHGP5330ZA0J	33	600	8.0	15	7	2	30	25	990	55	101	235
C44AHGP5400ZB0J	40	600	8.0	10	6	2	30	25	1200	60	101	240
C44AHGP5500ZG0J	50	600	3.2	15	10	5	20	25	1000	55	138	300
C44AHGP5600ZB0J	60	600	3.1	15	8	5	20	32	1200	60	138	315
C44AHGP5700ZA0J	70	600	3.2	25	15	5	20	32	1400	65	138	360
C44AHGP5750ZA0J	75	600	3.2	25	15	5	20	32	1500	65	138	360
C44AHGP5800ZA0J	80	600	3.2	25	15	5	20	32	1600	65	135	530
C44AHGP6100ZA0J	100	600	3.2	25	15	5	20	32	2000	76	135	625
C44AHGR6100ZB0J	100	600	1.25	15	10	5	30	50	3000	85	138	770

PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
700	900	400
850	1000	450

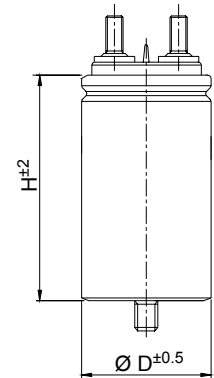


GENERAL CHARACTERISTICS

Code	C μF	Un Vdc	K °C/W	Tgδ x 10 ⁻⁴		ESR Typ. mΩ	dv/dt V/μs	I _{RMS} A	I _{PKR} A	Case		Approx Weight g
				Max	Typ.					D	H	
C44AJFP4500ZA0J	5	700	13.0	8	2	3	50	16	250	45	80	135
C44AJFP4600ZA0J	6	700	13.0	8	2	3	50	16	300	45	80	135
C44AJFP4750ZA0J	7.5	700	10.3	10	3	3	50	18	375	45	80	135
C44AJFP5100ZA0J	10	700	10.0	10	3	3	50	18	500	50	101	200
C44AJFP5150ZB0J	15	700	5.3	15	6	3	40	25	600	50	101	200
C44AJFP5200ZD0J	20	700	5.3	15	10	3	40	25	800	50	101	200
C44AJGP5220ZA0J	22	700	5.3	15	10	3	40	25	880	55	101	235
C44AJGP5250ZA0J	25	700	5.3	15	10	3	40	25	1000	60	101	240
C44AJGP5300ZB0J	30	700	5.3	15	12	3	30	25	900	60	138	310
C44AJGP5330ZA0J	33	700	5.3	15	10	3	35	25	990	60	138	310
C44AJGP5400ZA0J	40	700	4.0	25	15	4	35	32	1200	65	138	360
C44AJGP5500ZA0J	50	700	4.0	25	15	4	35	32	1500	65	138	360
C44AJGP5600ZA0J	60	700	4.0	25	15	4	30	32	1800	76	138	625
C44AJGP5700ZA0J	70	700	4.0	25	15	4	30	32	2100	76	138	625
C44AJGR5750ZA0J	75	700	4.0	25	15	4	30	32	2250	85	137	770
C44AJGR6100ZA0J	100	700	2.0	15	10	3	40	50	4000	85	185	1150
C44AMFP4300ZA0J	3	850	7.8	10	5	5	60	16	180	45	80	135
C44AMFP4500ZA0J	5	850	7.8	10	5	5	60	16	300	45	80	135
C44AMFP4600ZA0J	6	850	6.2	10	5	5	60	18	360	45	80	135
C44AMFP4800ZA0J	8	850	4.1	10	6	5	50	22	400	45	105	200
C44AMFP5100ZD0J	10	850	3.2	10	6	5	50	25	500	50	101	200
C44AMGP5150ZA0J	15	850	2.0	10	7	8	50	25	750	60	101	240
C44AMGP5200ZA0J	20	850	2.6	10	7	6	50	25	1000	65	101	310
C44AMGP5220ZA0J	22	850	1.5	12	5	4	40	25	880	55	138	300
C44AMGP5250ZA0J	25	850	3.2	15	7	5	40	25	1000	55	138	300
C44AMGP5300ZA0J	30	850	3.2	15	8	5	40	32	1200	65	138	380
C44AMGP5330ZA0J	33	850	3.2	15	8	5	40	32	1320	65	138	360
C44AMGP5350ZA0J	35	850	3.2	15	10	5	40	32	1400	65	138	360
C44AMGP5400ZB0J	40	850	3.2	15	10	5	40	32	1600	76	138	580
C44AMGP5500ZA0J	50	850	3.2	20	10	5	40	32	2000	76	138	625
C44AMGR5600ZA0J	60	850	3.2	20	10	5	40	32	2400	85	137	770

PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
1200	1600	500
1500	2000	630



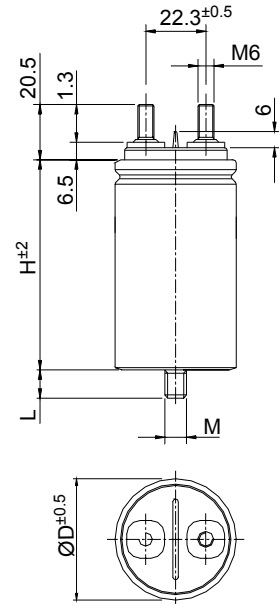
GENERAL CHARACTERISTICS

Codes	C	Un	K	Tgδ x 10 ⁻⁴		ESR Typ.	dv/dt	I _{RMS}	I _{PKR}	Case		Approx Weight
	μF	Vdc	°C/W	Max.	Typ.	mΩ	V/μs	A	A	D	H	g
C44APFP4100ZA0J	1	1200	17.7	5	2.5	2.5	300	15	300	45	80	135
C44APFP4150ZA0J	1.5	1200	17.7	5	2.5	2.5	300	15	450	45	80	135
C44APFP4200ZD0J	2	1200	17.7	5	2.5	2.5	300	15	600	45	80	135
C44APFP4220ZA0J	2.2	1200	19.5	5	2.5	2	300	16	660	45	80	135
C44APFP4250ZA0J	2.5	1200	15.4	5	2.5	2	300	18	750	45	80	135
C44APFP4300ZB0J	3	1200	12.5	5	2.5	2	300	20	900	50	76	150
C44APFP4400ZA0J	4	1200	12.5	5	2.5	2	300	20	1200	50	101	200
C44APFP4500ZB0J	5	1200	10.3	5	2.5	2	300	22	1500	50	101	200
C44APFP4500ZA0J	5	1200	3.3	5	2.5	2	400	40	2000	50	138	280
C44APGP4600ZB0J	6	1200	8.0	5	2.5	2	300	25	1800	55	101	235
C44APGP4680ZB0J	6.8	1200	8.0	5	2.5	2	300	25	2040	60	101	240
C44APGP4750ZF0J	7.5	1200	10.6	5	2.8	1.5	300	25	2250	50	138	280
C44APGP4800ZE0J	8	1200	4.5	5	2.8	3.5	250	25	2000	55	138	300
C44APGP5100ZE0J	10	1200	5.3	5	2.8	3	250	25	2500	55	138	300
C44APGP5100ZF0J	10	1200	3.2	5	2.5	2	300	50	3000	60	138	310
C44APGP5100ZH0J	10	1200	1.4	5	2.5	2	350	60	3500	65	158	350
C44APGP5125ZA0J	12.5	1200	3.2	5	2.5	2	300	50	3750	76	138	625
C44APGP5150ZB0J	15	1200	6.4	5	2.8	2.5	250	32	3750	76	138	625
C44APGR5200ZB0J	20	1200	6.4	5	2.8	2.5	250	32	5000	85	137	770
C44APGR5220ZA0J	22	1200	1.1	5	2.5	2.5	300	50	6600	76	200	940
C44ASFP4100ZA0J	1	1500	17.7	5	2.5	2.5	400	15	700	45	80	135
C44ASFP4200ZB0J	2	1500	15.6	5	2.8	2.5	400	16	800	50	76	150
C44ASFP4300ZA0J	3	1500	10.3	5	2.8	2	400	22	1200	50	101	200
C44ASGP4400ZA0J	4	1500	8.0	5	2.8	2	400	25	1600	60	101	265
C44ASGP4500ZB0J	5	1500	8.0	5	2.8	2	400	25	2000	65	101	350
C44ASGP4750ZA0J	7.5	1500	5.3	5	2.8	3	300	25	2250	65	138	380
C44ASGP5100ZA0J	10	1500	5.3	5	2.8	3	300	32	3000	70	138	530
C44ASGR5120ZA0J	12	1500	5.3	5	2.8	3	300	32	3600	85	137	770
C44ASGR5150ZA0J	15	1500	5.3	5	2.8	3	300	32	4500	85	137	770

