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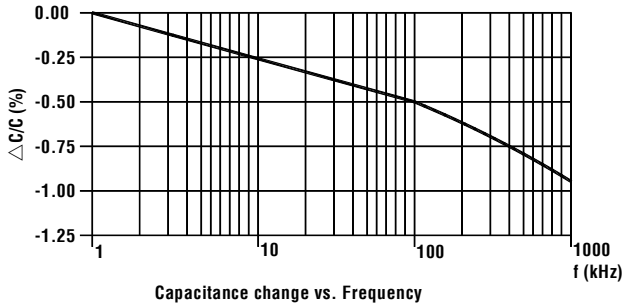
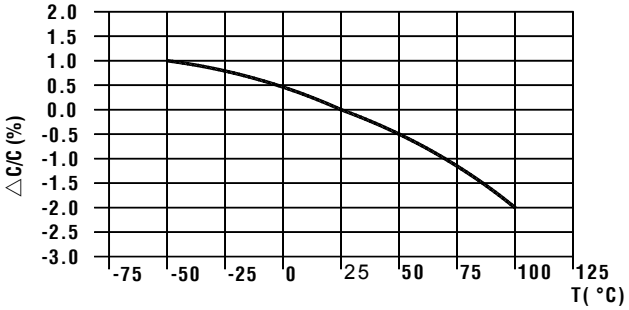
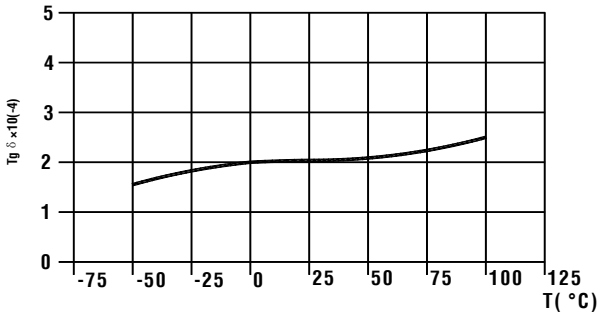
Typical polypropylene dielectric characteristics



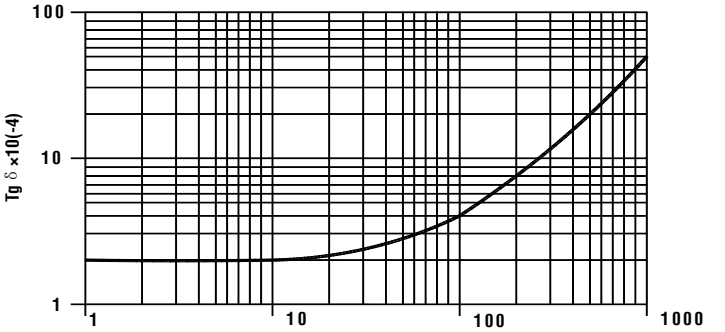
Capacitance change vs. Frequency



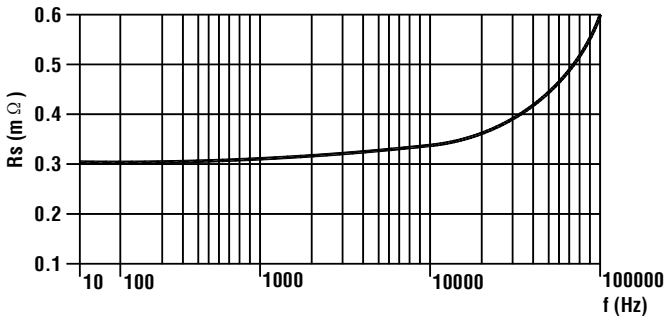
Capacitance change vs. temperature at 1kHz



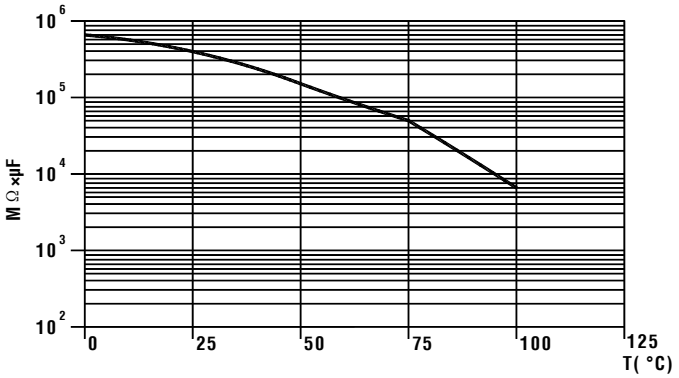
Dissipation factor vs. temperature at 1kHz



Dissipation factor vs. Frequency



Rs vs Frequency



Time constant vs. temperature

General remaeks

Rated capacitance C_N

Capacitance value rated at 20°C / 50 Hz.

Rated AC voltage U_N

Maximum operating peak recurrent voltage of either polarity of a reversing type waveform for which the capacitor has been designed.

Rated DC voltage U_{NDC}

Maximum operating peak voltage of either polarity but of a non-reversing type waveform,for which the capacitor has been designed,for continuous operation.

Ripple voltage U_r

Maximum value of the peak-to-peak alternating component of the unidirectional voltage. This value is stated only for DC-capacitors. The peak-to-peak value of AC- and AC/DC-types is always $2 \times U_{NAC}$.

Non-recurrent surge voltage U_s

Peak voltage induced by a switching or any other disturbance of the system which is allowed for a limited number of times and duration.

- Maximum duration: 50 ms / pulse. Maximum number of occurrences: 1000 (during load)

Insulation voltage U_i

Rms rated value of the insulation voltage of capacitive elements and terminals to case or earth.

rms voltage Urms

Root mean square of max. permissible value of sinusoidal AC voltage in continuous operation. In power electronics, the RMS voltage is usually not the rated voltage value of the capacitor.

Maximum current I_{max}

Maximum rms current for continuous operation.

Maximum rate of voltage rise $(du/dt)_{max}$

Maximum permissible repetitive rate of voltage rise of the operational voltage.

Maximum peak current $\hat{I}$

Maximum permissible repetitive current amplitude during continuous operation.

Maximum peak current ($\hat{I}$) and maximum rate of voltage rise $(du/dt)_{max}$ on a capacitor are related as follows: $\hat{I} = C \times (du/dt)_{max}$

Maximum non-repetitive rate of voltage rise $(du/dt)_s$

Peak rate of voltage rise that may occur non-repetitively and briefly in the event of a fault.

Maximum surge current $\hat{I}_s$

Admissible peak current induced by a switching or any other disturbance of the system which is allowed for a limited number of times (1000 times) and duration (50 ms / pulse).

$\hat{I}_s = C \times (du/dt)_s$

Ambient temperature Θ_A

Temperature of the surrounding air, measured at 10 cm distance and 2/3 of the case height of the capacitor.

Lowest operating temperature Θ_{min}

Lowest permitted ambient temperature at which a capacitor may be energized.

Maximum operating temperature Θ_{max}

Highest permitted capacitor temperature during operation, i.e. temperature at the hottest point of the case. It is, however, not sufficient to monitor the surface temperature. Life-span and safe operation crucially depend on the observance of the hotspot temperature.

Hot-spot temperature Θ_{hs}

Temperature zone inside of the capacitor at hottest spot. It has to be noted that,depending on the thermal power dissipation generated inside the capacitor,there is always a temperature difference between hotspot and surface. As the hotspot is usually not accessible for measurement, Θ_{hs} must be calculated based on the data stated in the catalogue or data sheet:

$$\Theta_{hs} = \Theta_{A} + I_{rms}^2 \times ESR \times R_{th}$$

Important: No thermal dissipation losses are admissible when operating a capacitor at an ambient temperature equal to the upper category temperature,i.e. Irms and Q shall be zero (operation at pure DC voltage) !

Dielectric dissipation factor tan δ_0

Constant dissipation factor of the dielectric material for all capacitors at their rated frequency.The typical loss factor of pp film is $\tan \delta_0 = 2 \times 10^{-4}$.

Dissipation factor tan δ

Loss factor of the capacitor at sinusoidal ac voltage and applied frequency.It is calculated as follows:

$$\tan \delta\ (f) = \tan \delta_0 + R_S \times 2 \pi f \times C_N$$

Series resistance R_s

The sum of all Ohmic resistances occurring inside the capacitor.

Equivalent Series Resistance ESR

Represents the sum of all loss resistances occurring in the capacitor. It depends on frequency and is essential for the calculation of the capacitor's total power losses.

$$ESR = R_S + \tan \delta_0 / (2 \pi f \times C_N)$$

Thermal resistance R_{th}

The thermal resistance indicates by how many degrees the capacitor temperature at the hot spot rises in relation to the dissipation losses.

Maximum power loss P_{max}

Maximum permissible power dissipation for the capacitor's operation.

$$P_{max} = (\Theta_{hs} - \Theta_A)/R_{th}$$

Self inductance Ls

The sum of all inductive elements which are contained in a capacitor.

Resonance frequency fr

The lowest frequency at which the impedance of the capacitor becomes minimum.

$$fr = 1/(2 \pi \sqrt{L_S \times C_N})$$

Rated energy contents W_N

Energy stored in the capacitor when charged at rated voltage.

$$W_N = 1/2 C_N \times U_N^2$$

Clearance in air L

The shortest distance between conducting parts of the terminals or between terminals and case. In this catalogue, we state only the shorter.

Creepage distance K

The shortest distance along an insulated surface between conducting parts of the terminals or between terminals and case. In this catalogue, again we state only the shorter.

DC capacitor Lifetime statements vs. Failure rate

In the lifetime expectancy graphic, statements for more than 200,000 hrs are cut off as they are technically unreasonable. For higher hotspot temperatures, no statements are made regarding operation at overvoltage: the simultaneous operation at limit values results in unpredictable conditions. Here, the statement of a FIT rate - that reflects the growing risk at such extreme conditions - would be of far better use.

DC capacitor Lifetime Expectancy Graphs

DC capacitor FIT rates (Failures In Time):

By reflecting the probability (in other words: risk) of failures during the operating period under selected operating conditions, it provides information on what effects to expect when de-rating (or over-loading) a capacitor. The failure probability of a component is a statistical value which is described by a log-normal distribution:

$$N = N_0 \times e^{-\lambda t}$$

N = number of functional components after period t

N_0 = total number of components at time t = 0

λ = failure rate

λ is the failure rate, which alternatively is also stated as the so-called FIT-rate (FIT = Failures In Time = $\lambda \times 10^9$). Service cycles may be calculated based on the so-called MTBF value (mean time between failures): MTBF = $1/\lambda$. The failure rate is very closely linked with the operating temperature and the operating voltage applied to the capacitor. As standard, our FIT rates are related to a realistic (from a technical and statistical point of view) operating interval of t=100,000 hours, assuming a capacitor hotspot temperature of 70°C. Hotspot is the only reliable criterion in relation to the capacitor's temperature stress. The outside temperatures may be comparably low, however with high electrical stress the temperature rise in the capacitor may be substantial due to the power dissipation losses produced inside. This could result in the same temperature stress as a generally high ambient temperature.

DC capacitor Expected life and Failure rate

The simultaneous operation of capacitors at highest permissible voltage and operating temperatureshould be avoided; otherwise, failure rates may increase beyond reasonable technical reliability.

In fact, a FIT rate of 50 would mean, for example: “If 10,000 capacitors are operated simultaneously for 100,000 hours at rated voltage and with a hotspot temperature of no more than 70°C, then out of this batch no more than 50 pcs may fail during the entire period.” Any period during which the hotspot temperature is lower than 70°C, or the voltage is less than rated voltage, will contribute to a reduction of the 50 FIT.

After the reference interval, the capacitors will continue operating; however the probability of failures may change. It shall be noted that the statements on FIT rates are based mainly on long-year empirical experience; at SCR, we are conducting numerous and regular reliability tests to verify and back up our empirical knowledge. However dedicated studies designed to prove FIT rates would require the test of thousands of capacitors, over hundreds of thousands of hours, which is technically and commercially impossible. Even the use of statistical methods and accelerated ageing factors encounters physical and chemical limits.

Hence lifetime formulas such as

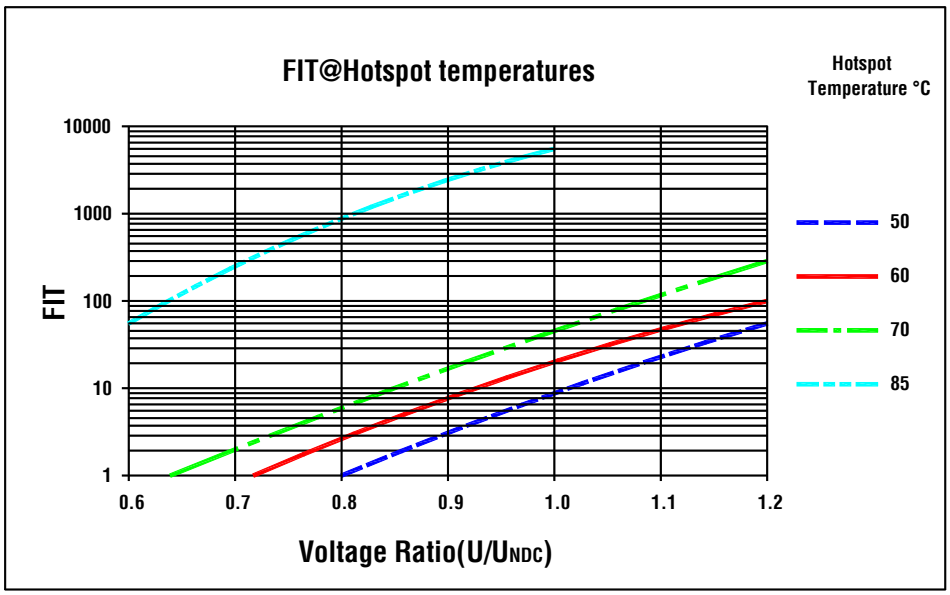
$$\text{Lifetime (U)} = L_N \times (U_{rated}/U_{working})^8 \quad \text{and} \quad \text{Lifetime } (\Theta) = L_N \times 2^{(\Theta \text{ rated} - \Theta \text{ working})/7}$$

should not be used to calculate absolute figures of expected lifetime. These rules and formulas are mainly designed to give an approximate feeling for the importance of voltage and temperature.

All standard items of SCR are designed and dimensioned to comply with their FIT rate as stated in the catalogue or special data sheet. FIT rate statements related to longer reference intervals can be made on request. Further, capacitor designs can be adapted on request to achieve lower FIT at the intended operating conditions.

Based on our current state of knowledge derived from test data and experience, we quote the following FIT rates for our standard products at the a.m. conditions:

DC capacitor FIT rates Quota Graphs



AC capacitor Lifetime statements vs. Failure rate

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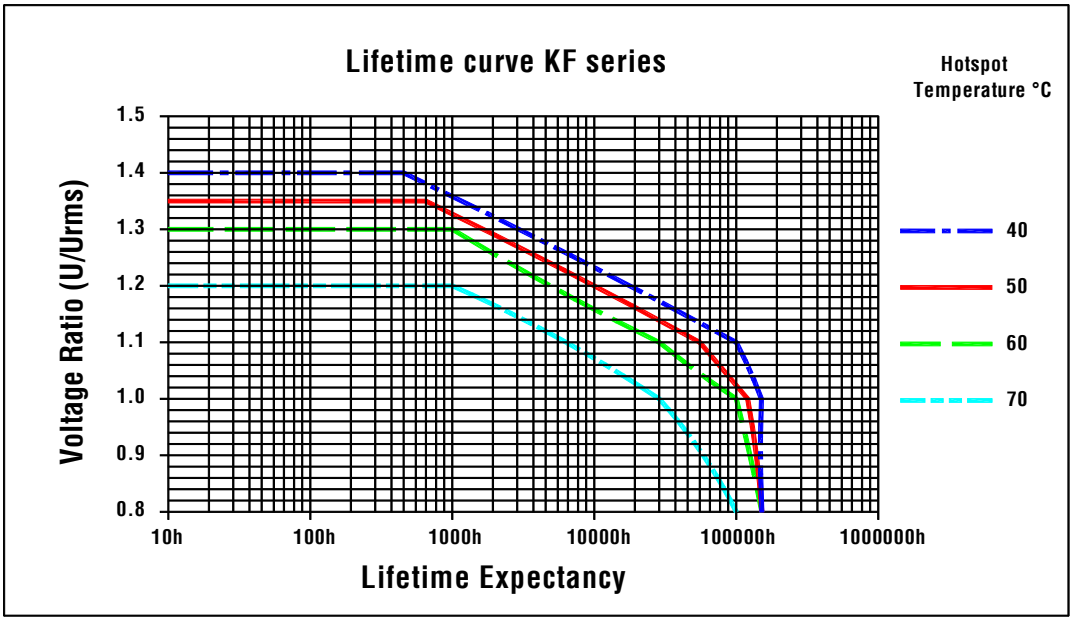
AC capacitor Lifetime Expectancy Graphs



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AC capacitor Expected life and Failure rate

The simultaneous operation of capacitors at highest permissible voltage and operating temperature should be avoided; otherwise, failure rates may increase beyond reasonable technical reliability.
In fact, a FIT rate of 50 would mean, for example: “If 10,000 capacitors are operated simultaneously for 100,000 hours at rated voltage and with a hotspot temperature of no more than 60°C, then out of this batch no more than 100 pcs may fail during the entire period.” Any period during which the hotspot temperature is lower than 60°C, or the voltage is less than rated voltage, will contribute to a reduction of the 100 FIT.
After the reference interval, the capacitors will continue operating; however the probability of failures may change. It shall be noted that the statements on FIT rates are based mainly on long-year empirical experience; at SCR, we are conducting numerous and regular reliability tests to verify and back up our empirical knowledge. However dedicated studies designed to prove FIT rates would require the test of thousands of capacitors, over hundreds of thousands of hours, which is technically and commercially impossible. Even the use of statistical methods and accelerated ageing factors encounters physical and chemical limits.
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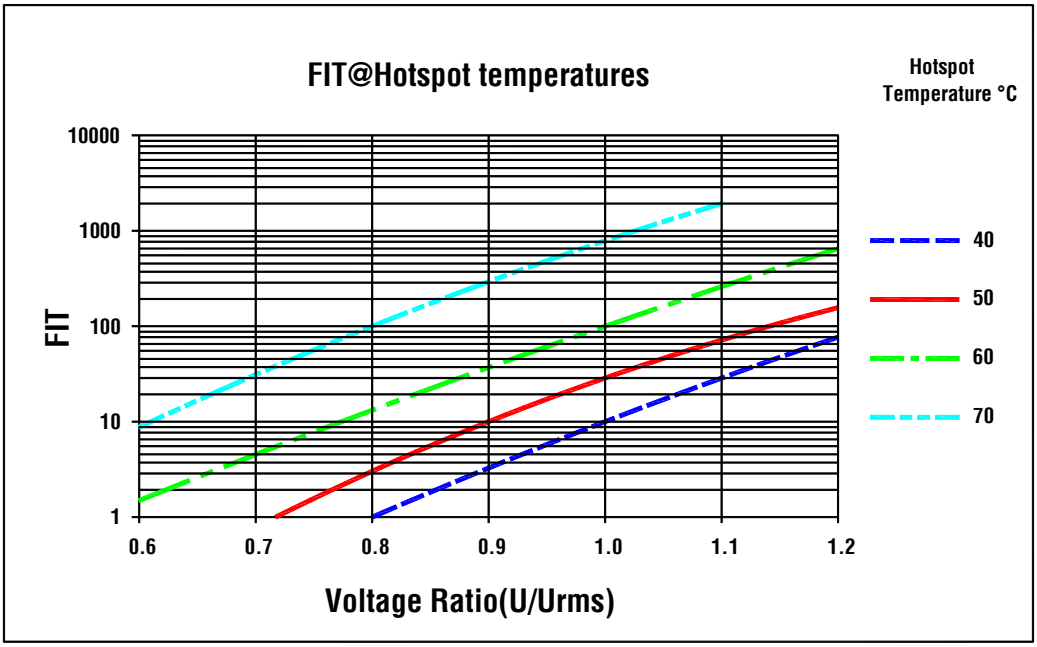
AC capacitor FIT rates Quota Graphs



KS1 Series

Overview

The KS1 series capacitors with double side metallized carrier film with internal series connection and metalized polypropylene film, polyester wrapping with epoxy resin fill.