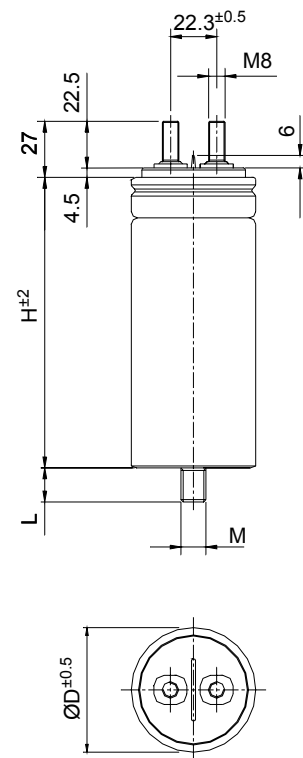
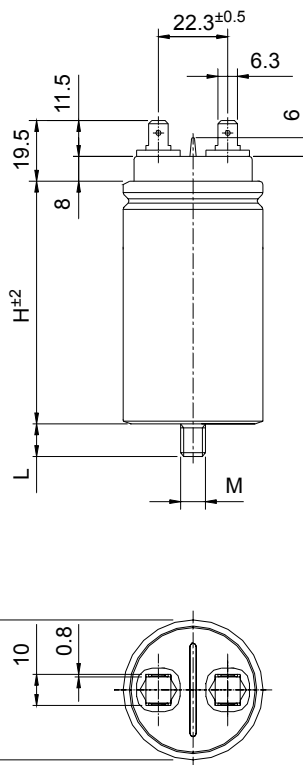
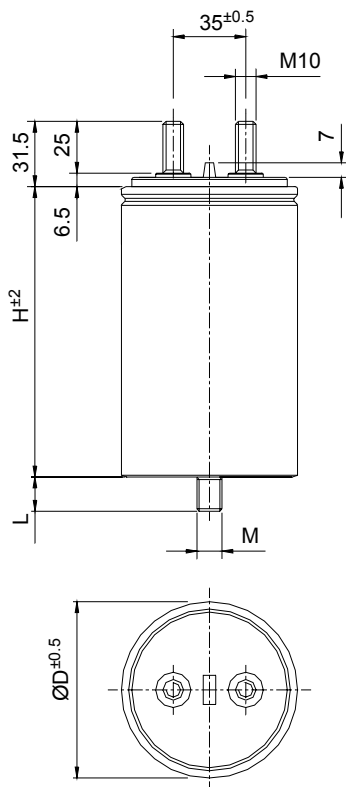
DRAWINGS

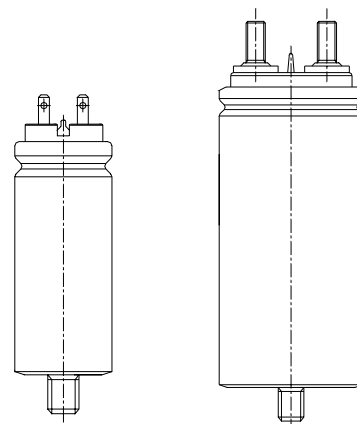
MECHANICAL CHARACTERISTICS

Case	Brass screw terminals			Bolt		
D	Driving Torque Nm	Creepage Distance	Clearance In air	M	H	Driving Torque Nm
45	4	14	10	M 8	10	6
50	4	14	10	M 8	10	6
55	4	16	10	M 12	12.5	10
60	4	18	10	M 12	12.5	10
65	4	20	10	M 12	12.5	10
70	4	22	10	M 12	12.5	10
85	7	22	10	M 12	12.5	10



TERMINATIONS



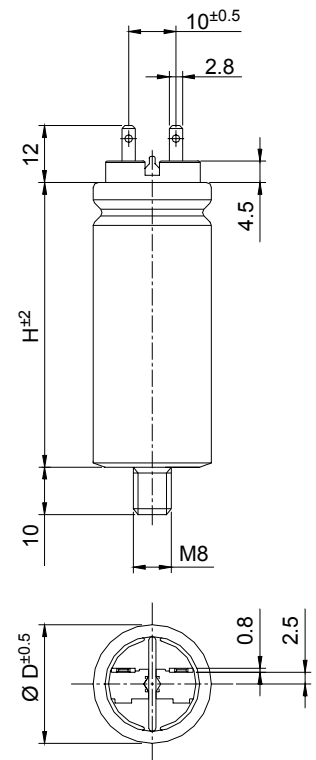


TECHNICAL DATA

General technical data	VDE 0560 - IEC61071 - EN61071
Application class (DIN 40040)	GPD / LS
Temperature range (Case)	-40 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = $\pm 5\%$; K = $\pm 10\%$
Peak non-repetitive max current	$I_{PKR} \times 1.5$
Test voltage terminal to case U_{TT}	$1.5 U_{RMS}$ for 60 seconds
Test voltage terminal to case U_{TC}	$3kV_{DC}$ 50Hz for 60 seconds
Rated insulation voltage U_i	700 V – 50 HZ – Insulation group B (VDE 0110 part 1)
Dissipation factor ($tg\delta$)	$\leq 5 \times 10^{-4}$ at 1 kHz and 20 °C
Permissible relative humidity	Annual average $\leq 95\%$ on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
IEC climatic category	40 / 85 / 21
Degree of protection	IP00
Capacitance deviation in the operating temperature range of –40 to +85 °C	$\pm 1.5\%$ max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Case components	Aluminium case plus plastic insulating deck flame retardant execution (UL class 94 V1) .
Terminals	Tinned brass fastons or screws (See figures on top)
Installation	Whatever Position
Life Expectancy	≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota	300 / 10^9 components hour

PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
1200	1600	500
2000	2400	630

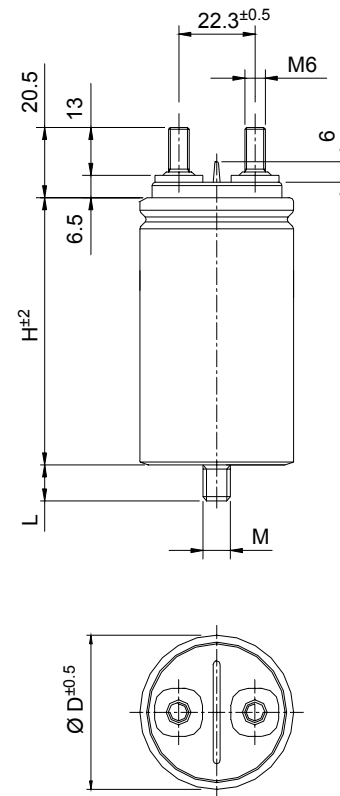


GENERAL CHARACTERISTICS

Codes	C	Un	Tgδ x 10 ⁴		ESR Typ.	dv/dt	I _{RMS}	I _{PKR}	Case		Approx Weight
	µF	Vdc	Max	Typ.	mΩ	V/µs	A	A	D	H	g
C44BPF13100ZB0J	0.1	1200	5	2	25	500	4	50	25	60	35
C44BPF13150ZB0J	0.15	1200	5	2	24	500	4	75	25	60	35
C44BPF13220ZB0J	0.22	1200	5	2	23	500	5	120	25	60	35
C44BPF13330ZB0J	0.33	1200	5	2	16	500	6	165	25	60	35
C44BPF13470ZB0J	0.47	1200	5	2	10	500	6	235	25	60	35
C44BPF13680ZB0J	0.68	1200	5	2	9	500	6	340	35	60	70
C44BPF14100ZB0J	1	1200	5	2	4	500	6	500	35	60	70
C44BPF14150ZA0J	1.5	1200	5	2	3	500	6	750	45	60	100
C44BWF12470ZA0J	0.047	2000	5	2	30	750	4	35	25	60	35
C44BWF13100ZA0J	0.1	2000	5	2	27	750	5	75	25	60	35
C44BWF13150ZA0J	0.15	2000	5	2	26	750	6	113	25	60	35
C44BWF13220ZA0J	0.22	2000	5	2	25	750	6	165	35	60	70
C44BWF13330ZA0J	0.33	2000	5	2	20	750	6	250	35	60	70
C44BWF13470ZA0J	0.47	2000	5	2	15	750	6	350	40	60	85
C44BWF13680ZA0J	0.68	2000	5	2	10	750	6	510	45	60	100

MECHANICAL CHARACTERISTICS

Case	Brass screw terminals			Bolt		
D	Driving Torque Nm	Creepage Distance	Clearance In air	M	L	Driving Torque Nm
45	4	14	10	M 8	10	6
50	4	14	10	M 8	10	6
55	4	16	10	M 12	12.5	10
60	4	18	10	M 12	12.5	10
65	4	20	10	M 12	12.5	10
70	4	22	10	M 12	12.5	10



PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
2400	4000	1000

GENERAL CHARACTERISTICS

Codes	C µF	Un Vdc	U _{RMS} Vac	tgδ x 10 ⁻⁴		dv/dt V/µs	I _{RMS} A	I _{PKR} A	Case		Approx Weight g
				Max	Typ.				D	H	
C44BXFP3100ZA0J	0.1	2400	1000	5	2.5	500	5	50	45	78	135
C44BXFP3220ZC0J	0.22	2400	1000	5	2.5	500	5	110	45	78	135
C44BXGP3330ZC0J	0.33	2400	1000	5	2.5	500	6	165	55	78	220
C44BXFP3470ZA0J	0.47	2400	1000	5	2.5	500	10	235	45	105	180
C44BXFP4100ZB0J	1	2400	1000	5	2.5	500	15	500	50	100	200
C44BXFP4150ZA0J	1.5	2400	1000	5	2.5	500	18	750	50	135	280
C44BXGP4200ZA0J	2	2400	1000	5	2.5	500	22	1000	55	200	410
C44BXGP4250ZA0J	2.5	2400	1000	5	2.5	500	22	1250	55	200	410
C44BXGP4300ZA0J	3	2400	1000	5	2.5	500	25	1500	65	175	620
C44BXGP4400ZA0J	4	2400	1000	5	2.5	500	25	2000	65	200	650

ALUMINIUM CASE - SAFETY DEVICE (FPU)**PROTECTED 10000 AFC -25 ... +70°C****Reference Standards: IEC 1071 VDE 0560 part 1 and 2****TECHNICAL DATA**

Dielectric: Polypropylene film
 Plates: Aluminium layer deposited under vacuum
 Cover: Metal deck and steatite insulator
 Terminals: Tinned double Faston 6.3 mm
 Winding: Non-inductive type
 Climatic category: GPD/LS DIN40040
 40/85/21 IEC 68-1
 Vibration strength: DIN 40040, table 6, class V

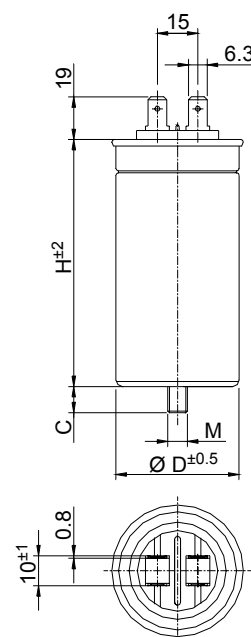
ELECTRICAL CHARACTERISTICS

Nominal voltage U_n :	400 Vdc	600 Vdc	700 Vdc
Rated voltage U_{RMS} 50Hz:	250 Vac	330 Vac	400 Vac
Peak repetitive voltage U_{PKR} :	600 Vdc	800 Vdc	900 Vdc
Surge voltage U_s :	750 Vdc	900 Vdc	1000 Vdc

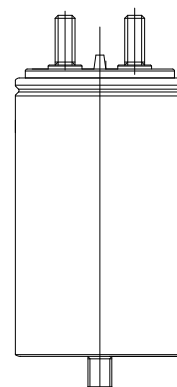
Category voltage (Vc): up to 70°C $V_c = U_n$
 Capacitance tolerance: $\pm 5\%$ (J) ; $\pm 10\%$ (K)

TEST METHODS AND PERFORMANCES

Test voltage terminal to terminal (U_{TT})	2,5 Vn/ for 10 s at 25°C or 1.5 U_{RMS} for 10s at 25°C
Test voltage terminal to case (U_{TC})	3 kV 50Hz for 60 s
Rated insulation Voltage U_i	700V - 50Hz - Insulation group B, according to VDE 0110 part 1
Damp heat test	Permissible relative humidity: Annual average $\leq 80\%$ at 24°C on 30 days/year, on other days occasionally 90% Dewing not admissible.
Life expectancy	≥ 100.000 hours at U_{RMS} and at U_n at 45°C
Failure quota	300/10 ⁹ components hours
Capacitance deviation in temperature range (-40...+85°C)	$\pm 1,5\%$ max on capacitance value at 20°C
Changes of capacitance as function of operating time	- 5 % after 100.000 hours at U_{RMS} or U_n
Installation	Whatever position



Code	C µF	U_{RMS} Vac	U_n Vdc	tgδ max x 10 ⁻⁴	I_{RMS} A	I_{PKR} A	I_{PKS} A	Case		Bolt		
								D	H	C	Thread	Torque
C44HFF35150ZB0J	15	250	400	10	8	450	600	45	61	16	M8	10N
C44HFG35400ZB0J	40	250	400	15	10	800	1000	50	105	16	M12	10N
C44HFG35600ZB0J	60	250	400	35	18	800	1200	60	98	16	M12	10N
C44HFG35750ZB0J	75	250	400	20	10	1500	2000	60	98	16	M12	10N
C44HFG35800ZB0J	80	250	400	20	18	1200	1500	60	133	16	M12	10N
C44HFG36120ZB0J	120	250	400	30	16	1800	2000	60	133	16	M12	10N
C44HHG35150ZA0J	15	330	600	17	18	450	590	50	85	16	M12	10N
C44HHG35300ZA0J	30	330	600	10	18	1200	1560	60	85	16	M12	10N
C44HHG35420ZA0J	42	330	600	12	18	1260	1750	60	98	16	M12	10N
C44HHG35560ZA0J	56	330	600	18	18	1120	1450	60	133	16	M12	10N
C44HJG35300ZA0J	30	400	700	20	18	600	900	60	105	16	M12	10N
C44HJG35550ZA0J	55	400	700	20	18	1100	1650	75	150	16	M12	10N

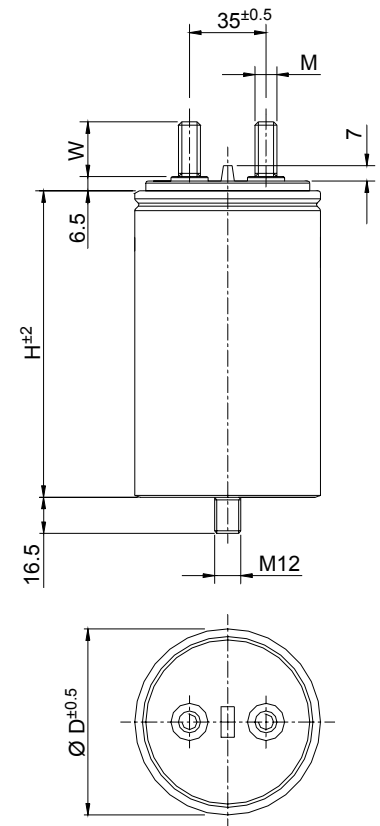


TECHNICAL DATA

General technical data	VDE 0560 - IEC61071 - EN61071
Application class (DIN 40040)	HSD / LS
Temperature range (Case)	-40 to + 70 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = ± 5% ; K = ± 10%
Test voltage terminal to case U_{TT}	1.5 U_{RMS} for 10 seconds
Test voltage terminal to case U_{TC}	4kV - 50Hz for 60 seconds
Rated insulation voltage U_i	700 V - 50 Hz - Insulation group B (VDE 0110 part 1)
Rated power Q	Reactive power at rated A.C. voltage U_{RMS} - 50Hz
Rated frequency F	50 ÷ 60 Hz
Permissible relative humidity	Annual average ≤ 95% on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
IEC climatic category	25 / 70 / 21
Degree of protection	IP00
Capacitance deviation in the operating temperature range of -40 to +85 °C	±1.5% max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 30.000 hours at U_{RMS} or after 100.000 hours at U_n
Terminals	Tinned brass fastons or screws (See figure on top)
Installation	Whatever Position
Life Expectancy	≥ 30.000 hours at U_{RMS} ; ≥ 100.000 hours at U_n
Failure quota	300 / 10 ⁹ components hour