Application:

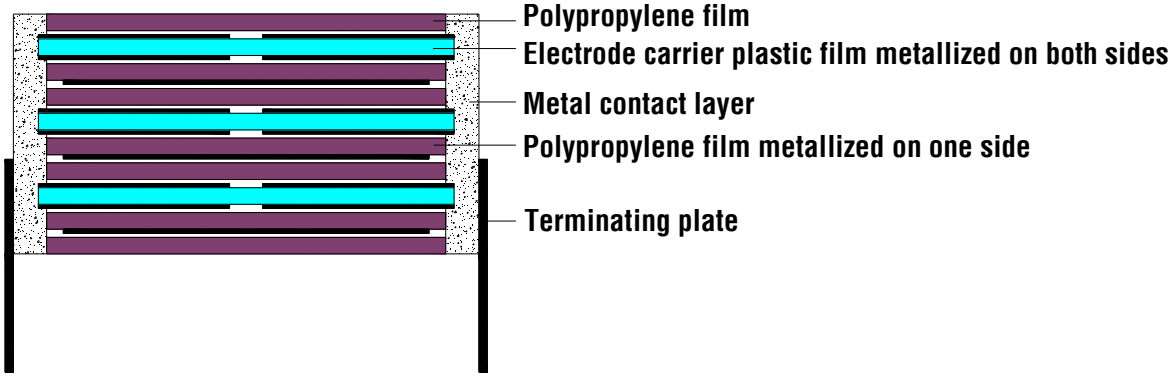
The KS1 series is designed for snubber/pulse applications. For high pulse and high frequency applications requiring extremely reliable contacts e.g. IGBT-applications

Benefits

Self-healing
Very low dissipation factor
Very high ripple current
Internal series connection
Negative capacitance change versus temperature

Construction

Dielectric: Polypropylene (PP) film.
Capacitor electrodes: Double-sided metallized plastic film.
Protection: Polyester wrapping with epoxy resin fill.
Terminals: Tinned copper wire (lead-free).
Internal construction:



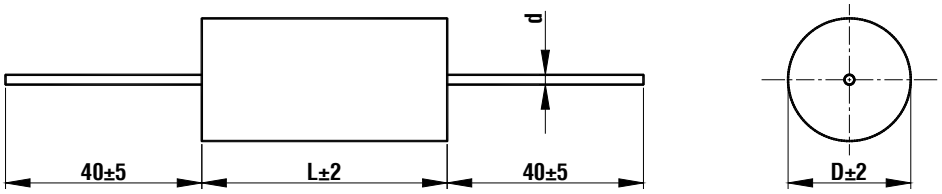
Structure of ordering code

KS1	122	K	474	S00	0
1	2	3	4	5	6

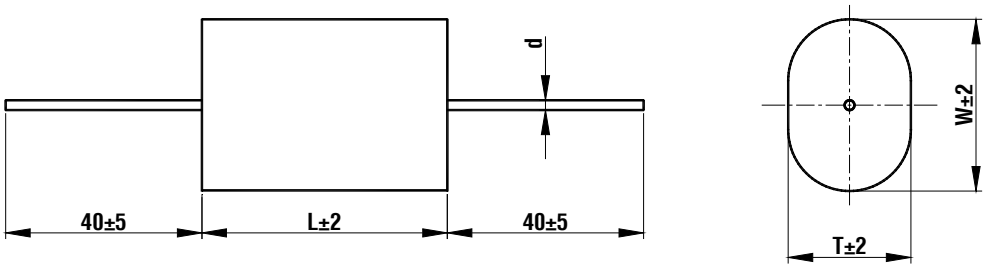
1 Series code
2 Rated voltage: 122 = 12 x 10^2=1200 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 474=47 x 10^4 pF = 0.47 µF (105=10 x 10^5 pF = 1.0 µF)
5 Designs Type
6 Internal use

Reference standards		IEC 61071 , IEC 60068 , RoHS compliance.
Degree of protection		IP00
Rated capacitance (C_N)		0.047µF ... 6.8µF
Rated voltage (U_{NDC})		700V ... 3000V
Standard capacitance tolerance		K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)		≤ $5.0 \cdot 10^{-4}$
Test voltage between terminals U_{TT}		1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}		4000 VAC, 10s
Insulation Resistance		30000s but need not exceed 30GW (typical value), after 1 minute of electrification at 100Vdc (25 ± 5°C).
Self inductance		≤1nH/mm of capacitor and leads length used for connection
Operating temperature range (case)		–40 °C ... +105°C
Max. permissible ambient temperature		+85°C, operation at rated power, rated current and natural cooling
Storage temperature Θ stg		–40 ... +105 °C
Climatic category		40/105/56
Capacitance deviation		in the operating Temperature range of -40 to +85 °C,±1.5% max on capacitance value measured at +20 °C
Damp heat test	- Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5% tg δ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 85°C 30 000 h at U_{RMS} @ Θ_{hs} 85°C
Capacitance drop at end of life		-3% (typical)
Fit rate		50 (100 000 h at Θ_{hs} 85°C)
Resistance to soldering heat		
	-Test conditions:	Solder bath temperature= +260±5°C dipping time (with heat screen)=10±1s
	-Performance:	Capacitance change: ≤ ±1% tg δ change : ≤0,0010 at 1kHz Insulation resistance: ≥50% of limit value

KS1 Designs



Designs S00



Designs S01

KS1 U_N 700V Us 1050V Urms 400V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.47	16.5	32				1.0	810	381	4.0	8	KS1701K474S000
			20	12	32	1.0	810	381	4.0	8	KS1701K474S010
0.68	19.5	32				1.0	810	551	3.1	9	KS1701K684S000
			23	15	32	1.0	810	551	3.1	9	KS1701K684S010
1.0	18.5	44				1.0	550	550	4.0	9	KS1701K105S000
			22	14	44	1.0	550	550	4.0	9	KS1701K105S010
1.5	22.5	44				1.2	550	825	3.0	12	KS1701K155S000
			26.5	17	44	1.2	550	825	3.0	12	KS1701K155S010
2.0	25.5	44				1.2	550	1100	2.5	12	KS1701K205S000
			30.5	19.5	44	1.2	550	1100	2.5	12	KS1701K205S010
2.5	28.5	44				1.2	550	1375	2.2	12	KS1701K255S000
			33	22	44	1.2	550	1375	2.2	12	KS1701K255S010
3.0	26	57				1.2	350	1050	2.8	12	KS1701K305S000
			30.5	19.5	57	1.2	350	1050	2.8	12	KS1701K305S010
3.5	28	57				1.2	350	1225	2.6	12	KS1701K355S000
			32.5	21.5	57	1.2	350	1225	2.6	12	KS1701K355S010
4.7	32	57				1.2	350	1645	2.2	12	KS1701K475S000
			36.5	25.5	57	1.2	350	1645	2.2	12	KS1701K475S010
6.8	38	57				1.2	350	2380	1.8	12	KS1701K685S000
			43.5	31	57	1.2	350	2380	1.8	12	KS1701K685S010

KS1 U_N 850V Us 1300V Urms 450V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code(1)
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.33	16	32				1.0	900	297	4.2	8	KS1851K334S000
			19	11	32	1.0	900	297	4.2	8	KS1851K334S010
0.47	18.5	32				1.0	900	423	3.1	9	KS1851K474S000
			22	14	32	1.0	900	423	3.1	9	KS1851K474S010
0.68	17.5	44				1.0	610	415	4.2	9	KS1851K684S000
			20.5	13	44	1.0	610	415	4.2	9	KS1851K684S010
1.0	21	44				1.2	610	610	3.1	12	KS1851K105S000
			25	15.5	44	1.2	610	610	3.1	12	KS1851K105S010
1.5	25	44				1.2	610	915	2.2	12	KS1851K155S000
			30	19	44	1.2	610	915	2.2	12	KS1851K155S010
2.0	29	44				1.2	610	1220	1.8	12	KS1851K205S000
			33.5	22.5	44	1.2	610	1220	1.8	12	KS1851K205S010
2.5	27	57				1.2	380	950	2.4	12	KS1851K255S000
			31.5	20.5	57	1.2	380	950	2.4	12	KS1851K255S010
3.0	29	57				1.2	380	1140	2.1	12	KS1851K305S000
			34	23	57	1.2	380	1140	2.1	12	KS1851K305S010
4.7	36	57				1.2	380	1786	1.5	12	KS1851K475S000
			41.5	29	57	1.2	380	1786	1.5	12	KS1851K475S010

KS1 U_N 1000V Us 1500V Urms 500V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code(1)
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.22	15	32				1.0	1050	231	5.0	8	KS1102K224S000
			18.5	10.5	32	1.0	1050	231	5.0	8	KS1102K224S010
0.33	18	32				1.0	1050	347	3.6	9	KS1102K334S000
			21.5	13.5	32	1.0	1050	347	3.6	9	KS1102K334S010
0.47	17	44				1.0	720	338	4.9	9	KS1102K474S000
			20	12.5	44	1.0	720	338	4.9	9	KS1102K474S010
0.68	20	44				1.2	720	490	3.6	12	KS1102K684S000
			24	14.5	44	1.2	720	490	3.6	12	KS1102K684S010
1.0	24	44				1.2	720	720	2.7	12	KS1102K105S000
			28	18.5	44	1.2	720	720	2.7	12	KS1102K105S010
1.5	29	44				1.2	720	1080	2.0	12	KS1102K155S000
			33.5	22.5	44	1.2	720	1080	2.0	12	KS1102K155S010
2.0	28	57				1.2	450	900	2.5	12	KS1102K205S000
			32.5	21.5	57	1.2	450	900	2.5	12	KS1102K205S010
2.5	31	57				1.2	450	1125	2.1	12	KS1102K255S000
			35.5	24.5	57	1.2	450	1125	2.1	12	KS1102K255S010
3.3	35	57				1.2	450	1485	1.7	12	KS1102K335S000
			40.5	28	57	1.2	450	1485	1.7	12	KS1102K335S010

KS1 U_N 1200V Us 1800V Urms 550V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code[1]
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.22	17	32				1.0	1200	264	4.5	9	KS1122K224S000
			20	12	32	1.0	1200	264	4.5	9	KS1122K224S010
0.33	20.5	32				1.2	1200	396	3.2	11	KS1122K334S000
			24.5	15	32	1.2	1200	396	3.2	11	KS1122K334S010
0.47	19	44				1.0	830	390	4.4	11	KS1122K474S000
			22.5	14.5	44	1.0	830	390	4.4	11	KS1122K474S010
0.68	22.5	44				1.2	830	564	3.2	12	KS1122K684S000
			26.5	17	44	1.2	830	564	3.2	12	KS1122K684S010
1.0	27	44				1.2	830	830	2.4	12	KS1122K105S000
			32	21	44	1.2	830	830	2.4	12	KS1122K105S010
1.5	27.5	57				1.2	520	780	2.8	12	KS1122K155S000
			32	21	57	1.2	520	780	2.8	12	KS1122K155S010
2.0	31.5	57				1.2	520	1040	2.2	12	KS1122K205S000
			36	25	57	1.2	520	1040	2.2	12	KS1122K205S010
2.5	35	57				1.2	520	1300	1.9	12	KS1122K255S000
			39.5	28.5	57	1.2	520	1300	1.9	12	KS1122K255S010
3.0	38	57				1.2	520	1560	1.7	12	KS1122K305S000
			43.5	31	57	1.2	520	1560	1.7	12	KS1122K305S010

KS1 U_N 1600V Us 2400V Urms 600V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.10	14.5	32				1.0	1500	150	7.1	7	KS1162K104S000
			18.0	10.0	32	1.0	1500	150	7.1	7	KS1162K104S010
0.15	17.5	32				1.0	1500	225	5.0	9	KS1162K154S000
			20.5	12.5	32	1.0	1500	225	5.0	9	KS1162K154S010
0.22	16.5	44				1.0	1030	227	6.8	9	KS1162K224S000
			20.0	12.0	44	1.0	1030	227	6.8	9	KS1162K224S010
0.33	20.0	44				1.2	1030	340	4.8	12	KS1162K334S000
			23.0	15.0	44	1.2	1030	340	4.8	12	KS1162K334S010
0.47	23.5	44				1.2	1030	484	3.6	12	KS1162K474S000
			27.5	18.0	44	1.2	1030	484	3.6	12	KS1162K474S010
0.68	23.0	57				1.2	640	435	4.4	12	KS1162K684S000
			27.0	27.5	57	1.2	640	435	4.4	12	KS1162K684S010
1.0	28.0	57				1.2	640	640	3.2	12	KS1162K105S000
			32.5	21.5	57	1.2	640	640	3.2	12	KS1162K105S010
1.5	34.0	57				1.2	640	960	2.3	12	KS1162K155S000
			38.0	27.0	57	1.2	640	960	2.3	12	KS1162K155S010
2.0	39.0	57				1.2	640	1280	1.9	12	KS1162K205S000
			44.0	31.5	57	1.2	640	1280	1.9	12	KS1162K205S010

KS1 U_N 2000V Us 3000V Urms 650V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code(1)
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.068	15.5	32				1.0	2000	136	7.8	6	KS1202K683S000
			18.5	10.5	32	1.0	2000	136	7.8	6	KS1202K683S010
0.10	18	32				1.0	2000	200	5.6	8	KS1202K104S000
			21.5	13.5	32	1.0	2000	200	5.6	8	KS1202K104S010
0.22	21	44				1.2	1370	301	5.4	10	KS1202K224S000
			25	15.5	44	1.2	1370	301	5.4	10	KS1202K224S010
0.33	25	44				1.2	1370	452	3.8	12	KS1202K334S000
			30	19	44	1.2	1370	452	3.8	12	KS1202K334S010
0.47	25	57				1.2	1000	470	4.7	12	KS1202K474S000
			28.5	19	57	1.2	1000	470	4.7	12	KS1202K474S010
0.56	27	57				1.2	1000	560	4.1	12	KS1202K564S000
			31.5	20.5	57	1.2	1000	560	4.1	12	KS1202K564S010
0.68	29.5	57				1.2	1000	680	3.5	12	KS1202K684S000
			34	23	57	1.2	1000	680	3.5	12	KS1202K684S010
1.0	35.5	57				1.2	1000	1000	2.5	12	KS1202K105S000
			41	28.5	57	1.2	1000	1000	2.5	12	KS1202K105S010
1.2	39	57				1.2	1000	1200	2.2	12	KS1202K125S000
			44	31.5	57	1.2	1000	1200	2.2	12	KS1202K125S010

KS1 U_N 3000V Us 4500V Urms 800V

Cn (µF)	DIMENSIONS (mm)						du/dt (V/µs)	Ipk (A)	ESR @100kHz (mΩ)	Imax 100kHz@70° (A)	Ordering code(1)
	Designs S00		Designs S01			d					
	D	L	W	T	L						
0.047	14.5	44				1.0	1780	84	23.8	6	KS1302K473S000
			17.5	9.5	44	1.0	1780	84	23.8	6	KS1302K473S010
0.068	17	44				1.0	1780	121	16.5	8	KS1302K683S000
			20	12	44	1.0	1780	121	16.5	8	KS1302K683S010
0.10	20	44				1.2	1780	178	11.6	11	KS1302K104S000
			24	14.5	44	1.2	1780	178	11.6	11	KS1302K104S010
0.15	24.5	44				1.2	1780	267	7.8	12	KS1302K154S000
			28.5	19	44	1.2	1780	267	7.8	12	KS1302K154S010
0.22	22.5	57				1.2	1160	255	10.6	12	KS1302K224S000
			26	16.5	57	1.2	1160	255	10.6	12	KS1302K224S010
0.33	27	57				1.2	1160	383	7.3	12	KS1302K334S000
			31.5	20.5	57	1.2	1160	383	7.3	12	KS1302K334S010
0.47	32	57				1.2	1160	545	5.2	12	KS1302K474S000
			36.5	25.5	57	1.2	1160	545	5.2	12	KS1302K474S010
0.56	35	57				1.2	1160	650	4.4	12	KS1302K564S000
			39.5	28.5	57	1.2	1160	650	4.4	12	KS1302K564S010
0.68	38.5	57				1.2	1160	789	3.7	12	KS1302K684S000
			43.5	31	57	1.2	1160	789	3.7	12	KS1302K684S010

KS2 Series

The KS2 series capacitors with double side metallized carrier film with internal series connection and metallized polypropylene film, solvent resistant plastic case with resin sealing (UL 94 V-0)

Application:

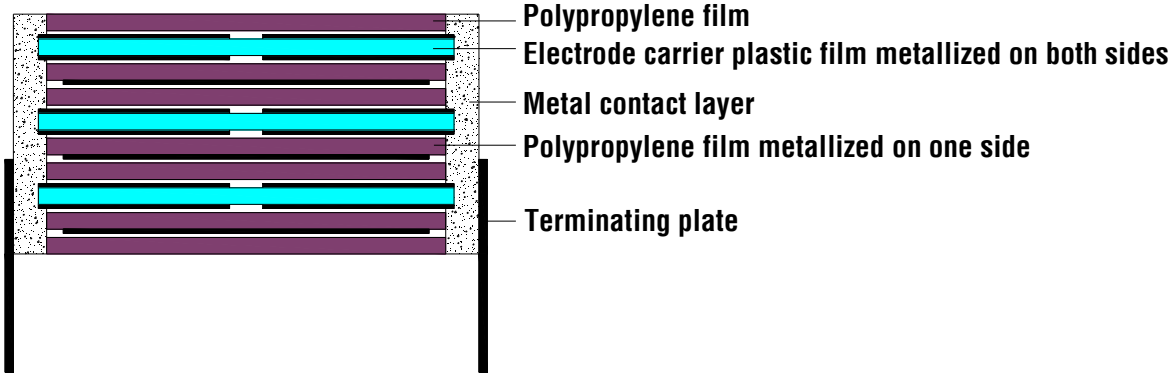
The KS2 series is designed for snubber/pulse applications.
For high pulse and high frequency applications requiring extremely reliable contacts e.g. IGBT-applications

Benefits

Self-healing
Very low dissipation factor
Very high ripple current
Internal series connection
Negative capacitance change versus temperature

Construction

Dielectric: Polypropylene (PP) film.
Capacitor electrodes: Double-sided metallized plastic film.
Protection: Solvent resistant plastic case with resin sealing (UL 94 V-0)
Terminals: Tinned copper lugs (lead-free)
Internal construction:



Structure of ordering code

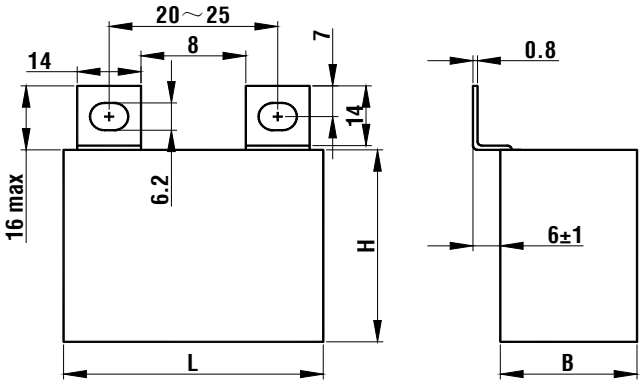
KS2	122	K	474	A11	0
1	2	3	4	5	6

1 Series code
2 Rated voltage: 122 = 12 x 10^2=1200 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 474=47 x 10^4 pF = 0.47 µF (105=10 x 10^5 pF = 1.0 µF)
5 Designs Type
6 Internal use

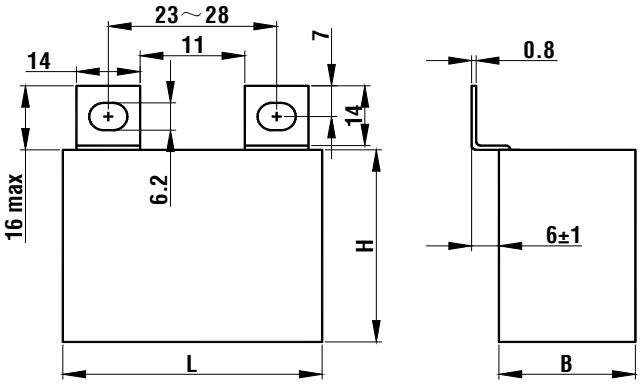
Electrical data

Reference standards	IEC 61071 , IEC 60068 , RoHS compliance.
Degree of protection	IP00
Rated capacitance (C_N)	0.047µF ... 7.5µF
Rated voltage (U_{NDC})	700V ... 3000V
Standard capacitance tolerance	K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)	≤ $5.0 \cdot 10^{-4}$
Test voltage between terminals U_{TT}	1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}	4000 VAC, 10s
Insulation Resistance	30000s but need not exceed 30GW (typical value), after 1 minute of electrification at 100Vdc (25 ± 5°C).
Self inductance	1nH/mm of fixing pitch
Operating temperature range (case)	–40 °C ... +105°C
Max. permissible ambient temperature	+85°C, operation at rated power, rated current and natural cooling
Storage temperature Θ_{stg}	–40 ... +105 °C
Climatic category	40/105/56
Capacitance deviation	in the operating Temperature range of -40 to +85 °C,±1.5% max on capacitance value measured at +20 °C
Damp heat test - Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
- Performances	Capacitance change : ≤ ± 5% tg δ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime	100 000 h at U_{NDC} @ Θ_{hs} 85°C 30 000 h at U_{RMS} @ Θ_{hs} 85°C
Capacitance drop at end of life	-3% (typical)
Fit rate	50 (100 000 h at Θ_{hs} 85°C)
Installation	Whatever position assuring correct heat dissipation. Arrangement of many components with box walls in contact not admitted; suggested minimum distance between side by side elements ≥1/8 of the box thickness.

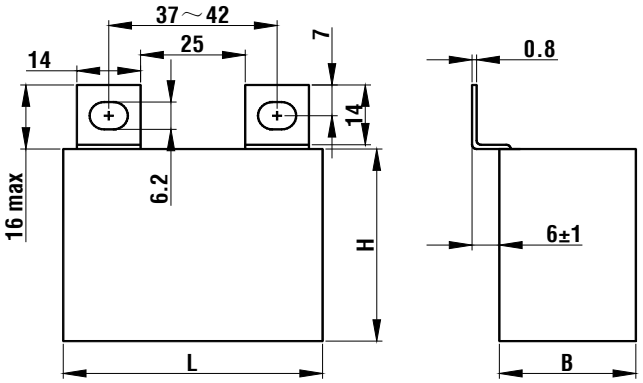
Designs



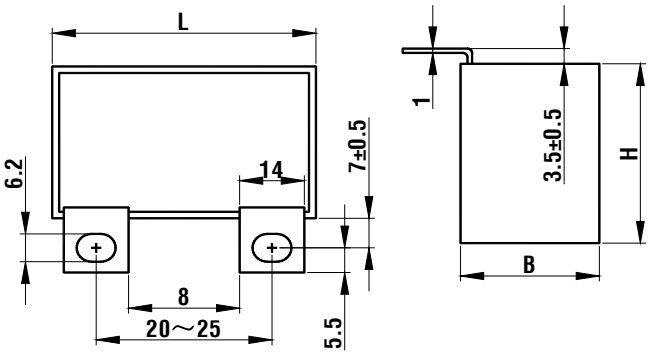
Designs A08



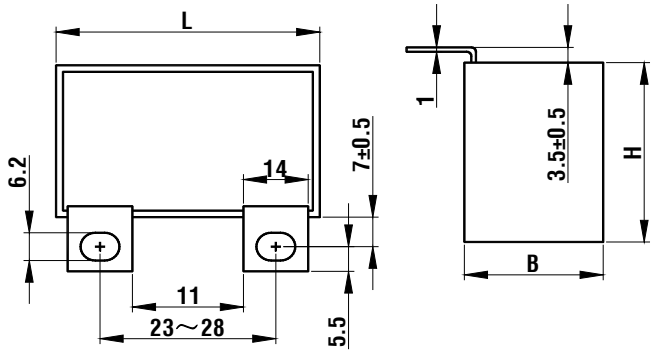
Designs A11



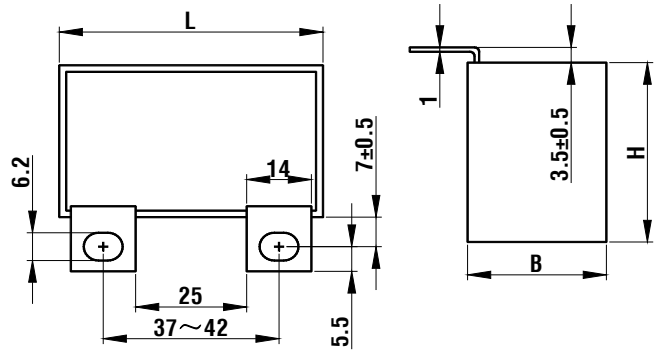
Designs A25



Designs B08



Designs B11



Designs B25

KS2 Series

U_N 700V Us 1050V Urms 400V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.68	42	17	28	550	374	5.6	12	A08	KS2701K684A080
	42	17	28	550	374	5.6	12	A11	KS2701K684A110
	42	17	28	550	374	5.6	12	B08	KS2701K684B080
	42	17	28	550	374	5.6	12	B11	KS2701K684B110
1.0	42	17	28	550	550	4.2	14	A08	KS2701K105A080
	42	17	28	550	550	4.2	14	A11	KS2701K105A110
	42	17	28	550	550	4.2	14	B08	KS2701K105B080
	42	17	28	550	550	4.2	14	B11	KS2701K105B110
1.5	42	20	39	550	825	3.4	18	A08	KS2701K155A080
	42	20	39	550	825	3.4	18	A11	KS2701K155A110
	42	20	39	550	825	3.4	18	B08	KS2701K155B080
	42	20	39	550	825	3.4	18	B11	KS2701K155B110
2.0	42	20	39	550	1100	2.8	22	A08	KS2701K205A080
	42	20	39	550	1100	2.8	22	A11	KS2701K205A110
	42	20	39	550	1100	2.8	22	B08	KS2701K205B080
	42	20	39	550	1100	2.8	22	B11	KS2701K205B110
2.5	42	28	37	550	1375	2.3	24	A08	KS2701K255A080
	42	28	37	550	1375	2.3	24	A11	KS2701K255A110
	42	28	37	550	1375	2.3	24	B08	KS2701K255B080
	42	28	37	550	1375	2.3	24	B11	KS2701K255B110
3.0	42	30	45	550	1650	2.1	25	A08	KS2701K305A080
	42	30	45	550	1650	2.1	25	A11	KS2701K305A110
	42	30	45	550	1650	2.1	25	B08	KS2701K305B080
	42	30	45	550	1650	2.1	25	B11	KS2701K305B110
3.5	42	30	45	550	1925	1.9	26	A08	KS2701K355A080
	42	30	45	550	1925	1.9	26	A11	KS2701K355A110
	42	30	45	550	1925	1.9	26	B08	KS2701K355B080
	42	30	45	550	1925	1.9	26	B11	KS2701K355B110
4.7	57	30	45	350	1645	2.3	27	A11	KS2701K475A110
	57	30	45	350	1645	2.3	27	A25	KS2701K475A250
	57	30	45	350	1645	2.3	27	B11	KS2701K475B110
	57	30	45	350	1645	2.3	27	B25	KS2701K475B250
6.8	57	35	50	350	2380	1.9	28	A11	KS2701K685A110
	57	35	50	350	2380	1.9	28	A25	KS2701K685A250
	57	35	50	350	2380	1.9	28	B11	KS2701K685B110
	57	35	50	350	2380	1.9	28	B25	KS2701K685B250
7.5	57	35	50	350	2625	1.8	30	A11	KS2701K755A110
	57	35	50	350	2625	1.8	30	A25	KS2701K755A250
	57	35	50	350	2625	1.8	30	B11	KS2701K755B110
	57	35	50	350	2625	1.8	30	B25	KS2701K755B250

U_N 850V Us 1300V Urms 450V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.68	42	17	28	610	415	4.5	13	A08	KS2851K684A080
	42	17	28	610	415	4.5	13	A11	KS2851K684A110
	42	17	28	610	415	4.5	13	B08	KS2851K684B080
	42	17	28	610	415	4.5	13	B11	KS2851K684B110
0.82	42	17	28	610	500	3.8	14	A08	KS2851K824A080
	42	17	28	610	500	3.8	14	A11	KS2851K824A110
	42	17	28	610	500	3.8	14	B08	KS2851K824B080
	42	17	28	610	500	3.8	14	B11	KS2851K824B110
1.0	42	20	39	610	610	3.7	18	A08	KS2851K105A080
	42	20	39	610	610	3.7	18	A11	KS2851K105A110
	42	20	39	610	610	3.7	18	B08	KS2851K105B080
	42	20	39	610	610	3.7	18	B11	KS2851K105B110
1.5	42	20	39	610	915	2.5	22	A08	KS2851K155A080
	42	20	39	610	915	2.5	22	A11	KS2851K155A110
	42	20	39	610	915	2.5	22	B08	KS2851K155B080
	42	20	39	610	915	2.5	22	B11	KS2851K155B110
2.0	42	28	37	610	1220	1.8	24	A08	KS2851K205A080
	42	28	37	610	1220	1.8	24	A11	KS2851K205A110
	42	28	37	610	1220	1.8	24	B08	KS2851K205B080
	42	28	37	610	1220	1.8	24	B11	KS2851K205B110
2.5	42	30	45	610	1525	1.6	25	A08	KS2851K255A080
	42	30	45	610	1525	1.6	25	A11	KS2851K255A110
	42	30	45	610	1525	1.6	25	B08	KS2851K255B080
	42	30	45	610	1525	1.6	25	B11	KS2851K255B110
3.0	42	30	45	610	1830	1.4	26	A08	KS2851K305A080
	42	30	45	610	1830	1.4	26	A11	KS2851K305A110
	42	30	45	610	1830	1.4	26	B08	KS2851K305B080
	42	30	45	610	1830	1.4	26	B11	KS2851K305B110
3.5	57	30	45	380	1330	2.0	24	A11	KS2851K355A110
	57	30	45	380	1330	2.0	24	A25	KS2851K355A250
	57	30	45	380	1330	2.0	24	B11	KS2851K355B110
	57	30	45	380	1330	2.0	24	B25	KS2851K355B250
4.0	57	30	45	380	1520	1.8	26	A11	KS2851K405A110
	57	30	45	380	1520	1.8	26	A25	KS2851K405A250
	57	30	45	380	1520	1.8	26	B11	KS2851K405B110
	57	30	45	380	1520	1.8	26	B25	KS2851K405B250
4.7	57	35	50	380	1786	1.6	28	A11	KS2851K475A110
	57	35	50	380	1786	1.6	28	A25	KS2851K475A250
	57	35	50	380	1786	1.6	28	B11	KS2851K475B110
	57	35	50	380	1786	1.6	28	B25	KS2851K475B250
5.5	57	35	50	380	2090	1.4	29	A11	KS2851K555A110
	57	35	50	380	2090	1.4	29	A25	KS2851K555A250
	57	35	50	380	2090	1.4	29	B11	KS2851K555B110
	57	35	50	380	2090	1.4	29	B25	KS2851K555B250

U_N 1000V Us 1500V Urms 500V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.47	42	17	28	720	338	5.3	12	A08	KS2102K474A080
	42	17	28	720	338	5.3	12	A11	KS2102K474A110
	42	17	28	720	338	5.3	12	B08	KS2102K474B080
	42	17	28	720	338	5.3	12	B11	KS2102K474B110
0.68	42	17	28	720	490	3.8	14	A08	KS2102K684A080
	42	17	28	720	490	3.8	14	A11	KS2102K684A110
	42	17	28	720	490	3.8	14	B08	KS2102K684B080
	42	17	28	720	490	3.8	14	B11	KS2102K684B110
1.0	42	20	39	720	720	3.1	17	A08	KS2102K105A080
	42	20	39	720	720	3.1	17	A11	KS2102K105A110
	42	20	39	720	720	3.1	17	B08	KS2102K105B080
	42	20	39	720	720	3.1	17	B11	KS2102K105B110
1.2	42	20	39	720	864	2.6	20	A08	KS2102K125A080
	42	20	39	720	864	2.6	20	A11	KS2102K125A110
	42	20	39	720	864	2.6	20	B08	KS2102K125B080
	42	20	39	720	864	2.6	20	B11	KS2102K125B110
1.5	42	28	37	720	1080	2.0	23	A08	KS2102K155A080
	42	28	37	720	1080	2.0	23	A11	KS2102K155A110
	42	28	37	720	1080	2.0	23	B08	KS2102K155B080
	42	28	37	720	1080	2.0	23	B11	KS2102K155B110
2.0	42	30	45	720	1440	1.7	24	A08	KS2102K205A080
	42	30	45	720	1440	1.7	24	A11	KS2102K205A110
	42	30	45	720	1440	1.7	24	B08	KS2102K205B080
	42	30	45	720	1440	1.7	24	B11	KS2102K205B110
2.2	42	30	45	720	1584	1.6	24	A08	KS2102K225A080
	42	30	45	720	1584	1.6	24	A11	KS2102K225A110
	42	30	45	720	1584	1.6	24	B08	KS2102K225B080
	42	30	45	720	1584	1.6	24	B11	KS2102K225B110
2.5	57	30	45	450	1125	2.2	25	A11	KS2102K255A110
	57	30	45	450	1125	2.2	25	A25	KS2102K255A250
	57	30	45	450	1125	2.2	25	B11	KS2102K255B110
	57	30	45	450	1125	2.2	25	B25	KS2102K255B250
3.0	57	30	45	450	1350	1.9	24	A11	KS2102K305A110
	57	30	45	450	1350	1.9	24	A25	KS2102K305A250
	57	30	45	450	1350	1.9	24	B11	KS2102K305B110
	57	30	45	450	1350	1.9	24	B25	KS2102K305B250
3.5	57	35	50	450	1575	1.7	26	A11	KS2102K355A110
	57	35	50	450	1575	1.7	26	A25	KS2102K355A250
	57	35	50	450	1575	1.7	26	B11	KS2102K355B110
	57	35	50	450	1575	1.7	26	B25	KS2102K355B250
4.0	57	35	50	450	1800	1.6	28	A11	KS2102K405A110
	57	35	50	450	1800	1.6	28	A25	KS2102K405A250
	57	35	50	450	1800	1.6	28	B11	KS2102K405B110
	57	35	50	450	1800	1.6	28	B25	KS2102K405B250