MECHANICAL CHARACTERISTICS

Case	Brass screw terminals					Bolt
D	W	M	Driving Torque Nm	Creepage Distance	Clearance In air	Driving Torque Nm
76	13	M 6	4	18	22	10
76	25	M 10	7	18	22	10
85	25	M 10	7	22	22	10

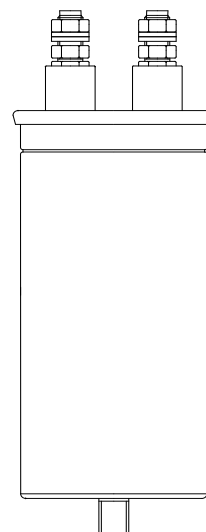


PEAK VOLTAGE TABLE

Un Vdc	U _{PK} Vdc	U _{RMS} Vac
400	600	250
600	800	380
750	1000	440
1200	1600	550

GENERAL CHARACTERISTICS

Code	C	Q	Un	U _{RMS}	dv/dt	I _{PKR}	I _{RMS}	Case Dimensions		Appr. Weight kg
	μF	kvar	Vdc	Vac	V/μs	A	A	D	H	
C44EFGP6150ZA0J	150	2.95	400	250	10	1500	30	76	138	0.63
C44EFGP6200ZA0J	200	3.93	400	250	10	2000	30	85	137	0.75
C44EFGP6250ZA0J	250	4.9	400	250	10	2500	60	85	185	1.05
C44EFGP6300ZA0J	300	5.89	400	250	10	3000	60	85	230	1.35
C44EFGP6400ZA0J	400	7.85	400	250	10	4000	60	85	270	1.71
C44EHGP6100ZA0J	100	4.53	600	380	20	2000	30	76	138	0.63
C44EHGP6150ZA0J	150	6.8	600	380	20	3000	60	85	200	1.15
C44EHGP6200ZA0J	200	9.07	600	380	20	4000	60	85	260	1.5
C44EKGP6100ZA0J	100	6.08	750	440	20	2000	60	85	185	1.05
C44EKGP6120ZA0J	120	7.3	750	440	20	2400	60	85	200	1.15
C44EPGP5500ZA0J	50	4.75	1200	550	30	1500	60	85	260	1.5
C44EPGP5600ZA0J	60	5.7	1200	550	30	1800	60	85	260	1.5

**ALUMINIUM CASE - SAFETY DEVICE (FPU)
PROTECTED 10000 AFC -25 ... +70°C****TECHNICAL DATA**

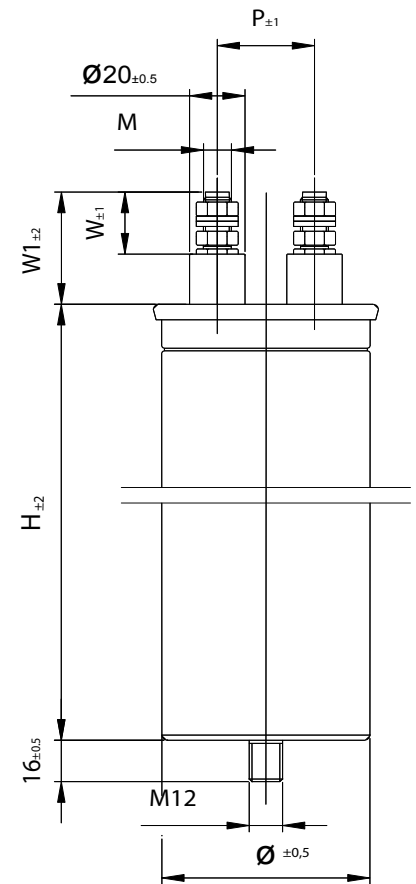
General technical data	IEC 1071 , EN 61071 , VDE 0560 - 12
Application class (DIN 40040)	HSF / LR according to DIN 40040
Temperature range (Case)	-25 to + 70 °C
Temperature storage	-55 to + 85 °C
Max permissible ambient temperature	+70 °C
Capacitance tolerance code (15 th digit)	J = ± 5% ; K = ± 10%
Test voltage terminal to terminal UTT	2,15 U _{RMS} for 10 seconds at 25°C
Test voltage terminal to case UTC	4kV - 50Hz for 60 seconds
Rated insulation voltage Ui	3600Vac for 10 seconds at 25°C for Vrms<600Vac 6000Vac for 10 seconds at 25°C for Vrms≥600Vac
Insulation Resistance	≥10.000MΩ x μF
Dissipation Factor tgδ	≤3 x 10 ⁻⁴ (Vn, 50Hz)
Damp heat test	Permissible relative humidity: Annual average ≤ 95% on 30 days / year, continuously 100% on other days occasionally 90%. Dewing not admissible
IEC climatic category	25 / 70 / 56 according to IEC 68-1
Degree of protection	IP00
Capacitance deviation in the operating temperature range of -40 to +70 °C	±1.5% max on capacitance value measured at +20 °C
Change of capacitance versus operating time	-3% after 100.000 hours at U _{RMS}
Terminations	Plastic Insulator with screw terminals M10
Installation	Space for safety device ≥15mm
Life Expectancy	≥ 100.000 hours at U _{RMS}
Failure quota	300 / 10 ⁹ components hour

PEAK VOLTAGE TABLE

U_{RMS} Vac	U_n Vdc	U_{PK} Vdc
250	400	600
330	500	700
440	750	1000
550	750	940
640	900	1130
780	1100	1380

GENERAL CHARACTERISTICS

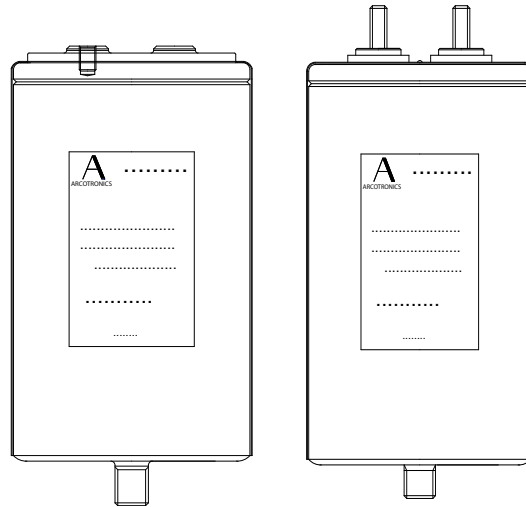
Code	C μF	U V _{DC}	U_{RMS} V _{AC}	I_{RMS} A	I_{PKR} A	D mm	H mm	Weight kg
C44PFGR6200ZA0J	200	400	250	60	2000	85	155	1.0
C44PFGR6250AA0J	250	400	250	60	2500	85	195	1.1
C44PFGR6300ZA0J	300	400	250	60	3000	75	268	1.2
C44PFGR6400ZA0J	400	400	250	65	4000	85	268	1.7
C44PFGR6500AA0J	500	400	250	65	5000	85	268	1.7
C44PFGR6600AA0J	600	400	250	65	6000	95	280	2.1
C44PLGR6100AASJ	100	500	330	25	1500	65	115	0.5
C44PLGR6200ZASJ	200	500	330	43	3000	65	145	0.6
C44PLGR6300ZASJ	300	500	330	50	4500	65	247	0.8
C44PLGR6400ZASJ	400	500	330	50	6000	65	247	1.0
C44PLGR6500ZASJ	500	500	330	58	7500	75	247	1.2
C44PLGR6600ZASJ	600	500	330	70	9000	85	270	1.3
C44PKGR6100AASJ	100	750	440	30	2000	75	147	0.7
C44PKGR6133AASJ	133	750	440	40	3000	65	247	0.8
C44PKGR6150AASJ	150	750	440	45	3000	65	247	1.0
C44PKGR6200AASJ	200	750	440	55	4000	75	247	1.2
C44PKGR6300AASJ	300	750	440	60	4000	85	247	1.6
C20AKGR5220AASK	22	750	550	40	1540	65	117	0.4
C20AKGR5330AASK	33	750	550	45	2310	75	117	0.5
C20AKGR5470AASK	47	750	550	50	3290	65	247	0.8
C20AKGR5680AASK	68	750	550	55	4760	65	247	1.0
C20AKGR6100AASK	100	750	550	60	7000	75	247	1.5
C20AKGR6120AASK	120	750	550	60	8400	85	247	2.0
C20AKGR6150AASK	150	750	550	60	10500	95	247	2.3
C20ALGR5150AASK	15	900	640	45	1350	65	117	0.4
C20ALGR5220AASK	22	900	640	45	1980	75	147	0.5
C20ALGR5330AASK	33	900	640	50	2970	75	147	0.8
C20ALGR5470AASK	47	900	640	55	4230	65	247	1.0
C20ALGR5680AASK	68	900	640	60	6120	75	247	1.5
C20ALGR6100AASK	100	900	640	60	9000	95	247	2.3
C20ALGR6120AASK	120	900	640	60	10800	95	280	2.5
C20ALGR6150AASK	150	900	640	60	13500	116	280	3.0
C20AQGR5100AASK	10	1100	780	30	1000	65	147	0.4
C20AQGR5150AASK	15	1100	780	45	1500	75	147	0.5
C20AQGR5220AASK	22	1100	780	45	2200	75	147	0.8
C20AQGR5330AASK	33	1100	780	50	3300	85	147	1.2
C20AQGR5470AASK	47	1100	780	55	4700	75	247	1.5
C20AQGR5680AASK	68	1100	780	60	6800	85	247	2.0
C20AQGR6100AASK	100	1100	780	60	10000	95	280	2.5



Max Driving Torque: 10 Nm
Creepage Distance: > 10mm
Clearance in Air: > 10mm
Insulation Group: D

P = 28mm for D = 65mm
P = 35mm for D ≥ 75mm

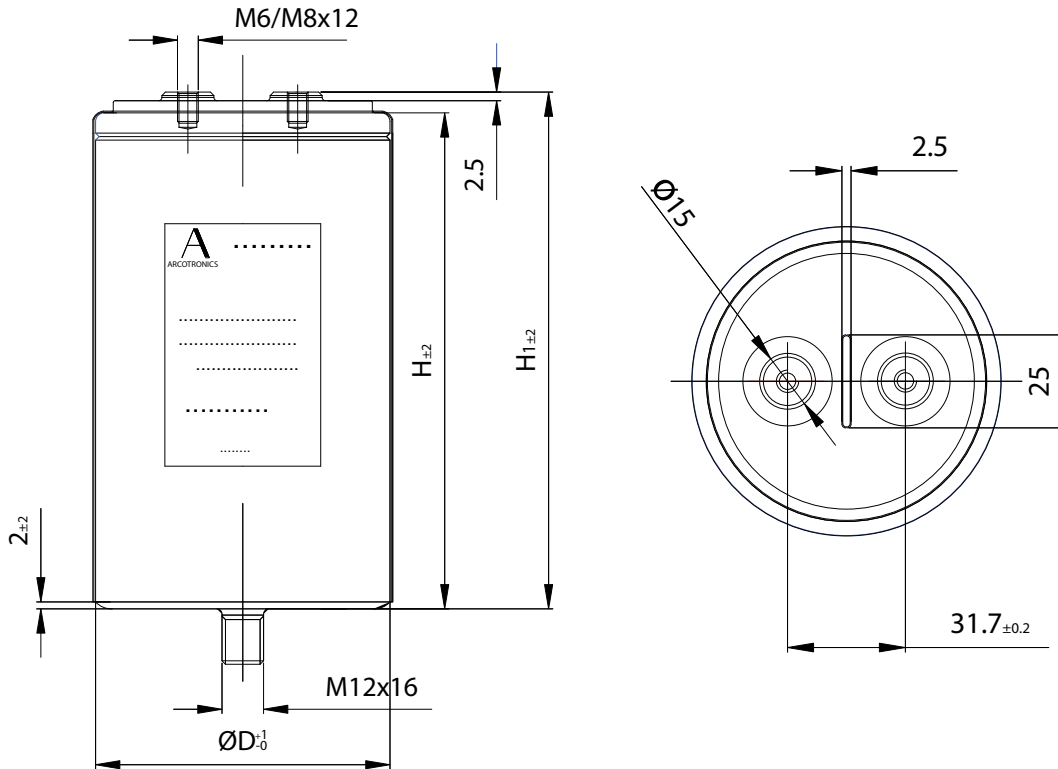
Care should be taken to ensure that there still is electrical clearance of 15 mm between terminations and other live or earthed parts above the capacitor, in case of safety device activation.

High Capacitance density**High Ripple Current****TECHNICAL DATA**

Reference Standards	IEC 1071, EN 61071
IEC climatic category	40/85/21 according to IEC 68-1
Storage Temperature	-40 to +105°C
Temperature range (Case)	-40 to +85 °C
Case	Aluminium case with or without, threaded bolt M12
Deck	Plastic deck flame retardant execution UL94 V0 with high current M6 or M8 female terminals
Test voltage terminal to terminal (U_{TT})	1.5* U_n for 2 s at 25°C
Test voltage terminal to case (U_{TC})	3 kV 50Hz for 2 sec.
Life expectancy	100,000 hours at U_n and 85°C
Failure quota	300/10 ⁹ components hours
Capacitance deviation in temperature range (-25..+85°C)	± 1,5% max on capacitance value at 20°C
Changes of capacitance as function of operating time	- 10% after 100.000 hours at U_n
Vibration strength	DIN 40040, table 6,class V
Installation	Whatever position

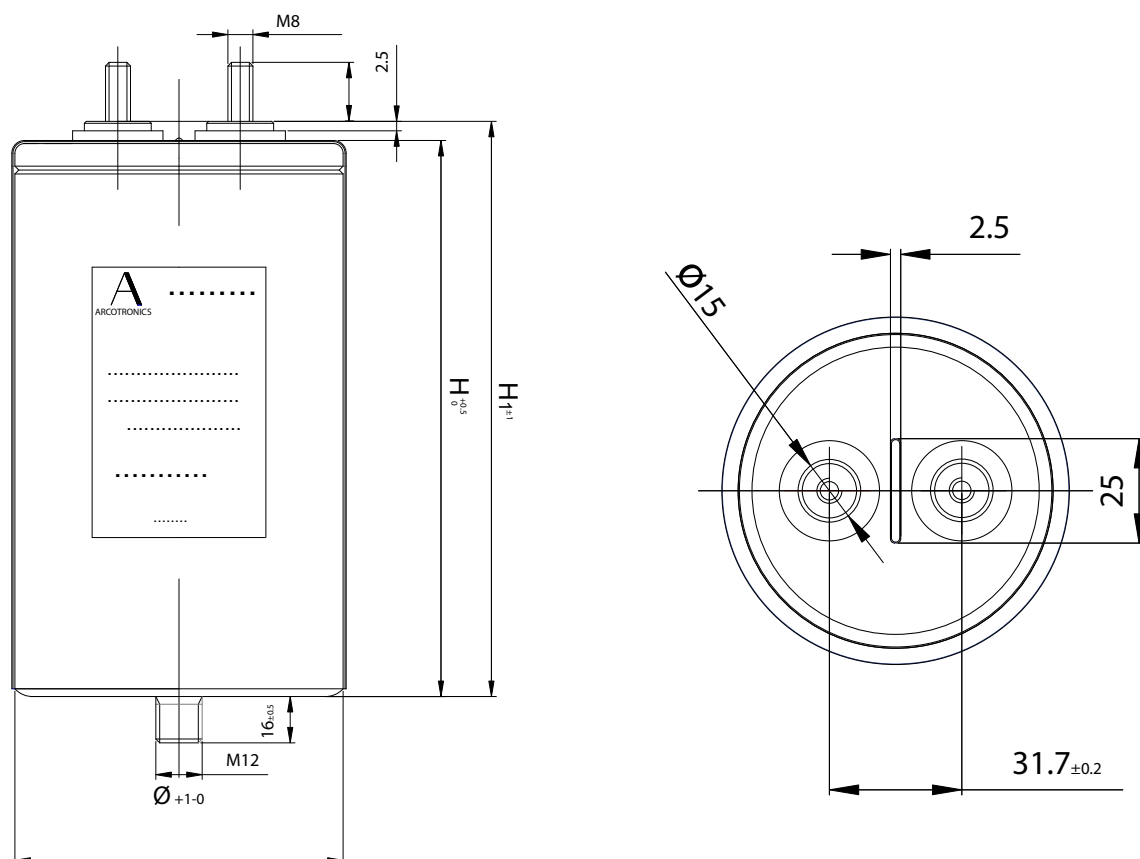
D mm	H ≥ 125mm	H < 125mm
76	9	18
85	5	10