U_N 1200V Us 1800V Urms 550V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.33	42	17	28	830	274	6.4	12	A08	KS2122K334A080
	42	17	28	830	274	6.4	12	A11	KS2122K334A110
	42	17	28	830	274	6.4	12	B08	KS2122K334B080
	42	17	28	830	274	6.4	12	B11	KS2122K334B110
0.47	42	17	28	830	390	4.6	15	A08	KS2122K474A080
	42	17	28	830	390	4.6	15	A11	KS2122K474A110
	42	17	28	830	390	4.6	15	B08	KS2122K474B080
	42	17	28	830	390	4.6	15	B11	KS2122K474B110
0.68	42	20	39	830	564	3.8	17	A08	KS2122K684A080
	42	20	39	830	564	3.8	17	A11	KS2122K684A110
	42	20	39	830	564	3.8	17	B08	KS2122K684B080
	42	20	39	830	564	3.8	17	B11	KS2122K684B110
1.0	42	20	39	830	830	2.6	22	A08	KS2122K105A080
	42	20	39	830	830	2.6	22	A11	KS2122K105A110
	42	20	39	830	830	2.6	22	B08	KS2122K105B080
	42	20	39	830	830	2.6	22	B11	KS2122K105B110
1.2	42	28	37	830	996	2.1	23	A08	KS2122K125A080
	42	28	37	830	996	2.1	23	A11	KS2122K125A110
	42	28	37	830	996	2.1	23	B08	KS2122K125B080
	42	28	37	830	996	2.1	23	B11	KS2122K125B110
1.5	42	30	45	830	1245	1.8	25	A08	KS2122K155A080
	42	30	45	830	1245	1.8	25	A11	KS2122K155A110
	42	30	45	830	1245	1.8	25	B08	KS2122K155B080
	42	30	45	830	1245	1.8	25	B11	KS2122K155B110
2.0	57	30	45	520	1040	2.3	24	A11	KS2122K205A110
	57	30	45	520	1040	2.3	24	A25	KS2122K205A250
	57	30	45	520	1040	2.3	24	B11	KS2122K205B110
	57	30	45	520	1040	2.3	24	B25	KS2122K205B250
2.2	57	30	45	520	1144	2.2	24	A11	KS2122K225A110
	57	30	45	520	1144	2.2	24	A25	KS2122K225A250
	57	30	45	520	1144	2.2	24	B11	KS2122K225B110
	57	30	45	520	1144	2.2	24	B25	KS2122K225B250
2.5	57	35	50	520	1300	2.0	25	A11	KS2122K255A110
	57	35	50	520	1300	2.0	25	A25	KS2122K255A250
	57	35	50	520	1300	2.0	25	B11	KS2122K255B110
	57	35	50	520	1300	2.0	25	B25	KS2122K255B250
3.0	57	35	50	520	1560	1.7	26	A11	KS2122K305A110
	57	35	50	520	1560	1.7	26	A25	KS2122K305A250
	57	35	50	520	1560	1.7	26	B11	KS2122K305B110
	57	35	50	520	1560	1.7	26	B25	KS2122K305B250
3.3	57	35	50	520	1716	1.6	27	A11	KS2122K335A110
	57	35	50	520	1716	1.6	27	A25	KS2122K335A250
	57	35	50	520	1716	1.6	27	B11	KS2122K335B110
	57	35	50	520	1716	1.6	27	B25	KS2122K335B250

U_N 1600V Us 2400V Urms 630V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.22	42	17	28	930	205	7.4	10	A08	KS2162K224A080
	42	17	28	930	205	7.4	10	A11	KS2162K224A110
	42	17	28	930	205	7.4	10	B08	KS2162K224B080
	42	17	28	930	205	7.4	10	B11	KS2162K224B110
0.33	42	17	28	930	307	5.1	12	A08	KS2162K334A080
	42	17	28	930	307	5.1	12	A11	KS2162K334A110
	42	17	28	930	307	5.1	12	B08	KS2162K334B080
	42	17	28	930	307	5.1	12	B11	KS2162K334B110
0.47	42	20	39	930	437	4.2	15	A08	KS2162K474A080
	42	20	39	930	437	4.2	15	A11	KS2162K474A110
	42	20	39	930	437	4.2	15	B08	KS2162K474B080
	42	20	39	930	437	4.2	15	B11	KS2162K474B110
0.56	42	20	39	930	521	3.5	18	A08	KS2162K564A080
	42	20	39	930	521	3.5	18	A11	KS2162K564A110
	42	20	39	930	521	3.5	18	B08	KS2162K564B080
	42	20	39	930	521	3.5	18	B11	KS2162K564B110
0.68	42	28	37	930	632	2.7	20	A08	KS2162K684A080
	42	28	37	930	632	2.7	20	A11	KS2162K684A110
	42	28	37	930	632	2.7	20	B08	KS2162K684B080
	42	28	37	930	632	2.7	20	B11	KS2162K684B110
0.75	42	28	37	930	698	2.5	22	A08	KS2162K754A080
	42	28	37	930	698	2.5	22	A11	KS2162K754A110
	42	28	37	930	698	2.5	22	B08	KS2162K754B080
	42	28	37	930	698	2.5	22	B11	KS2162K754B110
1.0	42	30	45	930	930	2.1	24	A08	KS2162K105A080
	42	30	45	930	930	2.1	24	A11	KS2162K105A110
	42	30	45	930	930	2.1	24	B08	KS2162K105B080
	42	30	45	930	930	2.1	24	B11	KS2162K105B110
1.2	57	30	45	580	696	2.9	23	A11	KS2162K125A110
	57	30	45	580	696	2.9	23	A25	KS2162K125A250
	57	30	45	580	696	2.9	23	B11	KS2162K125B110
	57	30	45	580	696	2.9	23	B25	KS2162K125B250
1.5	57	30	45	580	870	2.4	24	A11	KS2162K155A110
	57	30	45	580	870	2.4	24	A25	KS2162K155A250
	57	30	45	580	870	2.4	24	B11	KS2162K155B110
	57	30	45	580	870	2.4	24	B25	KS2162K155B250
2.0	57	35	50	580	1160	1.9	26	A11	KS2162K205A110
	57	35	50	580	1160	1.9	26	A25	KS2162K205A250
	57	35	50	580	1160	1.9	26	B11	KS2162K205B110
	57	35	50	580	1160	1.9	26	B25	KS2162K205B250

U_N 2000V Us 3000V Urms 700V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.10	42	17	28	1370	137	11.9	7	A08	KS2202K104A080
	42	17	28	1370	137	11.9	7	A11	KS2202K104A110
	42	17	28	1370	137	11.9	7	B08	KS2202K104B080
	42	17	28	1370	137	11.9	7	B11	KS2202K104B110
0.15	42	17	28	1370	206	8.0	9	A08	KS2202K154A080
	42	17	28	1370	206	8.0	9	A11	KS2202K154A110
	42	17	28	1370	206	8.0	9	B08	KS2202K154B080
	42	17	28	1370	206	8.0	9	B11	KS2202K154B110
0.22	42	20	39	1370	301	6.6	13	A08	KS2202K224A080
	42	20	39	1370	301	6.6	13	A11	KS2202K224A110
	42	20	39	1370	301	6.6	13	B08	KS2202K224B080
	42	20	39	1370	301	6.6	13	B11	KS2202K224B110
0.33	42	20	39	1370	452	4.3	15	A08	KS2202K334A080
	42	20	39	1370	452	4.3	15	A11	KS2202K334A110
	42	20	39	1370	452	4.3	15	B08	KS2202K334B080
	42	20	39	1370	452	4.3	15	B11	KS2202K334B110
0.47	42	28	37	1370	644	2.9	16	A08	KS2202K474A080
	42	28	37	1370	644	2.9	16	A11	KS2202K474A110
	42	28	37	1370	644	2.9	16	B08	KS2202K474B080
	42	28	37	1370	644	2.9	16	B11	KS2202K474B110
0.56	42	30	45	1370	767	2.6	18	A08	KS2202K564A080
	42	30	45	1370	767	2.6	18	A11	KS2202K564A110
	42	30	45	1370	767	2.6	18	B08	KS2202K564B080
	42	30	45	1370	767	2.6	18	B11	KS2202K564B110
0.68	57	30	45	1000	680	3.6	17	A08	KS2202K684A080
	57	30	45	1000	680	3.6	17	A11	KS2202K684A110
	57	30	45	1000	680	3.6	17	B08	KS2202K684B080
	57	30	45	1000	680	3.6	17	B11	KS2202K684B110
0.82	57	30	45	1000	820	3.1	19	A11	KS2202K824A110
	57	30	45	1000	820	3.1	19	A25	KS2202K824A250
	57	30	45	1000	820	3.1	19	B11	KS2202K824B110
	57	30	45	1000	820	3.1	19	B25	KS2202K824B250
1.0	57	35	50	1000	1000	2.6	20	A11	KS2202K105A110
	57	35	50	1000	1000	2.6	20	A25	KS2202K105A250
	57	35	50	1000	1000	2.6	20	B11	KS2202K105B110
	57	35	50	1000	1000	2.6	20	B25	KS2202K105B250
1.2	57	35	50	1000	1200	2.3	21	A11	KS2202K125A110
	57	35	50	1000	1200	2.3	21	A25	KS2202K125A250
	57	35	50	1000	1200	2.3	21	B11	KS2202K125B110
	57	35	50	1000	1200	2.3	21	B25	KS2202K125B250
1.5	57	35	50	830	1245	2.0	23	A11	KS2202K155A110
	57	35	50	830	1245	2.0	23	A25	KS2202K155A250
	57	35	50	830	1245	2.0	23	B11	KS2202K155B110
	57	35	50	830	1245	2.0	23	B25	KS2202K155B250

U_N 3000V Us 4500V Urms 1000V

Cn (µF)	DIMENSIONS (mm) L	B	H	du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Designs	Ordering code
0.068	42.0	17	28	1780	121	17.2	6	A08	KS2302K683A080
	42.0	17	28	1780	121	17.2	6	A11	KS2302K683A110
	42.0	17	28	1780	121	17.2	6	B08	KS2302K683B080
	42.0	17	28	1780	121	17.2	6	B11	KS2302K683B110
0.10	42.0	17	28	1780	178	11.6	8	A08	KS2302K104A080
	42.0	17	28	1780	178	11.6	8	A11	KS2302K104A110
	42.0	17	28	1780	178	11.6	8	B08	KS2302K104B080
	42.0	17	28	1780	178	11.6	8	B11	KS2302K104B110
0.15	42.0	20	39	1780	267	8.7	10	A08	KS2302K154A080
	42.0	20	39	1780	267	8.7	10	A11	KS2302K154A110
	42.0	20	39	1780	267	8.7	10	B08	KS2302K154B080
	42.0	20	39	1780	267	8.7	10	B11	KS2302K154B110
0.22	42.0	28	37	1780	392	5.3	13	A08	KS2302K224A080
	42.0	28	37	1780	392	5.3	13	A11	KS2302K224A110
	42.0	28	37	1780	392	5.3	13	B08	KS2302K224B080
	42.0	28	37	1780	392	5.3	13	B11	KS2302K224B110
0.27	42.0	30	45	1780	481	4.5	15	A08	KS2302K274A080
	42.0	30	45	1780	481	4.5	15	A11	KS2302K274A110
	42.0	30	45	1780	481	4.5	15	B08	KS2302K274B080
	42.0	30	45	1780	481	4.5	15	B11	KS2302K274B110
0.33	57.0	30	45	1160	383	7.4	15	A11	KS2302K334A080
	57.0	30	45	1160	383	7.4	15	A25	KS2302K334A110
	57.0	30	45	1160	383	7.4	15	B11	KS2302K334B080
	57.0	30	45	1160	383	7.4	15	B25	KS2302K334B110
0.47	57.0	30	45	1160	545	5.2	17	A11	KS2302K474A110
	57.0	30	45	1160	545	5.2	17	A25	KS2302K474A250
	57.0	30	45	1160	545	5.2	17	B11	KS2302K474B110
	57.0	30	45	1160	545	5.2	17	B25	KS2302K474B250
0.56	57.0	30	45	1160	650	4.4	18	A11	KS2302K564A110
	57.0	30	45	1160	650	4.4	18	A25	KS2302K564A250
	57.0	30	45	1160	650	4.4	18	B11	KS2302K564B110
	57.0	30	45	1160	650	4.4	18	B25	KS2302K564B250
0.68	57.0	35	50	1160	789	3.7	20	A11	KS2302K684A110
	57.0	35	50	1160	789	3.7	20	A25	KS2302K684A250
	57.0	35	50	1160	789	3.7	20	B11	KS2302K684B110
	57.0	35	50	1160	789	3.7	20	B25	KS2302K684B250

(1) Maximum values at 100kHz, +60°C for case operating T= +85°C

(2) Typical values at 100kHz.

KS3 Series

Overview

The KS3 series capacitors with double side metallized carrier film with internal series connection and metallized polypropylene film, solvent resistant plastic case with resin sealing (UL 94 V-0)

Application:

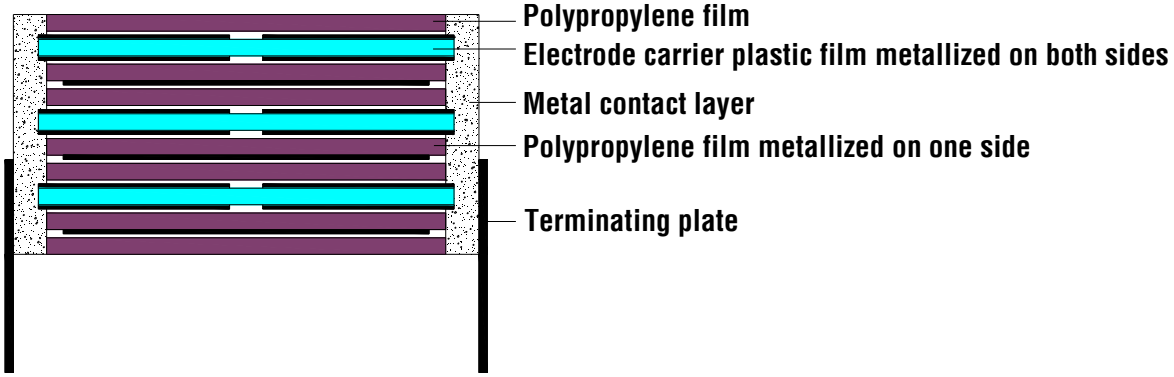
The KS3 series is designed for snubber/pulse applications.
For high pulse and high frequency applications requiring extremely reliable contacts e.g. IGBT-applications

Benefits

Self-healing
Very low dissipation factor
Very high ripple current
Internal series connection
Negative capacitance change versus temperature

Construction

Dielectric: Polypropylene (PP) film.
Capacitor electrodes: Double-sided metallized plastic film.
Protection: Solvent resistant plastic case with resin sealing (UL 94 V-0)
Terminals: Tinned copper wire (lead-free).
Internal construction:



Structure of ordering code

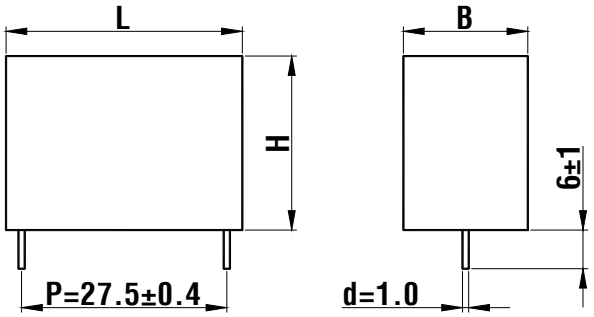
KS3	122	K	474	S42	0
1	2	3	4	5	6

1 Series code
2 Rated voltage: 122 = 12 x 10^2=1200 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 474=47 x 10^4 pF = 0.47 µF (105=10 x 10^5 pF = 1.0 µF)
5 Designs Type
6 Internal use

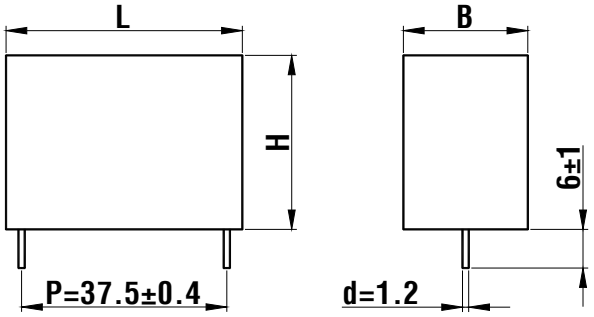
Electrical data

Reference standards		IEC 61071 , IEC 60068 , RoHS compliance.
Degree of protection		IP00
Rated capacitance (C_N)		0.047µF ... 7.5µF
Rated voltage (U_{NDC})		700V ... 2000V
Standard capacitance tolerance		K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)		≤ $5.0 \cdot 10^{-4}$
Test voltage between terminals U_{TT}		1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}		4000 VAC, 10s
Insulation Resistance		30000s but need not exceed 30GW (typical value), after 1 minute of electrification at 100Vdc (25 ± 5°C).
Self inductance		1nH/mm of fixing pitch
Operating temperature range (case)		–40 °C ... +105°C
Max. permissible ambient temperature		+85°C, operation at rated power, rated current and natural cooling
Storage temperature Θstg		–40 ... +105 °C
Climatic category		40/105/56
Capacitance deviation		in the operating Temperature range of -40 to +85 °C,±1.5% max on capacitance value measured at +20 °C
Damp heat test	- Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5% tg δ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 85°C 30 000 h at U_{RMS} @ Θ_{hs} 85°C
Capacitance drop at end of life		-3% (typical)
Fit rate		50 (100 000 h at Θ_{hs} 85°C)
Resistance to soldering heat		
	-Test conditions:	Solder bath temperature= +260±5°C dipping time (with heat screen) ≤4s
	-Performance:	Capacitance change: ≤ ±1% tg δ change : ≤0,0010 at 1kHz Visual inspection No visible damage

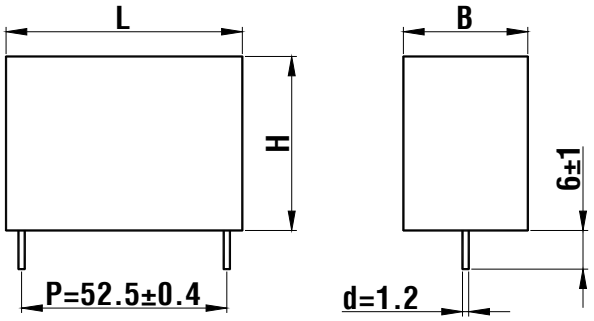
Designs



Designs S31



Designs S42



Designs S57

U_N 700V Us 1050V Urms 400V

Cn (µF)	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.22	31	11	20	27.5	1.0	790	174	7.1	6	KS3701K224S320
0.33	31	13	22	27.5	1.0	790	261	5.2	7	KS3701K334S320
0.47	31	14	25	27.5	1.0	790	371	4.0	8	KS3701K474S320
0.68	31	17	28	27.5	1.0	790	537	3.2	9	KS3701K684S320
0.82	31	18	33	27.5	1.0	790	648	2.8	10	KS3701K824S320
1.0	42	17	28	37.5	1.2	540	540	3.8	10	KS3701K105S420
1.5	42	20	39	37.5	1.2	540	810	2.9	12	KS3701K155S420
2.0	42	20	39	37.5	1.2	540	1080	2.1	14	KS3701K205S420
2.5	42	28	37	37.5	1.2	540	1350	1.7	14	KS3701K255S420
3.5	42	30	45	37.5	1.2	540	1890	1.4	14	KS3701K355S420
4.7	57	30	45	52.5	1.2	340	1598	1.8	14	KS3701K475S570
5.6	57	30	45	52.5	1.2	340	1904	1.6	14	KS3701K565S570
6.8	57	35	50	52.5	1.2	340	2312	1.4	14	KS3701K685S570
7.5	57	35	50	52.5	1.2	340	2550	1.3	14	KS3701K755S570

U_N 850V Us 1300V Urms 450V

Cn (µF)	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.22	31	11	20	27.5	1.0	1180	260	6.2	6	KS3851K224S320
0.33	31	14	25	27.5	1.0	1180	389	4.6	8	KS3851K334S320
0.47	31	17	28	27.5	1.0	1180	555	3.6	9	KS3851K474S320
0.68	31	18	33	27.5	1.0	1180	802	2.8	10	KS3851K684S320
0.82	42	17	28	37.5	1.2	810	664	3.9	10	KS3851K824S420
1.0	42	20	39	37.5	1.2	810	810	3.4	12	KS3851K105S420
1.5	42	20	39	37.5	1.2	810	1215	2.4	14	KS3851K155S420
2.0	42	28	37	37.5	1.2	810	1620	1.7	14	KS3851K205S420
2.5	42	30	45	37.5	1.2	810	2025	1.5	14	KS3851K255S420
3.3	57	30	45	52.5	1.2	510	1683	2.0	14	KS3851K335S420
4.0	57	30	45	52.5	1.2	510	2040	1.7	14	KS3851K405S570
4.7	57	35	50	52.5	1.2	510	2397	1.6	14	KS3851K475S570
5.6	57	35	50	52.5	1.2	510	2856	1.4	14	KS3851K565S570

(1) Maximum values at 100kHz, +60°C for case operating T= +85°C

(2) Typical values at 100kHz.