6 th Code digit ⇒	G	Case WITH M12 STUD
	E	Case WITH NO STUD
7 th Code digit ⇒	T	M6 FEMALE Terminals
	Y	M8 FEMALE Terminals
	Q	M8 MALE Terminals
13 th Code digit⇒	7	Case D 76mm
	8	Case D 85mm
14 th Code digit ⇒	T	Standard MKP
	S	Segmented MKP



GENERAL CHARACTERISTICS

Code	C µF	Vdc V	dv/dt V/µs	I _{PKR} Ap	ESL nH	ESR mΩ (10kHz)	I _{RMS} A 10 kHz (40°C)	I _{RMS} A 10 kHz (55°C)	I _{RMS} A 10 kHz (75°C)	DIM (mm)			Weight gr
										Ø	H	H1	
C44UJGT6120A7TK	120	700	21	2520	36	1.0	63	55	33	76	55	61	280
C44UJGT6160A8TK	160	700	21	3360	36	0.8	73	60	38	85	55	61	354
C44UJGT6175A7TK	175	700	14	2450	40	1.2	62	52	34	76	70	76	348
C44UJGT6225A8TK	225	700	14	3150	40	1.1	70	60	35	85	70	76	414
C44UJGT6350A7SK	350	700	7	2450	50	2.6	55	45	30	76	120	126	569
C44UJGT6425A7SK	425	700	6	2550	60	3.1	55	45	30	76	140	146	656
C44UJGT6450A8SK	450	700	7	3150	50	2.2	65	55	32	85	120	126	723
C44UJGT6550A8SK	550	700	6	3300	60	2.5	65	55	32	85	140	146	831
C44UOGT5750A7TK	75	900	26	1950	36	1.1	57	47	30	76	55	61	283
C44UOGT6100A8TK	100	900	26	2600	36	1.0	65	53	32	85	55	61	355
C44UOGT6110A7TK	110	900	17	1870	40	1.5	57	47	30	76	70	76	324
C44UOGT6150A8TK	150	900	17	2550	40	1.2	65	55	35	85	70	76	437
C44UOGT6220A7SK	220	900	9	1980	50	3.2	50	42	27	76	120	126	574
C44UOGT6275A7SK	275	900	7	1925	60	3.7	50	42	28	76	140	146	654
C44UOGT6300A8SK	300	900	9	2700	50	2.5	60	50	30	85	120	126	711
C44UOGT6350A8SK	350	900	7	2450	60	3.1	60	48	30	85	140	146	833
C44UQGT5500A7TK	50	1100	31	1550	36	1.3	52	43	30	76	55	61	265
C44UQGT5700A8TK	70	1100	31	2170	36	1.1	62	50	30	85	55	61	356
C44UQGT5750A7TK	75	1100	21	1575	40	1.7	58	43	30	76	70	76	352
C44UQGT6100A8TK	100	1100	21	2100	40	1.4	60	50	32	85	70	76	414
C44UQGT6150A7SK	150	1100	11	1650	50	3.8	45	38	25	76	120	126	577
C44UQGT6190A7SK	190	1100	9	1710	60	4.3	47	38	25	76	140	146	654
C44UQGT6200A8SK	200	1100	11	2200	50	3.0	55	45	30	85	120	126	723
C44UQGT6250A8SK	250	1100	9	2250	60	3.5	55	45	30	85	140	146	824

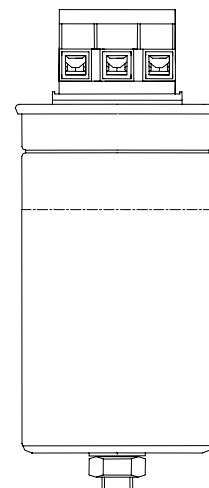


GENERAL CHARACTERISTICS

Code	C μF	Vdc V	dv/dt V/μs	I _{PKR} Ap	ESL nH	ESR mΩ (10kHz)	I _{RMS} A 10 kHz (40°C)	I _{RMS} A 10 kHz (50°C)	I _{RMS} A 10 kHz (60°C)	DIM (mm)			Weight gr
										Ø	H	H1	
C44UOGQ6200F7SK	200	900	10	2000	36	2.4	45	36	25	76	95	101	645
C44UOGQ6270F7SK	270	900	10	2700	36	1.8	50	40	30	76	95	101	610
C44UOGQ6370F8SK	370	900	10	3700	40	1.5	60	50	35	85	95	101	715
C44UOGQ6510F8SK	510	900	7	3570	40	1.9	60	50	35	85	120	126	840
C44UOGQ6600F8SK	600	900	7	4200	40	2.2	58	47	33	85	140	146	950
C44UQGQ6130F7SK	130	1100	12	1560	36	2.8	40	33	23	76	95	101	580
C44UQGQ6175F7SK	175	1100	12	2100	36	2.2	46	38	27	76	95	101	610
C44UQGQ6240F8SK	240	1100	12	2880	40	1.7	56	46	32	85	95	101	710
C44UQGQ6280F7SK	280	1100	7	1960	40	3.5	43	35	25	76	140	146	805
C44UQGQ6330F8SK	330	1100	7	2310	40	3	50	40	28	85	140	146	990
C44UQGQ6500F8SK	500	1100	12	6000	80	1.3	90	72	50	85	174	180	1120
C44UUGQ65900F7SK	90	1300	15	1350	36	3.5	37	30	22	76	95	101	580
C44UUGQ6120F7SK	120	1300	15	1800	36	2.7	43	35	24	76	95	101	610
C44UUGQ6165F8SK	165	1300	15	2475	40	2.1	52	42	30	85	95	101	716
C44UUGQ6195F8SK	195	1300	9	1755	50	4.2	40	33	23	76	140	146	797
C44UUGQ6250F8SK	250	1300	9	2250	50	3.5	47	39	27	85	140	146	957
C44UUGQ6320F8SK	320	1300	15	4800	80	1.6	82	67	47	85	174	180	1130
C44UUGQ6550F8SK	550	1300	9	4950	100	2.3	82	67	47	85	264	270	1600

TECHNICAL DATA

Service:	Continuous
Operating temperature	-25 ... +55°C
Storage temperature	-40 ... +85°C
Life Expectancy	≥ 100.000 Hours at U_{RMS}
Dielectric Dissipation Factor $tg\delta_0$	2×10^{-4}
Capacitance tolerance	-5 ... +15% (X)
Test voltage terminal to case U_{TT}	$2,15 U_{RMS}$ for 10 seconds
Test voltage terminal to case U_{TC}	$U_{RMS} < 690[V\sim]$: 3KV - 50Hz for 10 seconds $U_{RMS} \geq 690[V\sim]$: 6kV - 50Hz for 10 seconds
Rated power Q	Reactive power at rated A.C. voltage $U_{RMS} - F_N$
Max admissible voltage:	1.1 times the nominal voltage 8h / 24h
Max admissible current:	1.3 times the nominal current I_N
Permissible relative humidity	Annual average ≤ 95% on 30 days / year, continuously 100% on other days occasionally 100%. Dewing not admissible
Degree of protection	IP30
Capacitance deviation	±1.5% max on cap. value measured at +20 °C
Installation	Whatever Position
Safety:	Overpressure safety device



GENERAL CHARACTERISTICS

Code	C	Q	U_{RMS}	dv/dt	Freq	I_N	Dimensions	
	μF	kvar	V_{ac}	V/μs	Hz	A	Slim	Conc.
C9T_5AD5308AA0X	3*30.8	5	415	30	50	7.0	A	G
C9T_5AD5462AA0X	3*46.2	7.5	415	30	50	10.4	A	H
C9T_5BD5616AA0X	3*61.6	10	415	30	50	13.9	B	I
C9T_5MD5770AA0X	3*77	12.5	415	30	50	17.4	C	J
C9T_5MD5924AA0X	3*92.4	15	415	30	50	20.9	C	K
C9T_5MD6108AA0X	3*108	17.5	415	30	50	24.3	D	L
C9T_5MD6123AA0X	3*123.2	20	415	30	50	27.8	D	M
C9T_5MD6154AA0X	3*154	25	415	30	50	34.7	E	N
C9T_5MD6185AA0X	3*184.8	30	415	30	50	41.7	F	O
C9T_6AD5262AA0x	3*26.2	5	450	30	50	6.4	A	G
C9T_6AD5393AA0X	3*39.3	7.5	450	30	50	9.6	A	H
C9T_6BD5524AA0X	3*52.4	10	450	30	50	12.8	B	I
C9T_6MD5655AA0X	3*65.5	12.5	450	30	50	16.0	C	J
C9T_6MD5786AA0X	3*78.6	15	450	30	50	19.2	C	K
C9T_6MD5917AA0X	3*91.7	17.5	450	30	50	22.5	D	L
C9T_6MD6105AA0X	3*105	20	450	30	50	25.7	D	M
C9T_6MD6131AA0X	3*131	25	450	30	50	32.0	E	N
C9T_6MD6157AA0X	3*157	30	450	30	50	38.5	F	O
C9T_AAD5192AA0X	3*19.2	5	525	30	50	5.5	A	G
C9T_AAD5290AA0X	3*29	7.5	525	30	50	8.3	A	H
C9T_ABD5385AA0X	3*38.5	10	525	30	50	11.0	B	I
C9T_AMD5481AA0X	3*48.1	12.5	525	30	50	13.7	C	J
C9T_AMD5577AA0X	3*57.7	15	525	30	50	16.5	C	K
C9T_AMD5674AA0X	3*67.4	17.5	525	30	50	19.2	D	L
C9T_AMD5770AA0X	3*77	20	525	30	50	22.0	D	M
C9T_AMD5962AA0X	3*96.2	25	525	30	50	27.5	E	N
C9T_AMD6115AA0X	3*115	30	525	30	50	33.0	F	O
C9T_DBD5279AA0X	3*27.9	12.5	690	30	50	10.5	B	J
C9T_DMD5334AA0X	3*33.4	15	690	30	50	12.6	D	K
C9T_DMD5390AA0X	3*39	17.5	690	30	50	14.6	D	L
C9T_DMD5446AA0X	3*44.6	20	690	30	50	16.7	E	M
C9T_DMD5557AA0X	3*55.7	25	690	30	50	20.9	E	N
C9T_DMD5668AA0X	3*66.8	30	690	30	50	25.1	F	O

Reference Standards:
IEC 831-1 / 2

Protected 1000 AFC
-25°C ... +70°C

DIMENSIONS & PACKAGING

Dim	Case			Style	SPQ
	D mm	D1 mm	H mm		
A	60	64	220	3	9
B	65	69	220	2	9
C	75	79	220	1	9
D	75	79	280	1	9
E	85	89	280	1	5
F	95	99	280	1	4
G	65	69	150	2	9
H	65	69	175	2	9
I	75	79	175	2	9
J	75	79	200	1	9
K	85	89	200	1	5
L	95	99	175	1	4
M	95	99	200	1	4
N	116	120	175	1	4
O	116	120	200	1	4

CODE STRUCTURE

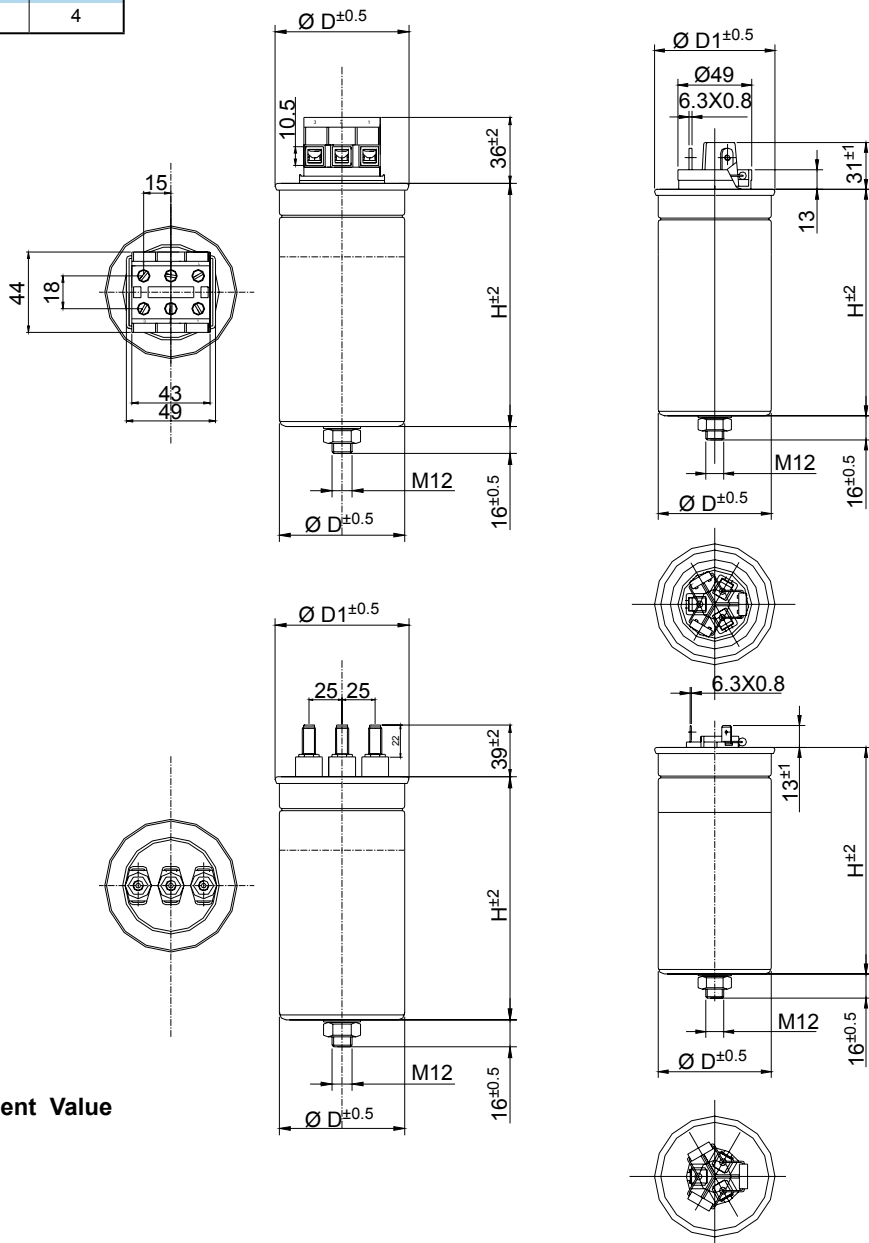
4 th dgt	Type
S	Slim
C	Concentric

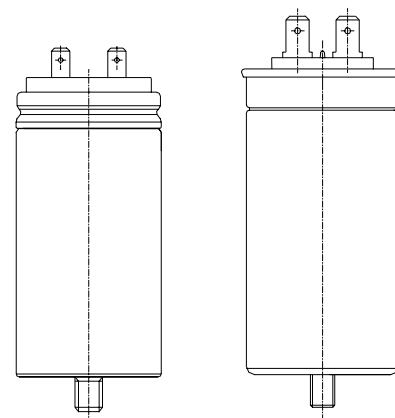
5 th dgt	Rated Voltage
5	415
6	450
A	525
D	690

6 th dgt	Terminal Style
A	3
B	2
M	1
T	4

7 th dgt	Internal Connection
D	DELTA
Y	STAR

8th - 11th dgt → Single Capacitive Element Value

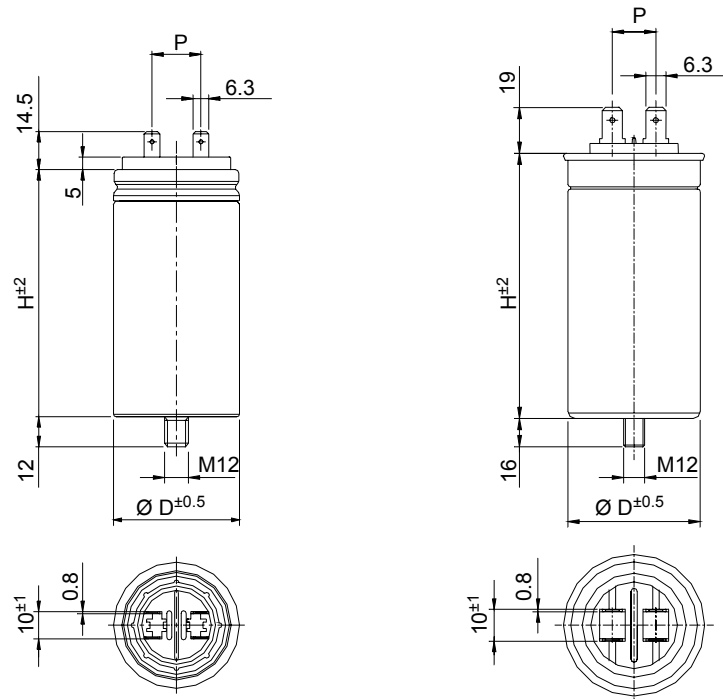


Reference standards :
IEC 60831-1, IEC 60831-2
PROTECTED 10000 AFC -25 ...+70°C
UL 810 APPROVED (*)