U_N 1000V Us 1500V Urms 500V

Cn (µF)	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.15	31	11	20	27.5	1.0	1840	276	7.0	6	KS3102K154S320
0.22	32	14	25	52.5	1.2	1840	405	5.2	8	KS3102K224S320
0.33	32	17	28	52.5	1.2	1840	607	3.9	9	KS3102K334S320
0.47	32	18	33	52.5	1.2	1840	865	3.1	10	KS3102K474S320
0.56	42	17	28	37.5	1.2	1260	706	4.3	10	KS3102K564S420
0.68	42	20	39	37.5	1.2	1260	857	3.8	12	KS3102K684S420
1.0	42	20	39	37.5	1.2	1260	1260	2.7	14	KS3102K105S420
1.2	42	28	37	37.5	1.2	1260	1512	2.1	14	KS3102K125S420
1.5	42	30	45	37.5	1.2	1260	1890	1.8	14	KS3102K155S420
2.5	57	30	45	52.5	1.2	790	1975	2.1	14	KS3102K255S570
3.0	57	30	45	52.5	1.2	790	2370	1.8	14	KS3102K305S570
3.5	57	35	50	52.5	1.2	790	2765	1.6	14	KS3102K355S570

U_N 1200V Us 1800V Urms 550V

Cn (µF)	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.10	31	11	20	27.5	1.0	2140	214	9.2	6	KS3122K104S320
0.22	31	14	25	27.5	1.0	2140	471	5.0	9	KS3122K224S320
0.33	31	17	28	27.5	1.0	2140	706	3.7	10	KS3122K334S320
0.47	42	17	28	37.5	1.2	1470	691	4.7	12	KS3122K474S420
0.68	42	20	39	37.5	1.2	1470	1000	3.6	14	KS3122K684S420
1.0	42	28	37	37.5	1.2	1470	1470	2.3	14	KS3122K105S420
1.5	42	30	45	37.5	1.2	1470	2205	1.8	14	KS3122K155S420
2.2	57	30	45	52.5	1.2	920	2024	2.2	14	KS3122K225S570
3.3	57	35	50	52.5	1.2	920	3036	1.6	14	KS3122K335S570

(1) Maximum values at 100 kHz, +60°C for case operating T= +85°C

(2) Typical values at 100 kHz.

U_N 1600V Us 2400V Urms 630V

Cn (µF)	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.068	31	11	20	27.5	1.0	3680	250	10.6	5	KS3162K683S320
0.10	31	13	22	27.5	1.0	3680	368	7.7	7	KS3162K104S320
0.15	31	14	25	27.5	1.0	3680	552	5.6	9	KS3162K154S320
0.22	31	17	28	27.5	1.0	3680	810	4.2	10	KS3162K224S320
0.33	42	17	28	37.5	1.2	2310	762	5.3	12	KS3162K334S420
0.47	42	20	39	37.5	1.2	2520	1184	4.0	14	KS3162K474S420
0.68	42	28	37	37.5	1.2	2520	1714	2.6	14	KS3162K684S420
1.0	42	30	45	37.5	1.2	2520	2520	2.0	14	KS3162K105S420
1.5	57	30	45	52.5	1.2	1580	2370	2.4	14	KS3162K155S570
2.0	57	35	50	52.5	1.2	1580	3160	1.9	14	KS3162K205S570

U_N 2000V Us 3000V Urms 700V

	DIMENSIONS (mm)					du/dt (V/µs)	Ipk (A)	ESR(2) (mΩ)	Imax(1) (A)	Ordering code
	L	B	H	P	d					
0.047	31	11	20	27.5	1.0	5780	272	11.7	5	KS3202K473S320
0.068	31	13	22	27.5	1.0	5780	393	8.7	6	KS3202K683S320
0.082	31	14	25	27.5	1.0	5780	474	7.4	7	KS3202K823S320
0.10	31	17	28	27.5	1.0	5780	578	6.3	8	KS3202K104S320
0.15	31	18	33	27.5	1.0	5780	867	4.6	10	KS3202K154S320
0.18	42	17	28	37.5	1.2	3960	713	6.8	10	KS3202K184S420
0.22	42	20	39	37.5	1.2	3960	871	5.8	12	KS3202K224S420
0.33	42	20	39	37.5	1.2	3960	1307	4.1	14	KS3202K334S420
0.47	42	28	37	37.5	1.2	3960	1861	2.9	14	KS3202K474S420
0.68	42	30	45	37.5	1.2	3960	2693	2.2	14	KS3202K684S420
1.0	57	30	45	52.5	1.2	2480	2480	2.7	14	KS3202K105S570
1.2	57	35	50	52.5	1.2	2930	3516	2.2	14	KS3202K125S570

(1) Maximum values at 100 kHz, +60°C for case operating T= +85°C

(2) Typical values at 100 kHz.

KS4 Series

Overview

The KS4 series capacitors with double side metallized carrier film with internal series connection and metalized polypropylene film, polyester wrapping with epoxy resin fill.

Application:

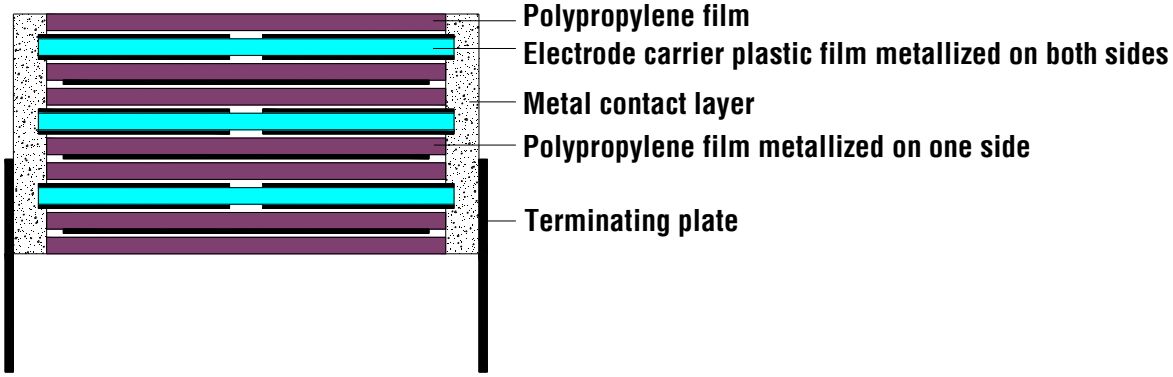
The KS4 series is designed for snubber/pulse applications. For high pulse and high frequency applications requiring extremely reliable contacts e.g.

Benefits

Self-healing
Very low dissipation factor
Very high ripple current
Internal series connection
Negative capacitance change versus temperature

Construction

Dielectric: Polypropylene (PP) film.
Capacitor electrodes: Double-sided metallized plastic film.
Protection: Polyester wrapping with epoxy resin fill.
Terminals: Tinned copper nut.
Internal construction:



Structure of ordering code

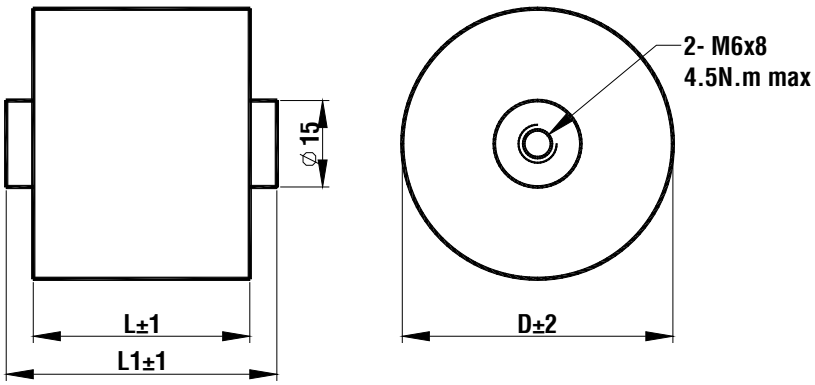
KS4	122	K	205	M37	0
1	2	3	4	5	6

1 Series code
2 Rated voltage: 122 = 12 x 10^2=1200 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 205=20 x 10^5 pF = 2.0 µF (504=50 x 10^4 pF = 0.50 µF)
5 Designs Type
6 Internal use

Reference standards	IEC 61071, IEC 60068, RoHS compliance.
Degree of protection	IP00
Rated capacitance (C_N)	0.50µF ... 10 µF
Rated voltage (U_{NDC})	1000V ... 2000V
Standard capacitance tolerance	K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)	≤ $5.0 \cdot 10^{-4}$
Test voltage between terminals U_{TT}	1.5 U_{NDC}, 10s
Test voltage between terminals and case U_{TC}	4000 VAC, 10s
Insulation Resistance	30000s but need not exceed 30GW (typical value), after 1 minute of electrification at 100Vdc (25 ± 5°C).
Operating temperature range (case)	–40 °C ... +85°C
Max. permissible ambient temperature	+70°C, operation at rated power, rated current and natural cooling
Storage temperature Θ stg	–40 ... +85 °C
Climatic category	40/85/56
Capacitance deviation	in the operating Temperature range of -40 to +85 °C,±1.5% max on capacitance value measured at +20 °C

Damp heat test	- Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5% tg δ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 70°C 30 000 h at U_{RMS} @ Θ_{hs} 70°C
Fit rate		50 (100 000 h at Θ_{hs} 70°C)

KS4 Designs



Designs	L	L1
M37	37	50
M47	47	60

KS4 U_{NDC} 1000V Urms 400V Us 1500V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
1.5	42	37	50	700	1050	1.1	40	KS4102K155M370
2.0	47	37	50	700	1400	1.1	45	KS4102K205M370
3.0	57	37	50	700	2100	1.0	60	KS4102K305M370
4.0	65	37	50	700	2800	1.0	68	KS4102K405M370
5.0	72	37	50	700	3500	1.0	80	KS4102K505M370
7.5	71	47	60	500	3750	0.9	80	KS4102K755M470
10	81	47	60	500	5000	0.9	90	KS4102K106M470

KS4 U_{NDC} 1200V Urms 500V Us 1800V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
1.0	44	37	50	800	800	1.5	40	KS4122K105M370
2.0	49	37	50	800	1600	1.2	50	KS4122K205M370
3.0	60	37	50	800	2400	1.1	65	KS4122K305M370
4.0	68	37	50	800	3200	1.1	75	KS4122K405M370
5.0	75	37	50	800	4000	1.0	85	KS4122K505M370
6.0	66	47	60	550	3300	1.4	75	KS4122K605M470
8.0	76	47	60	550	4400	1.2	85	KS4122K805M470

KS4 U_{NDC} 2000V Urms 700V Us 3000V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
0.50	42	37	50	1500	750	1.5	36	KS4202K504M370
1.0	55	37	50	1500	1500	1.3	50	KS4202K105M370
1.5	66	37	50	1500	2250	1.2	65	KS4202K155M370
2.0	76	37	50	1500	3000	1.1	80	KS4202K205M370
2.5	68	47	60	1000	2500	1.3	70	KS4202K255M470
3.0	75	47	60	1000	3000	1.2	75	KS4202K305M470
4.0	85	47	60	1000	4000	1.1	85	KS4202K405M470

KD1~KD4 Series

Overview

The KD1~KD4 Series is a polypropylene metallized film with cylindrical aluminium can type filled with resin, screw terminals and plastic deck.

Application:

The KD1~KD4 series is designed for DC-link applications.
KD1 series, the voltage 700VDC to 800VDC, Some typical examples of DC-Link applications are as follows: 380VAC converters and UPS, etc.
KD2 series, the voltage 1000VDC to 1300VDC, Some typical examples of DC-Link applications are as follows: SVG, wind power, solar power, High voltage converters, 690VAC mines converters, power distribution, etc.
KD3 series, the voltage 1800VDC to 2000VDC, Some typical examples of DC-Link applications are as follows: High voltage converters, 1140VAC mines converters, SVG, etc.
KD4 series, the voltage 2600VDC to 3000VDC, Some typical examples of DC-Link applications are as follows:
3300VAC converters and wind power, SVG, etc.

Benefits

- self-healing
- Low losses
- High ripple current
- High capacitance density
- Long lifetime

Construction and general data

Characteristics

Standard capacitance tolerance	K: ±10%
Dielectric dissipation factor (tan δ_0)	2×10^{-4}
Minimum temperature Θ min.	–40 °C
Maximum temperature Θ max.	+ 70 °C
Storage temperature Θ stg	–40 ... +85 °C
Maximum hotspot temperature Θhs	+70 °C
Climatic category	40/70/56
Permissible Relative Humidity	Annual average ≤ 70%; 85% on 30 days/year randomly distributed throughout the year. Dewing not admissible.
Maximum altitude	2000 m above sea level (derating curves available upon request)
Expected lifetime	100 000 h at U_{NDC} @ Θ_{hs} 70°C
Capacitance drop at end of life	-10% (typical)
Fit rate	50 (100 000 h at Θ_{hs} 70°C)

Reference standards

IEC 61071 , IEC 60068 , UL 810
RoHS compliance

Test data

Test voltage between terminals	U_{TT} 1.5 U_{NDC} , 10s
Test voltage between terminals and case	U_{TC} (1.5 x U_{NDC} + 1000) VAC, 10s
Dissipation factor tan δ (100 Hz)	≤ $2.0 \bullet 10^{-3}$
Insulation Resistance	Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Life test According to	IEC 61071

Design data

Impregnation Resin filling:	Non PCB, dry type
Protection	Aluminium case with or without, threaded bolt M12 Plastic deck flame retardant execution UL 94 V–0 Thermosetting resin sealing UL 94 V–0 compliant
Cooling	Naturally air-cooled (or forced air cooling)
Degree of protection	Indoor mounting
Installation	Any position
Max. torque (case)	M12 stud 8 Nm
Max. torque terminal	internal thread M6: 4 Nm internal thread M8: 7 Nm threaded stud M8: 8 Nm

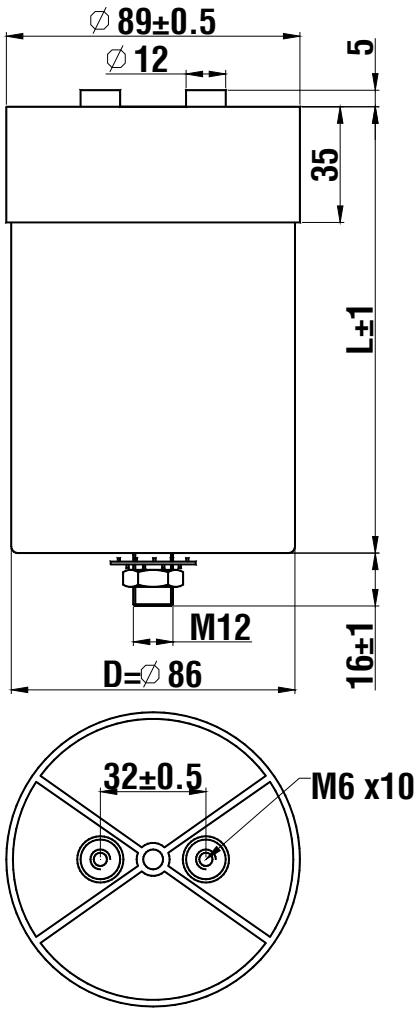
Over-Voltage (IEC 61071)

1.1 x U_{NDC} for maximum 8 Hour per day
1.15 x U_{NDC} for maximum 30 minimum per day
1.2 x U_{NDC} for maximum 5 minimum per day
1.3 x U_{NDC} for maximum 1 minimum per day
1.5 x U_{NDC} for 30 ms no more than 1000 times