TECHNICAL DATA

Service:	Continuous
Operating temperature:	-25 ... +55°C
Storage temperature	-40 ... +90°C
Rated Voltage V_{AC} :	320 Vac; 415 Vac; 440Vac; 525 Vac
Nominal frequency (Hz.):	50 - 60 Hz
Max dv/dt:	30 V/ μ s
Max admissible tension:	temporarily 1.1 times the nominal voltage 8 hours/24 hours
Life expectancy at nominal voltage	30.000 hours with ($\Delta C/C > 5\%$) at the operating temperature
Max dissipation Factor ($tg\delta$):	10×10^{-4} at 20°C and 50 Hz.
Tolerance (ΔC):	-5 ... +15%
Assembling	Whatever position
Case:	Aluminum case
Dielectric:	Metallized polypropylene
Voltage tests	
Between terminals	2,15 Vn for 2 s
Between terminals and case	3600 V for 2 s
Air distance	
Between live parts	≥ 5 mm
Between live parts and case	≥ 6 mm
Vibration test:	IEC 68-2-6
Safety:	Overpressure safety device

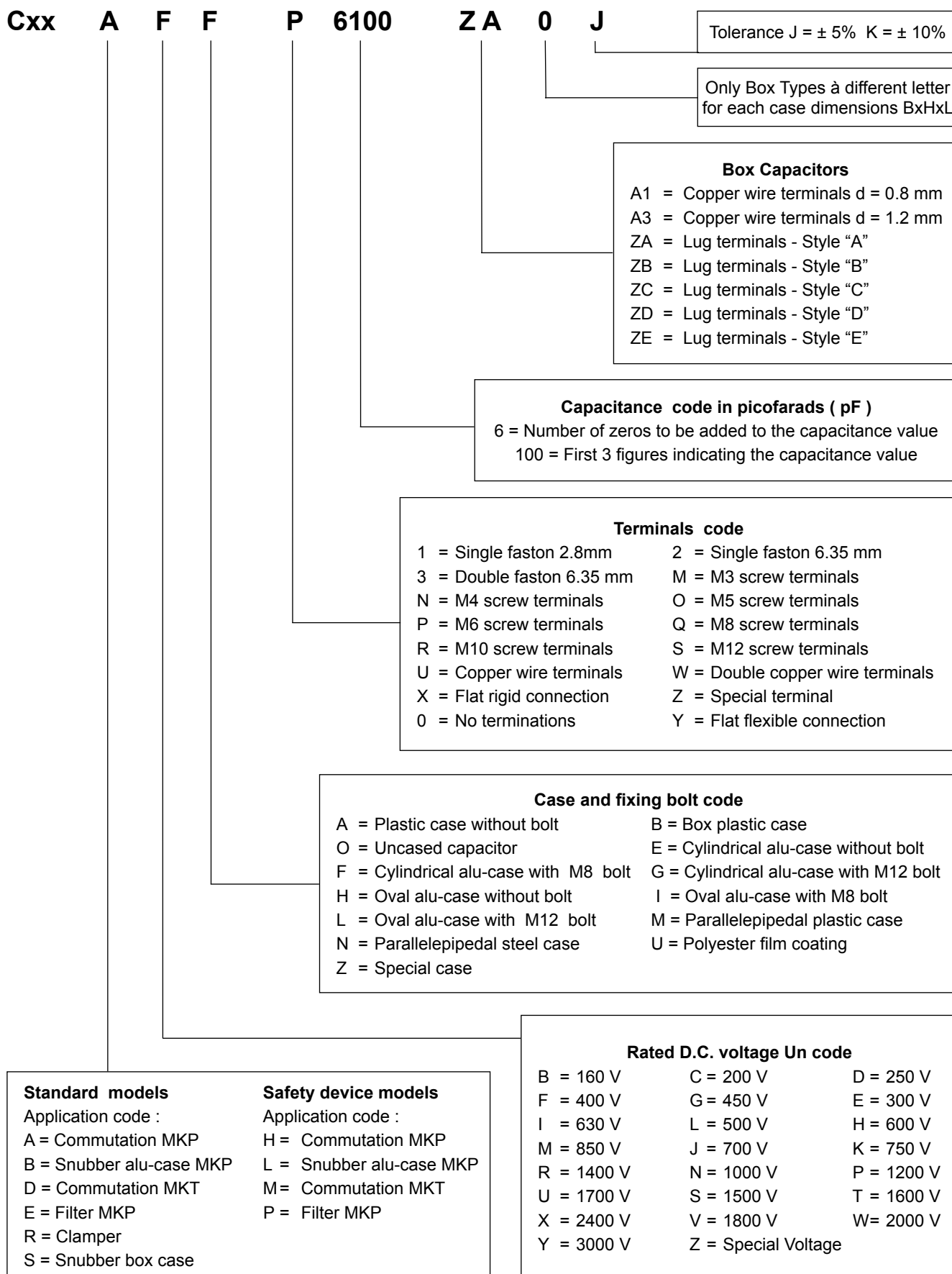
TEST VOLTAGE TABLE

U_{RMS} Vac	Test Voltage Vac (2s)	U_{RMS} max Vac
320	640	375
415	830	460



Code	C μF	Un Vdc	U_{RMS} Vac	I_{RMS} A	I_{PKR} A	Case			Style
						D	H	P	
C930ZG35500ZA0X	50	400	320	4.5	1250	60	98	18.8	1
C930ZG35700ZA0X	70	400	320	9.1	1750	60	98	18.8	1
C930ZG36100ZA0X	100	400	320	13.0	2500	60	133	18.8	1
C931ZG35100ZA0X	10	600	415	1.7	250	40	78	13.4	1
C931ZG35300ZA0X	30	600	415	5.0	750	60	98	18.8	1
C931ZG35470ZA0X	47	600	415	8.5	1250	60	98	18.8	1
C931ZG35600ZA0X	60	600	415	10.1	1500	60	133	18.8	1
C931ZG35830ZA0X	83	600	415	13.5	2000	60	133	15.0	2
C931ZG36100ZA0X	100	600	415	16.9	2500	75	150	15.0	2

ORDERING CODES - Series C4A , C4B , C4D , C44, C20



WARNING**DO NOT MISAPPLY CAPACITORS FOR POWER ELECTRONICS**

Arcotronics Italia S.p.A. is not responsible for any extent of possible damages to persons or things, of any kind, caused by the improper installation and application of capacitors for power electronics .

1.0 MISAPPLICATION FORMS

Common misapplications which may cause failures :

- 1.1** Ripple current or peak current or voltage above specification.
- 1.2** Application voltages beyond surge voltage specified.
- 1.3** Temperature exposures beyond specified limits.
- 1.4** Unusual service conditions:
 - unusual mechanical shocks and vibrations,
 - corrosive and abrasive particles in cooling air,
 - conducting dust in the cooling air,
 - oil or water vapour or corrosive substances,
 - explosive gas or dust,
 - radioactivity,
 - unusual storage or transport temperature
 - excessive and rapid changes of ambient temperature or humidity,
 - service areas higher than 2000 m above sea level,
 - superimposed radiofrequency voltages.

In case of doubt between service conditions and correspondent capacitor performances, the Arcotronics Technical Service **MUST** be consulted by customer for approval.

1.5 APPLICATIONS ACROSS THE MAINS

The products of this catalogue fully comply with ECC Standard 89/366 but are not suitable for applications "Across the Line" except the series C93 specifically designed for this purpose .

2.0 PERSONAL SAFETY

- 2.1** Electrical or mechanical misapplication of capacitor for power electronics may be hazardous. Personal injury or property damage may result from explosion of a capacitor or from the expulsion of oil due to mechanical disruption of a capacitor. In case of injury or skin or eye exposure to oil, contact a physician immediately .
- 2.2** Don' t dispose of capacitors in fire, explosion may result .

Before using capacitors in any application, please read this Technical Information Bulletin carefully familiarizing yourself thoroughly with the information contained herein. Special care should be taken to assure that the capacitors are proper for your application and that warnings and instructions for use are followed.

CHECK in the intended application and operating conditions of the capacitor before using in any product to be sure that the capacitor is proper for your application.