Structure of ordering code

KD1	112	K	427	D01	0
1	2	3	4	5	6

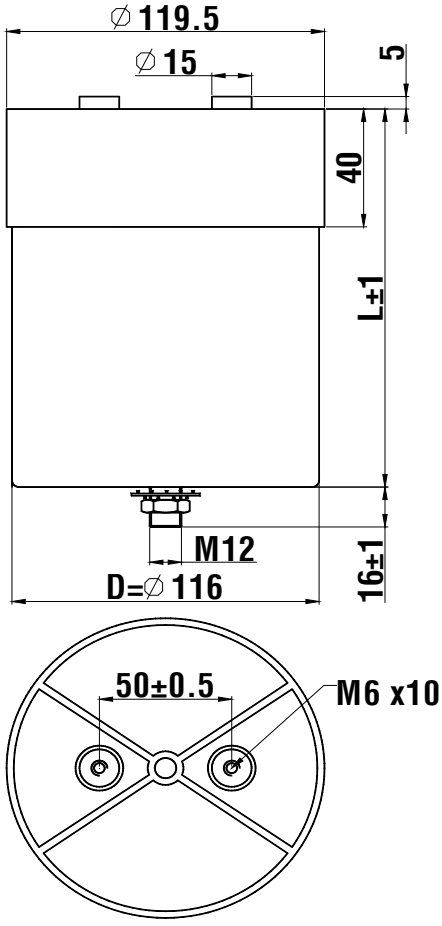
1 Series code
2 Rated voltage: 112 = 11 x 10^2=1100 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 427=42 x 10^7 pF = 420 µF (474=47 x 10^4 pF = 0.47 µF)
5 Designs Type
6 Internal use



Designs D01

Capacitors with a can diameter of 86mm

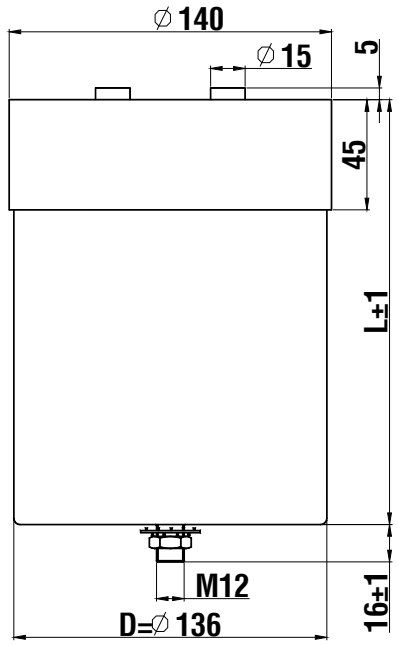
an material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	75A
K	38mm
L	20mm

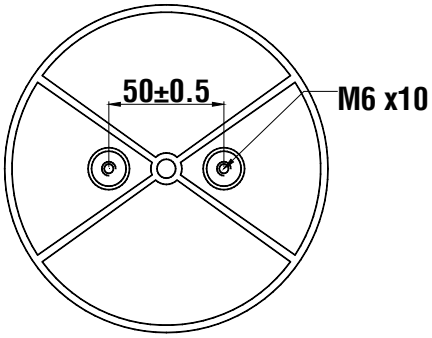


Designs D02

Capacitors with a can diameter of 116mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	100A
K	53mm
L	35mm





Designs D03

Capacitors with a can diameter of 136mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	100A
K	53mm
L	35mm

U_{NDC} 700V Us 1050V Ur 200V U_{TT} 1050V/10s U_{TC} 3000VAC/10s

Cn (µF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
680	60	2.0	6.1	1.8	4.5	60	167	86	120	0.9	KD1701K687D010
800	55	2.4	7.2	2.1	4.0	70	196	86	144	1.0	KD1701K807D010
1000	55	2.0	6.0	2.6	3.4	80	245	86	174	1.2	KD1701K108D010
1200	75	3.6	10.8	1.2	3.4	60	294	116	124	1.7	KD1701K128D020
1300	75	3.9	11.7	1.1	2.6	60	319	86	225	1.6	KD1701K138D010
1500	75	4.5	13.5	1.3	3.1	70	368	116	144	1.9	KD1701K158D020
1800	85	5.4	16.2	0.9	3.0	60	441	136	125	2.3	KD1701K188D030
1900	75	3.8	11.4	1.5	2.6	80	466	116	174	2.3	KD1701K198D020
2100	85	6.3	18.9	1.0	2.6	70	515	136	145	2.7	KD1701K218D030
2500	100	7.5	22.5	0.7	2.1	60	613	116	228	3.0	KD1701K258D020
3500	100	10.5	31.5	0.6	1.8	60	858	136	230	4.1	KD1701K358D030
5400	100	10.8	32.4	0.7	1.3	80	1323	136	330	5.7	KD1701K548D030

1.Imax @ Θ_A 40°C@10kHz, *that lead to a* ΔT *of* ~ 70°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

U_{NDC} 800V Us 1200V Ur 200V U_{TT} 1200V/10s U_{TC} 3000VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
550	55	2.2	6.6	2.0	4.5	60	176	86	120	0.9	KD1801K557D010
650	55	2.0	5.9	2.3	4.0	70	208	86	144	1.0	KD1801K657D010
800	55	2.4	7.2	2.8	3.4	80	256	86	174	1.2	KD1801K807D010
1000	75	4.0	12.0	1.2	3.4	60	320	116	124	1.7	KD1801K108D020
1100	75	4.4	13.2	1.1	2.6	60	352	86	225	1.6	KD1801K118D010
1200	75	3.6	10.8	1.4	3.1	70	384	116	144	2.0	KD1801K128D020
1400	80	5.6	16.8	1.0	3.0	60	448	136	125	2.3	KD1801K148D030
1500	75	4.5	13.5	1.7	2.6	80	480	116	174	2.3	KD1801K158D020
1700	80	5.1	15.3	1.1	2.6	70	544	136	145	2.7	KD1801K178D030
2000	100	8.0	24.0	0.8	2.1	60	640	116	228	3.0	KD1801K208D020
2800	100	11.2	33.6	0.6	1.8	60	896	136	230	4.1	KD1801K288D030
4300	100	12.9	38.7	0.8	1.3	80	1376	136	330	5.7	KD1801K438D030

U_{NDC} 1000V Us 1500V Ur 250V U_{TT} 1500V/10s U_{TC} 3500VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
400	50	2.0	6.0	2.3	4.5	60	200	86	120	0.9	KD2102K407D010
470	75	4.2	12.7	0.9	3.9	45	235	86	144	1.1	KD2102K477D010
500	50	2.0	6.0	2.6	4.0	70	250	86	144	1.0	KD2102K507D010
590	75	4.1	12.4	1.1	3.3	50	295	86	174	1.3	KD2102K597D010
600	50	1.8	5.4	3.2	3.4	80	300	86	174	1.2	KD2102K607D010
750	70	3.8	11.3	1.4	3.4	60	375	116	124	1.7	KD2102K757D020
800	75	4.0	12.0	1.3	2.6	60	400	86	225	1.6	KD2102K807D010
900	70	3.6	10.8	1.6	3.1	70	450	116	144	2.0	KD2102K907D020
1100	75	5.5	16.5	1.0	3.0	60	550	136	125	2.3	KD2102K118D030
1200	70	3.6	10.8	1.8	2.6	80	600	116	174	2.2	KD2102K128D020
1300	75	5.2	15.6	1.2	2.6	70	650	136	145	2.6	KD2102K138D030
1500	100	7.5	22.5	0.8	2.1	60	750	116	228	3.0	KD2102K158D020
2100	100	10.5	31.5	0.7	1.8	60	1050	136	230	4.1	KD2102K218D030
3200	100	9.6	28.8	0.9	1.3	80	1600	136	330	5.7	KD2102K328D030

1.Imax @ Θ_A 40°C@10kHz, *that lead to a* ΔT *of* ~ 70°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

U_{NDC} 1100V Us 1650V Ur 250V U_{TT} 1650V/10s U_{TC} 3500VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
330	50	2.0	5.9	2.5	4.5	60	200	86	120	0.9	KD2112K337D010
420	75	4.2	12.6	1.0	3.9	45	254	86	155	1.0	KD2112K427D010
420	75	4.2	12.6	1.0	3.9	45	254	86	144	1.0	KD2112K427D011
420	50	2.1	6.3	2.6	4.1	65	254	86	136	1.0	KD2112K427D012
420	50	2.1	6.3	2.8	4.0	70	254	86	144	1.0	KD2112K427D013
500	75	4.0	12.0	1.1	3.3	50	303	86	174	1.2	KD2112K507D010
510	50	2.0	6.1	3.4	3.4	80	309	86	174	1.2	KD2112K517D010
600	65	3.6	10.8	1.5	3.4	60	363	116	124	1.7	KD2112K607D020
650	75	3.9	11.7	1.4	2.6	60	393	86	225	1.6	KD2112K657D010
680	75	3.9	11.7	1.4	2.6	60	411	86	225	1.6	KD2112K687D010
720	65	3.6	10.8	1.7	3.1	70	436	116	144	2.0	KD2112K727D020
730	90	7.5	22.5	0.8	3.0	50	442	116	148	2.1	KD2112K737D020
900	72	5.0	15.0	1.1	3.0	60	545	136	125	2.3	KD2112K877D030
950	65	3.8	11.4	2.0	2.6	80	575	116	174	2.3	KD2112K957D020
1100	75	5.5	16.5	1.2	2.6	70	666	136	145	2.6	KD2112K118D030
1200	100	7.2	21.6	0.9	2.1	60	726	116	228	3.0	KD2112K128D020
1700	100	10.2	30.6	0.7	1.8	60	1029	136	230	4.1	KD2112K178D030
2000	100	10.3	30.9	0.7	1.8	60	1210	136	230	4.1	KD2112K208D030
2600	100	10.4	31.2	0.9	1.3	80	1573	136	330	5.7	KD2112K268D030
3060	120	17	51	0.6	1.3	60	1850	136	335	6.0	KD2112K308D030

U_{NDC} 1200V Us 1800V Ur 300V U_{TT} 1800V/10s U_{TC} 3500VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
300	75	3.6	10.8	1.1	3.9	45	216	86	144	1.1	KD2122K307D010
330	50	2.0	5.9	2.9	4.0	70	238	86	144	1.0	KD2122K337D010
400	75	3.6	10.8	1.2	3.3	50	288	86	174	1.3	KD2122K407D010
410	50	1.6	4.9	3.5	3.4	80	295	86	174	1.2	KD2122K417D010
470	75	4.0	12.0	1.5	2.6	60	338	86	225	1.6	KD2122K477D010
500	65	3.5	10.5	1.5	3.4	60	360	116	124	1.7	KD2122K507D020
600	75	3.9	11.7	1.6	2.6	60	396	86	225	1.6	KD2122K607D010
600	65	3.6	10.8	1.7	3.1	70	432	116	144	2.0	KD2122K607D020
720	75	5.0	15.1	1.1	3.0	60	518	136	125	2.3	KD2122K727D030
750	65	3.0	9.0	2.1	2.6	80	540	116	174	2.3	KD2122K757D020
850	70	5.1	15.3	1.3	2.6	70	612	136	145	2.7	KD2122K857D030
1000	100	7.0	21.0	0.9	2.1	60	720	116	228	3.0	KD2122K108D020
1400	100	9.8	29.4	0.7	1.8	60	1008	136	230	4.1	KD2122K148D030
2200	100	8.8	26.4	0.9	1.3	80	1584	136	330	5.7	KD2122K228D030

U_{NDC} 1300V Us 1950V Ur 300V U_{TT} 1950V/10s U_{TC} 3500VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
230	45	1.8	5.5	2.7	4.5	60	194	86	120	0.9	KD2132K237D010
280	45	1.7	5.0	3.1	4.0	70	237	86	144	1.0	KD2132K287D010
330	75	3.3	9.9	1.3	3.3	50	279	86	174	1.3	KD2132K337D010
350	45	1.8	5.3	3.8	3.4	80	296	86	174	1.2	KD2132K357D010
420	65	3.4	10.1	1.6	3.4	60	355	116	124	1.7	KD2132K427D020
450	75	3.6	10.8	1.5	2.6	60	380	86	225	1.6	KD2132K457D010
500	65	3.0	9.0	1.9	3.1	70	423	116	144	2.0	KD2132K507D020
600	70	4.8	14.4	1.2	3.0	60	507	136	125	2.3	KD2132K607D030
650	65	3.3	9.8	2.2	2.6	80	549	116	174	2.3	KD2132K657D020
720	70	4.3	13.0	1.4	2.6	70	608	136	145	2.7	KD2132K727D030
850	100	6.8	20.4	1.0	2.1	60	718	116	228	3.0	KD2132K857D020
1200	100	9.6	28.8	0.8	1.8	60	1014	136	230	4.1	KD2132K128D030
1800	100	9.0	27.0	1.0	1.3	80	1521	136	330	5.7	KD2132K188D030

U_{NDC} 1800V Us 2700V Ur 400V U_{TT} 2700V/10s U_{TC} 4000VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
200	40	1.6	4.8	4.9	3.4	80	324	86	174	1.2	KD3182K207D010
240	55	2.9	8.6	2.0	3.4	60	389	116	124	1.7	KD3182K247D020
250	75	3.0	9.0	2.0	2.6	60	405	86	225	1.6	KD3182K257D010
290	55	2.9	8.7	2.3	3.1	70	470	116	144	1.9	KD3182K297D020
340	65	4.1	12.2	1.5	3.0	60	551	136	125	2.3	KD3182K347D030
370	55	3.0	8.9	2.8	2.6	80	599	116	174	2.3	KD3182K377D020
420	65	4.2	12.6	1.7	2.6	70	680	136	145	2.6	KD3182K427D030
470	100	5.6	16.9	1.2	2.1	60	761	116	228	3.0	KD3182K477D020
680	100	8.2	24.5	0.9	1.8	60	1102	136	230	4.1	KD3182K687D030
1000	100	8.0	24.0	1.2	1.3	80	1620	136	330	5.8	KD3182K108D030

1.Imax @ Θ_A 40°C@10kHz, *that lead to a* ΔT *of* ~ 70°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

U_{NDC} 2000V Us 3000V Ur 450V U_{TT} 3000V/10s U_{TC} 4000V/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
150	40	1.4	4.1	5.7	3.4	80	300	86	174	1.2	KD3202K157D010
190	55	2.7	8.0	2.2	3.4	60	380	116	124	1.7	KD3202K197D020
200	70	2.8	8.4	2.1	2.6	60	400	86	225	1.6	KD3202K207D010
230	55	2.8	8.3	2.6	3.1	70	460	116	144	1.9	KD3202K237D020
270	60	3.8	11.3	1.7	3.0	60	540	136	125	2.3	KD3202K277D030
300	55	2.7	8.1	3.0	2.6	80	600	116	174	2.2	KD3202K307D020
330	60	4.0	11.9	1.9	2.6	70	660	136	145	2.6	KD3202K337D030
380	90	5.3	16.0	1.3	2.1	60	760	116	228	3.0	KD3202K387D020
400	100	7.6	22.7	0.9	2.2	50	800	136	180	3.3	KD3202K407D030
540	100	7.6	22.7	1.0	1.8	60	1080	136	230	4.0	KD3202K547D030
600	100	10	30	0.9	1.7	50	1200	136	260	4.6	KD3202K607D030
800	100	7.2	21.6	1.3	1.3	80	1600	136	330	5.7	KD3202K807D030
855	100	10	30	1.0	1.3	60	1710	136	335	6.0	KD3202K857D030

U_{NDC} 2600V Us 3900V Ur 600V U_{TT} 3900V/10s U_{TC} 5500VAC/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
100	48	2.2	6.6	3.1	3.4	60	338	116	124	1.7	KD4262K107D020
110	63	2.4	7.3	2.8	2.6	60	372	86	225	1.6	KD4262K117D010
130	49	2.3	7.0	3.3	3.1	70	439	116	144	1.9	KD4262K137D020
150	55	3.3	9.9	2.2	3.0	60	507	136	125	2.3	KD4262K157D030
160	47	2.2	6.7	4.1	2.6	80	541	116	174	2.3	KD4262K167D020
180	54	3.2	9.7	2.5	2.6	70	608	136	145	2.7	KD4262K187D030
210	85	4.6	13.9	1.6	2.1	60	710	116	228	3.0	KD4262K217D020
300	93	6.6	19.8	1.2	1.8	60	1014	136	230	4.1	KD4262K307D030
450	95	6.3	18.9	1.7	1.3	80	1521	136	330	5.7	KD4262K457D030

U_{NDC} 3000V Us 4500V Ur 700V U_{TT} 4500V/10s U_{TC} 5500V/10s

Cn (μF)	Imax[1] (A)	Ipk (KA)	Is (KA)	ESR (mΩ)	Rth (K/W)	Ls (nH)	Wn (Ws)	D (mm)	L (mm)	Weight (kg)	Ordering code
100	79	1.3	3.9	1.5	2.6	50	450	116	178	2.4	KD4302K107D020
140	80	1.4	4.2	1.8	2.1	60	630	116	228	3.0	KD4302K147D020
150	87	2.0	5.9	1.1	2.2	50	675	136	180	3.2	KD4302K157D030
200	88	2.0	6.0	1.4	1.8	60	900	136	230	4.1	KD4302K207D030
300	89	1.8	5.4	1.9	1.3	80	1350	136	330	5.7	KD4302K307D030

1.Imax @ Θ_A 40°C@10kHz, *that lead to a* ΔT *of* ~ 70°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

KD8 Series

Overview

The KD8 Series is a polypropylene metallized film with solvent resistant plastic case filled with resin sealing (UL 94 V-0)

Application:

The KD8 series is designed for DC-link applications.
For compact design of: Frequency converters.
Industrial and high-end power supplies.
Solar inverters.

Benefits

- High capacitance density, compact.
- Excellent self-healing properties.
- Overvoltage capability.
- Low losses with high current capability.
- High reliability.
- Long useful life.
- RoHS-compatible.

Construction

Dielectric: Polypropylene (PP) film.
Protection: Solvent resistant plastic case with resin sealing (UL 94 V-0)
Terminals: Parallel wire leads, lead-free tinned
2-pin and 4-pin versions
Standard lead lengths: 6 ±1 mm
Special lead lengths are available on request

Structure of ordering code

KD8	112	K	306	D82	0
1	2	3	4	5	6

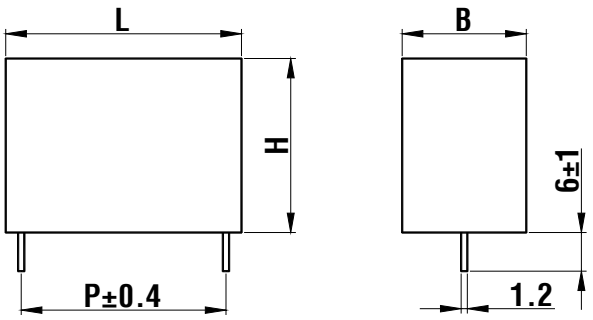
1 Series code
2 Rated voltage: 112 = 11 x 10^2=1100 V (701= 70 x 10^1=700 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 306=30 x 10^6 pF = 30 µF (474=47 x 10^4 pF = 0.47 µF)
5 Designs Type
6 Internal use

Electrical data

Reference standards		IEC 61071 , IEC 60068 , RoHS compliance.
Rated capacitance (C_N)		4.5µF ... 90µF
Rated voltage (U_{NDC})		800V ... 1300V
Standard capacitance tolerance		K: ±10% , J: ±5%
Dissipation factor tan δ (100Hz@20°C)		≤ $10 \cdot 10^{-4}$
Test voltage between terminals U_{TT}		1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}		3000 VAC, 10s
Insulation Resistance		Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Operating temperature range (case)		–40 °C ... +105°C
Max. permissible ambient temperature		+85°C, operation at rated power, rated current and natural cooling
Storage temperature Θstg		–40 ... +105 °C
Climatic category		40/85/56
Damp heat test	- Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5% tgδ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 70°C
Fit rate		50 (100 000 h at Θ_{hs} 70°C)
Resistance to soldering heat		
	-Test conditions:	Solder bath temperature= +260±5°C dipping time (with heat screen) ≤4s
	-Performance:	Capacitance change: ≤ ±1% tg δ change : ≤0,0010 at 1kHz Visual inspection No visible damage

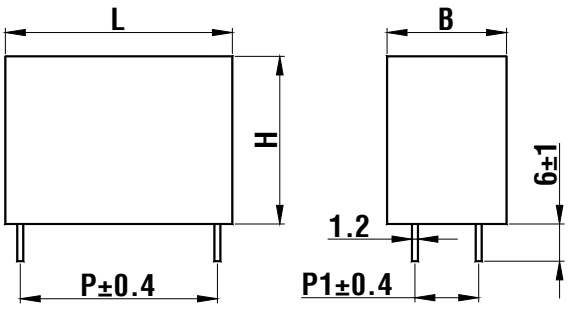
DESIGNS

2-pin version



Designs D82

4-pin version



Designs D84

U_{NDC} 800V @ Θ_{hs} 70°C 700V @ Θ_{hs} 85°C

Cn (µF)	DIMENSIONS (mm)					Imax 10kHz@60° (A)	Imax 20kHz@60° (A)	ESR @10kHz (mΩ)	Ordering code
	L	B	H	P	P1				
10	42	17	28	37.5	-	8	8	11.2	KD8801K106D820
18	42	20	39	37.5	-	10	10	6.5	KD8801K186D820
24	42	28	37	37.5	-	11	11	5.0	KD8801K246D820
24	42	28	37	37.5	10.2	13	12	4.8	KD8801K246D840
33	42	30	45	37.5	-	14	13	3.7	KD8801K336D820
33	42	30	45	37.5	20.3	15	14	3.5	KD8801K336D840
50	57	30	45	52.5	-	14	13	4.7	KD8801K506D820
50	57	30	45	52.5	20.3	15	14	4.5	KD8801K506D840
65	57	35	50	52.5	-	14	13	3.7	KD8801K656D820
65	57	35	50	52.5	20.3	18	16	3.5	KD8801K656D840
90	57	40	55	52.5	-	14	13	2.8	KD8801K906D820
90	57	40	55	52.5	20.3	20	18	2.6	KD8801K906D840
100	57	42.5	56	52.5	-	14	13	2.6	KD8801K107D820
100	57	425	56	52.5	20.3	22	20	2.4	KD8801K107D840

U_{NDC} 900V @ Θ_{hs} 70°C 800V @ Θ_{hs} 85°C

Cn (µF)	DIMENSIONS (mm)					Imax 10kHz@60° (A)	Imax 20kHz@60° (A)	ESR @10kHz (mΩ)	Ordering code
	L	B	H	P	P1				
8	42	17	28	37.5	-	7	7	12.7	KD8901K805D820
15	42	20	39	37.5	-	9	9	7.0	KD8901K156D820
21	42	28	37	37.5	-	11	10	5.1	KD8901K216D820
21	42	28	37	37.5	10.2	12	11	4.9	KD8901K216D840
28	42	30	45	37.5	-	14	13	3.9	KD8901K286D820
28	42	30	45	37.5	20.3	15	14	3.7	KD8901K286D840
42	57	30	45	52.5	-	14	13	5.1	KD8901K426D820
42	57	30	45	52.5	20.3	15	14	4.9	KD8901K426D840
55	57	35	50	52.5	-	14	13	4.0	KD8901K556D820
55	57	35	50	52.5	20.3	18	16	3.8	KD8901K556D840
72	57	40	55	52.5	-	14	13	3.1	KD8901K726D820
72	57	40	55	52.5	20.3	20	18	2.9	KD8901K726D840
90	57	42.5	56	52.5	-	14	13	2.9	KD8901K906D820
90	57	42.5	56	52.5	20.3	22	20	2.7	KD8901K906D840

U_{NDC} 1100V @ Θ_{hs} 70°C 900V @ Θ_{hs} 85°C

Cn (µF)	DIMENSIONS (mm)					Imax 10kHz@60° (A)	Imax 20kHz@60° (A)	ESR @10kHz (mΩ)	Ordering code
	L	B	H	P	P1				
6.5	42	17	28	37.5	-	7	7	13.4	KD8112K655D820
11	42	20	39	37.5	-	9	9	8.2	KD8112K116D820
15	42	28	37	37.5	-	12	11	6.1	KD8112K156D820
15	42	28	37	37.5	10.2	13	12	5.9	KD8112K156D840
20	42	30	45	37.5	-	14	13	4.7	KD8112K206D820
20	42	30	45	37.5	20.3	15	14	4.5	KD8112K206D840
30	57	30	45	52.5	-	14	13	6.0	KD8112K306D820
30	57	30	45	52.5	20.3	15	14	5.8	KD8112K306D840
42	57	35	50	52.5	-	14	13	4.4	KD8112K426D820
42	57	35	50	52.5	20.3	18	17	4.2	KD8112K426D840
55	57	40	55	52.5	-	14	13	3.5	KD8112K556D820
55	57	40	55	52.5	20.3	20	19	3.3	KD8112K556D840
60	57	42.5	56	52.5	-	14	13	3.3	KD8112K606D820
60	57	42.5	56	52.5	20.3	22	20	3.1	KD8112K606D840

U_{NDC} 1300V @ Θ_{hs} 70°C 1100V @ Θ_{hs} 85°C

Cn (µF)	DIMENSIONS (mm)					Imax 10kHz@60° (A)	Imax 20kHz@60° (A)	ESR @10kHz (mΩ)	Ordering code
	L	B	H	P	P1				
4.5	42	17	28	37.5	-	6	6	16.1	KD8132K455D820
8	42	20	39	37.5	-	8	8	9.3	KD8132K805D820
11	42	28	37	37.5	-	10	9	6.9	KD8132K116D820
11	42	28	37	37.5	10.2	12	11	6.7	KD8132K116D840
15	42	30	45	37.5	-	12	11	5.2	KD8132K156D820
15	42	30	45	37.5	20.3	13	12	5.0	KD8132K156D840
22	57	30	45	52.5	-	12	11	6.8	KD8132K226D820
22	57	30	45	52.5	20.3	14	13	6.6	KD8132K226D840
28	57	35	50	52.5	-	14	13	5.5	KD8132K286D820
28	57	35	50	52.5	20.3	16	14	5.3	KD8132K286D840
37	57	40	55	52.5	-	14	13	4.2	KD8132K376D820
37	57	40	55	52.5	20.3	18	16	4.0	KD8132K376D840
40	57	42.5	56	52.5	-	14	13	4.0	KD8132K406D820
40	57	42.5	56	52.5	20.3	20	18	3.8	KD8132K406D840

KF1 Series

Overview

The KF1 Series is a polypropylene metallized film with cylindrical aluminium can type filled with resin, screw terminals and plastic deck.

Application:

KF1 capacitor for general use in power electronics, Some typical examples of AC filter applications are as follows: solar power, Inverter, UPS, wind power, etc.

Construction and general data

Characteristics

Standard capacitance tolerance	J: ± 5%
Dielectric dissipation factor (tan δ_0)	2×10^{-4}
Minimum temperature Θ min.	–40 °C
Maximum temperature Θ max.	+ 70 °C
Storage temperature Θ stg	–40 ... +85 °C
Maximum hotspot temperature Θhs	+70 °C
Climatic category	40/70/56
Permissible Relative Humidity	Annual average ≤ 70%; 85% on 30 days/year randomly distributed throughout the year. Dewing not admissible.
Maximum altitude	3000 m above sea level (derating curves available upon request)
Expected lifetime	100 000 h at U_{rms} @ Θ_{hs} 60°C
Capacitance drop at end of life	- 5% (typical)
Fit rate	100 (100 000 h at Θ_{hs} 60°C)

Reference standards

IEC 61071 , IEC 60068 , UL 810
RoHS compliance

Test data

Test voltage between terminals	U_{TT} 1.5 Urms , 10s
Test voltage between terminals and case	U_{TC} 3500 VAC, 10s
Dissipation factor tan δ (100 Hz)	≤ $2.0 \bullet 10^{-3}$
Self inductance (Ls)	≤ 60 nH
Insulation Resistance	Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Life test According to	IEC 61071

Design data

Impregnation Resin filling:	Non PCB, dry type
Protection	Aluminium case with or without, threaded bolt M12
	Plastic deck flame retardant execution UL 94 V–0
	Thermosetting resin sealing UL 94 V–0 compliant
Cooling	Naturally air-cooled (or forced air cooling)
Degree of protection	Indoor mounting
Installation	Any position
Max. torque (case)	M12 stud 8 Nm
Max. torque terminal	internal thread M6: 4 Nm
	threaded stud M8: 8 Nm

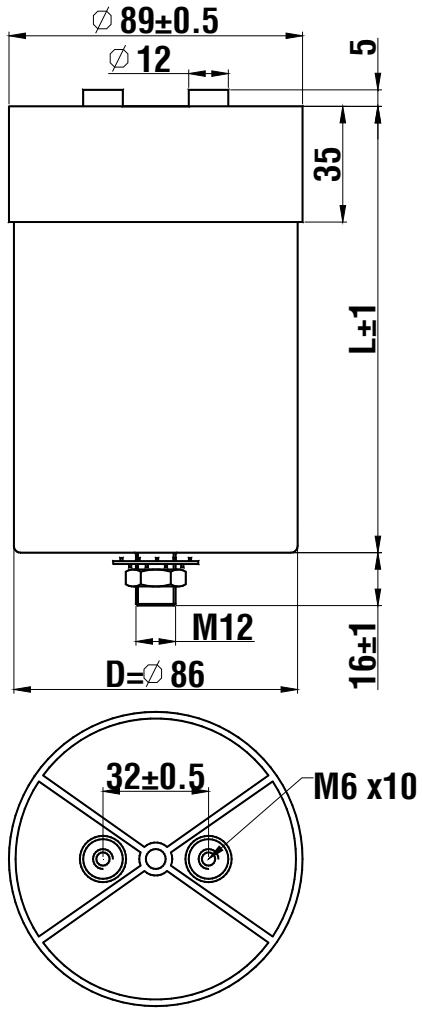
Over-Voltage (IEC 61071)

1.1 x U_{NDC} for maximum 8 Hour per day
1.15 x U_{NDC} for maximum 30 minimum per day
1.2 x U_{NDC} for maximum 5 minimum per day
1.3 x U_{NDC} for maximum 1 minimum per day
1.5 x U_{NDC} for 30 ms no more than 1000 times

Structure of ordering code

KF1	401	J	207	D01	0
1	2	3	4	5	6

1 Series code
2 rms voltage: 401 = 40 x 10^1=400 V (122= 12 x 10^2=1200 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 207=20 x 10^7 pF = 200 µF (506=50 x 10^6 pF = 50 µF)
5 Designs Type
6 Internal use



Designs D01

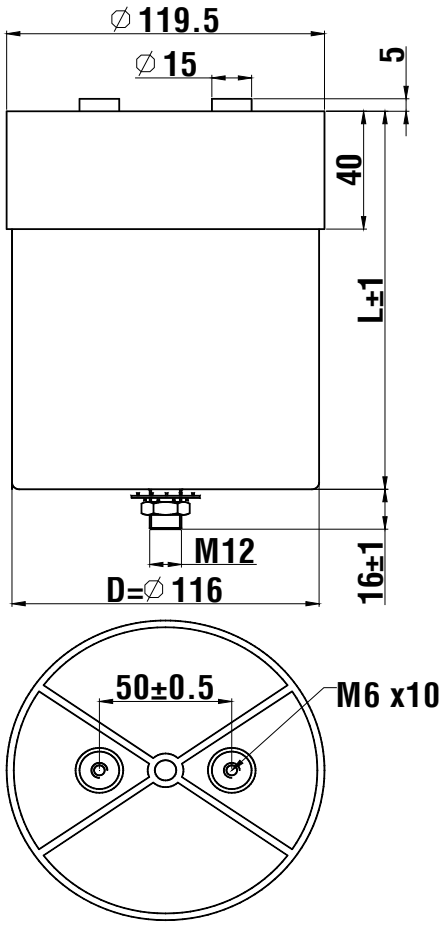
Capacitors with a can diameter of 86mm

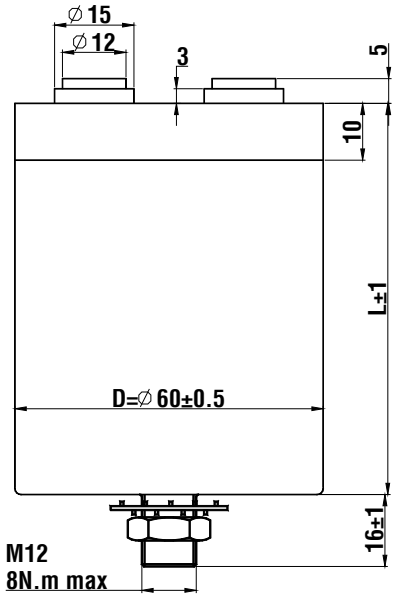
Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	75A
K	38mm
L	20mm

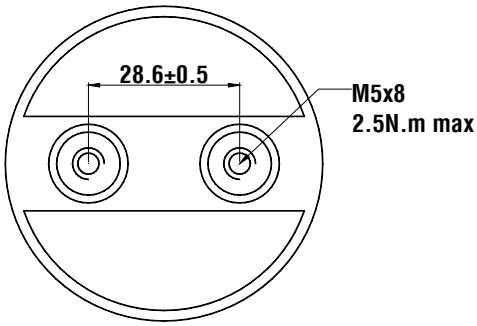
Designs D02

Capacitors with a can diameter of 116mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	100A
K	53mm
L	35mm







Designs D06

Capacitors with a can diameter of 60mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M5 x10mm
Imax (Terminals)	50A
K	22.6mm
L	16.6mm

Urms 330V **U_{NDC} 600V** **Us 1200V** **U_{TT} 500VAC/10s** **U_{TC} 3500VAC/10s**

Cn (µF)	Imax[1] (A)	Ipk (KA)	ESR[2] (mΩ)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
47	25	0.8	2.7	7.5	60	70	0.3	KF1331J476D060
90	40	1.4	1.5	4.6	60	120	0.5	KF1331J906D060
100	40	1.6	1.4	5.3	86	70	0.6	KF1331J107D010
200	65	3.2	0.8	3.3	86	124	1.0	KF1331J207D010
250	65	3.3	0.9	2.9	86	144	1.1	KF1331J257D010
350	80	5.6	0.5	2.4	116	128	1.9	KF1331J357D020
400	80	6.4	0.5	2.4	116	128	1.8	KF1331J407D020
470	80	6.1	0.6	2.1	116	148	2.1	KF1331J477D020

1.Imax @ Θ_A 40°C, *that lead to a* ΔT *of* ~ 60°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

2.Test at 1kHz

Urms 400V U_{NDC} 700V Us 1400V U_{TT} 600VAC/10s U_{TC} 3500VAC/10s

Cn (µF)	Imax[1] (A)	Ipk (KA)	ESR[2] (mΩ)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
33	20	0.7	3.2	7.5	60	70	0.3	KF1401J336D060
68	35	1.4	1.7	4.6	60	120	0.5	KF1401J686D060
80	40	1.7	1.5	5.3	86	70	0.6	KF1401J806D010
100	40	1.7	1.6	4.8	86	80	0.6	KF1401J107D010
150	60	3.2	0.9	3.3	86	124	0.9	KF1401J157D010
200	60	3.4	0.9	2.9	86	144	1.1	KF1401J207D010
250	75	5.3	0.6	2.4	116	128	1.9	KF1401J257D020
300	80	6.3	0.5	2.4	116	128	1.8	KF1401J307D020
350	80	6.0	0.6	2.1	116	148	2.1	KF1401J357D020

Urms 450V U_{NDC} 850V Us 1700V U_{TT} 675VAC/10s U_{TC} 3500VAC/10s

Cn (µF)	Imax[1] (A)	Ipk (KA)	ESR[2] (mΩ)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
25	20	0.6	3.7	7.5	60	70	0.3	KF1451J256D060
50	35	1.3	1.9	4.6	60	120	0.5	KF1451J506D060
60	35	1.5	1.7	5.3	86	70	0.5	KF1451J606D010
120	60	3.0	0.9	3.3	86	124	0.9	KF1451J127D010
150	60	3.2	1.0	2.9	86	144	1.1	KF1451J157D010
200	80	5.0	0.6	2.4	116	128	1.9	KF1451J207D020
220	80	5.5	0.6	2.4	116	128	1.8	KF1451J227D020
250	80	5.3	0.7	2.1	116	148	2.1	KF1451J257D020
270	80	5.7	0.7	2.1	116	148	2.0	KF1451J277D020

Urms 750V U_{NDC} 1500V Us 2200V U_{TT} 1125VAC/10s U_{TC} 3500VAC/10s

Cn (µF)	Imax[1] (A)	Ipk (KA)	ESR[2] (mΩ)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
27	40	1.5	2.2	4.2	86	95	0.7	KF1751J276D010
40	40	1.6	2.6	3.5	86	120	0.9	KF1751J406D010
56	65	3.2	1.2	2.4	86	174	1.3	KF1751J566D010
80	65	3.3	1.4	1.8	86	225	1.5	KF1751J806D010
100	80	5.7	0.8	1.7	116	178	2.5	KF1751J107D020
140	80	5.7	0.9	1.3	116	228	3.0	KF1751J147D020

1.Imax @ Θ_A 40°C, *that lead to a* ΔT *of* ~ 60°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

2.Test at 1kHz

Urms 1200V **U_{NDC} 3000V** **Us 4500V** **U_{TT} 1800VAC/10s** **U_{TC} 3500VAC/10s**

Cn (µF)	Imax[1] (A)	Ipk (KA)	ESR[2] (mΩ)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
15	40	2.1	3.2	2.4	86	174	1.3	KF1122J156D010
20	40	2.1	4.2	1.8	86	225	1.6	KF1122J206D010
25	60	3.6	2.0	1.7	116	178	2.5	KF1122J256D020
35	60	3.6	2.5	1.3	116	228	3.0	KF1122J356D020

1.Imax @ Θ_A 40°C, *that lead to a* ΔT *of* ~ 60°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

2.Test at 1kHz

KF3 Series

Overview

The KF3 Series is a polypropylene metallized film with cylindrical aluminium can type filled with resin, screw terminals and plastic deck.

Application:

KF3 is designed for solar inverter output AC filter.

Construction and general data

Characteristics

Standard capacitance tolerance	J: ± 5%
Dielectric dissipation factor (tan δ_0)	2×10^{-4}
Minimum temperature Θ min.	–40 °C
Maximum temperature Θ max.	+ 70 °C
Storage temperature Θ stg	–40 ... +85 °C
Maximum hotspot temperature Θhs	+70 °C
Climatic category	40/70/56
Permissible Relative Humidity	Annual average ≤ 70%; 85% on 30 days/year randomly distributed throughout the year. Dewing not admissible.
Maximum altitude	3000 m above sea level (derating curves available upon request)
Expected lifetime	100 000 h at U_{rms} @ Θ_{hs} 60°C
Capacitance drop at end of life	- 5% (typical)
Fit rate	100 (100 000 h at Θ_{hs} 60°C)

Reference standards

IEC 61071 , IEC 60068 , UL 810
RoHS compliance

Test data

Test voltage between terminals	U_{TT} 1.5 Urms , 10s
Test voltage between terminals and case	U_{TC} 3500 VAC, 10s
Dissipation factor tan δ (100 Hz)	≤ 2.0×10^{-3}
Self inductance (Ls)	≤ 50 nH
Insulation Resistance	Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Life test According to	IEC 61071

Design data

Impregnation Resin filling:	Non PCB, dry type
Protection	Aluminium case with or without, threaded bolt M12
	Plastic deck flame retardant execution UL 94 V–0
	Thermosetting resin sealing UL 94 V–0 compliant
Cooling	Naturally air-cooled (or forced air cooling)
Degree of protection	Indoor mounting
Installation	Any position
Max. torque (case)	M12 stud 8 Nm
Max. torque terminal	internal thread M6: 4 Nm

Structure of ordering code

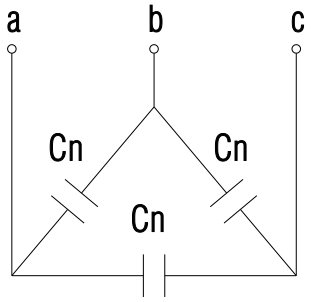
KF3	451	J	3X200	F03	0
1	2	3	4	5	6

1 Series code
2 rms voltage: 451 = 45 x 10^1=450 V
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 3X200=3x200 µF
5 Designs Type
6 Internal use

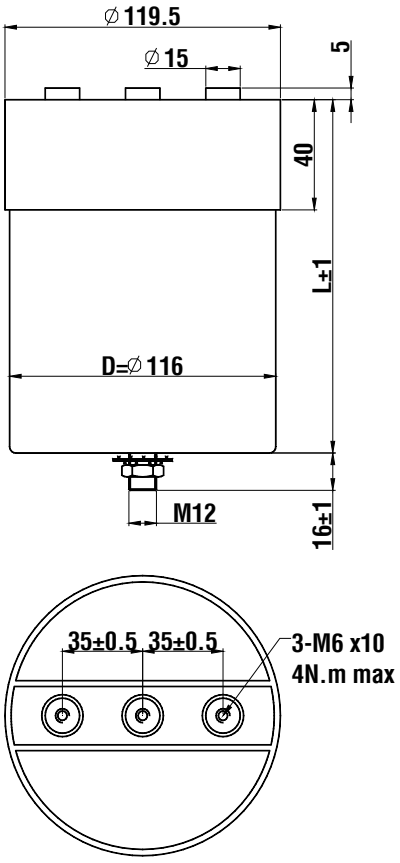
Designs F02

Capacitors with a can diameter of 116mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	100A
K	36mm
L	20mm
Connection	Three-phase, delta connected



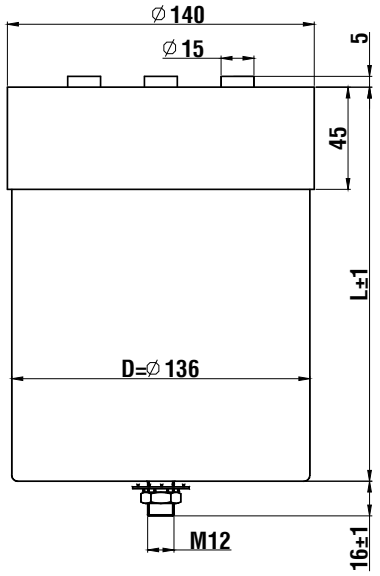
Connection

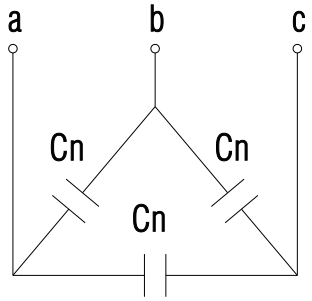


Designs F03

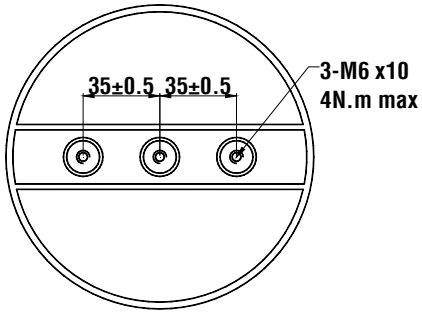
Capacitors with a can diameter of 136mm

Can material	aluminium, filled with resin
Base mounting stud	M12
Lid	plastic (UL94-V0)
Terminals	internal thread M6 x10mm
Imax (Terminals)	100A
K	36mm
L	20mm
Connection	Three-phase, delta connected





Connection



Urms 450V Us 1400V U_{TT} 675VAC/10s U_{TC} 3500VAC/10s

Cn (µF)	Imax[1] (A)	Ipk (KA)	Is (KA)	Rs (mΩ)	Ls (nH)	Rth (K/W)	D (mm)	L (mm)	Weight (kg)	Ordering code
3×100	3×50	2.1	6.3	3×1.1	50	1.7	116	185	3.50	KF3451J3X100F020
3×120	3×55	2.5	7.6	3×1.0	50	1.7	116	185	3.44	KF3451J3X120F020
3×135	3×60	2.8	8.5	3×0.9	50	1.7	116	185	3.40	KF3451J3X135F020
3×150	3×65	3.2	9.5	3×0.8	50	1.7	116	185	3.36	KF3451J3X150F020
3×180	3×70	3.8	11.3	3×0.8	50	1.4	136	185	4.70	KF3451J3X180F030
3×200	3×75	4.2	12.6	3×0.7	50	1.4	136	185	4.64	KF3451J3X200F030

1.Imax @ Θ_A 40°C, *that lead to a* ΔT *of* ~ 60°C in the hotspot, $\Theta_{hs} = \Theta_A + \Delta T$

KH2 Series

Overview

The KH2 series capacitors is a polypropylene metallized film
polyester wrapping with epoxy resin fill.

Application:

The KH2 series is designed for switching applications.
For high pulse and high frequency applications requiring.

Construction

Dielectric: Polypropylene metallized film.
Protection: Polyester wrapping with epoxy resin fill.
Terminals: Tinned copper nut.

Electrical data

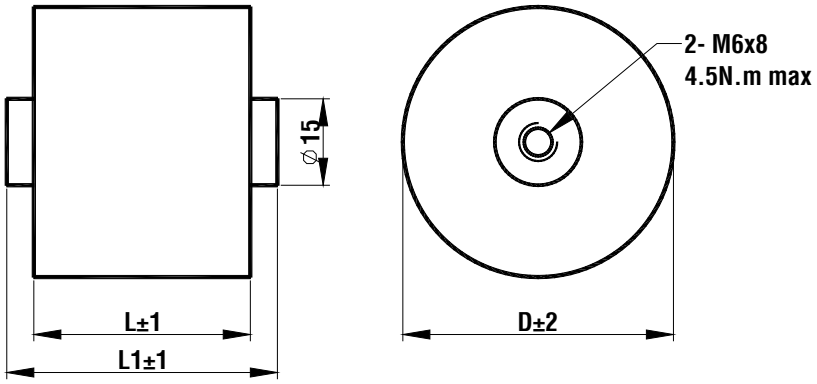
Reference standards		IEC 61071, IEC 60068, RoHS compliance.
Degree of protection		IP00
Rated capacitance (C_N)		15µF ... 100µF
Rated voltage (U_{NDC})		600V ... 1000V
Standard capacitance tolerance		K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)		≤ 10 x 10^{-4}
Test voltage between terminals U_{TT}		1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}		4000 VAC, 10s
Insulation Resistance		Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Operating temperature range (case)		–40 °C ... +70°C
Storage temperature Θ stg		–40 ... +85 °C
Climatic category		40/70/56
Damp heat test	- Test conditions	Temperature : +40 °C
		Relative humidity : 93% ±2%
		Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5%
		tg δ change: ≤50% of nominal value at 1 kHz
		Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 70°C
Fit rate		50 (100 000 h at Θ_{hs} 70°C)

Structure of ordering code

KH2	801	K	206	S40	0
1	2	3	4	5	6

1 Series code
2 Rated voltage: 801= 80 x 10^1=800 V
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 206=20 x 10^6 pF = 20 µF
5 Designs Type
6 Internal use

KH2 Designs



Designs	L	L1
S40	40	53
S50	50	63

KH2 U_N 600V Urms 250V Us 900V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
20	39	40	53	60	1200	3.0	25	KH2601K206S400
30	46	40	53	60	1800	2.2	35	KH2601K306S400
40	53	40	53	60	2400	1.8	40	KH2601K406S400
50	59	40	53	60	3000	1.5	45	KH2601K506S400
60	65	40	53	60	3600	1.3	50	KH2601K606S400
75	61	50	63	40	3000	1.7	45	KH2601K756S500
100	70	50	63	40	4000	1.4	50	KH2601K107S500

KH2 U_N 800V Urms 350V Us 1200V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
15	43	40	53	100	1500	3.1	30	KH2801K156S400
20	49	40	53	100	2000	2.4	35	KH2801K206S400
30	60	40	53	100	3000	1.8	40	KH2801K306S400
40	68	40	53	100	4000	1.5	45	KH2801K406S400
50	76	40	53	100	5000	1.3	50	KH2801K506S400

KH2 U_N 1000V Urms 450V Us 1800V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
15	45	50	63	100	1500	4.1	30	KH2102K156S500
20	51	50	63	100	2000	3.2	35	KH2102K206S500
30	62	50	63	100	3000	2.3	40	KH2102K306S500
40	71	50	63	100	4000	1.9	45	KH2102K406S500
50	79	50	63	100	5000	1.6	50	KH2102K506S500

KH6 Series

Overview

The KH6 series capacitors is a polypropylene metallized film,
solvent resistant plastic case withresin sealing (UL 94 V-0).

Application:

The KH6 series is designed for switching applications.
For high pulse and high frequency applications requiring.

Construction

Dielectric: Polypropylene metallized film.
Protection: Solvent resistant plastic case with resin sealing (UL 94 V-0)
Terminals: Tinned copper lugs.

Electrical data

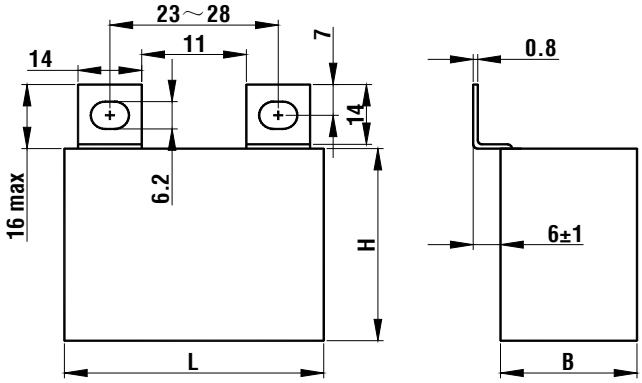
Reference standards		IEC 61071, IEC 60068, RoHS compliance.
Degree of protection		IP00
Rated capacitance (C_N)		10µF ... 40µF
Rated voltage (U_{NDC})		800V ... 1200V
Standard capacitance tolerance		K: ±10% , J: ±5%
Dissipation factor tan δ (1kHz@20°C)		≤ 10 x 10^{-4}
Test voltage between terminals U_{TT}		1.5 U_{NDC}, 10s
Test voltage between terminals and case U_{TC}		4000 VAC, 10s
Insulation Resistance		Ri x C ≥ 10,000s at 100 VDC/1min at +25°C
Operating temperature range (case)		–40 °C ... +85°C
Storage temperature Θ stg		–40 °C ... +85 °C
Climatic category		40/70/56
Damp heat test	- Test conditions	Temperature : +40 °C
		Relative humidity : 93% ±2%
		Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5%
		tg δ change: ≤50% of nominal value at 1 kHz
		Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 70°C
Fit rate		50 (100 000 h at Θ_{hs} 70°C)

Structure of ordering code

KH6	801	K	206	A11	0
1	2	3	4	5	6

1 Series code
2 Rated voltage: 801= 80 x 10^1=800 V
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 206=20 x 10^6 pF = 20 µF
5 Designs Type
6 Internal use

KH6 Designs



Designs A11

KH6 U_N 800V Urms 300V Us 1200V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	L	B	H					
10	42	30	45	100	1000	3.9	25	KH6801K106A110
20	57	30	45	50	1000	5.4	23	KH6801K206A110
30	57	35	50	50	1500	3.8	25	KH6801K306A110
40	57	42.5	56	50	2000	3.0	30	KH6801K406A110

KH6 U_N 1200V Urms 400V Us 1800V

Cn (µF)	DIMENSIONS (mm)			du/dt (V/µs)	Ipk (A)	ESR (mΩ)	Imax (A)	Ordering code
	D	L	L1					
15	57	30	45	80	1200	6.1	20	KH6122K156A110
20	57	35	50	80	1600	4.7	25	KH6122K206A110
30	57	42.5	56	80	2400	3.3	30	KH6122K306A110

KD9 Series

Overview

The KD9 Series is a polypropylene metallized film
with polyester wrapping with epoxy resin fill. (UL 94 V-0)

Application:

The KD9 series is designed for DC-link applications.
For compact design of: 380VAC small power inverter

Benefits

- High capacitance density, compact.
- Excellent self-healing properties.
- Overvoltage capability.
- Low losses with high current capability.
- High reliability.
- Long useful life.
- RoHS-compatible.

Construction

Dielectric: Polypropylene (PP) film.
Protection: polyester wrapping with epoxy resin fill. (UL 94 V-0)
Terminals: Parallel wire leads, lead-free tinned

Structure of ordering code

KD9	901	K	107	L70	0
1	2	3	4	5	6

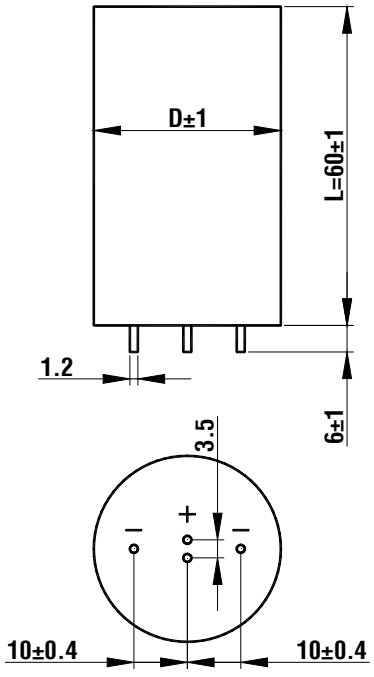
1 Series code
2 Rated voltage: 901 = 90x 10^1=900 V (801= 80 x 10^1=800 V)
3 Capacitance tolerance: J = ± 5% , K = ± 10% , S = special
4 Rated capacitance: 107=10 x 10^7 pF = 100 µF
5 Designs Type
6 Internal use

Electrical data

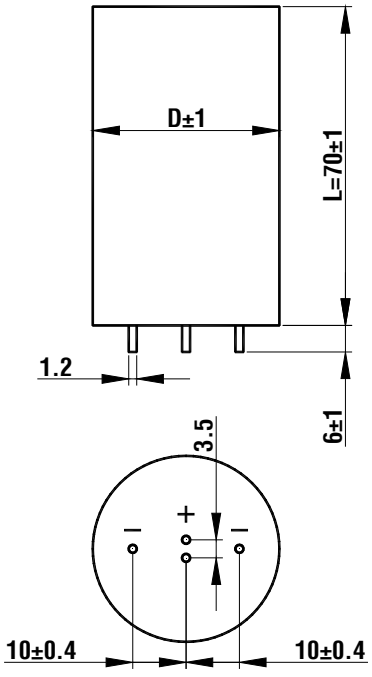
Reference standards	IEC 61071 , IEC 60068 , RoHS compliance.
Rated capacitance (C_N)	50µF ... 160µF
Rated voltage (U_{NDC})	700V , 900V
Standard capacitance tolerance	K: ±10% , J: ±5%
Dissipation factor tan δ (100Hz@20°C)	≤ 20 • 10^{-4}
Test voltage between terminals U_{TT}	1.5 U_{NDC} , 10s
Test voltage between terminals and case U_{TC}	3000 VAC, 10s
Insulation Resistance	Ri x C ≥ 10,000s at 100 VDC/1min at +25°C

Operating temperature range (case)		–40 °C ... +85°C
Max. permissible ambient temperature		+70°C, operation at rated power, rated current and natural cooling
Storage temperature Θstg		–40 ... +85 °C
Climatic category		40/70/56
Damp heat test	- Test conditions	Temperature : +40 °C Relative humidity : 93% ±2% Test duration : 56 days
	- Performances	Capacitance change : ≤ ± 5% tgδ change: ≤50% of nominal value at 1 kHz Insulation resistance: ≤50% of limit value
Expected lifetime		100 000 h at U_{NDC} @ Θ_{hs} 70°C
Fit rate		50 (100 000 h at Θ_{hs} 70°C)
Resistance to soldering heat		
	-Test conditions:	Solder bath temperature= +260±5°C dipping time (with heat screen) ≤4s
	-Performance:	Capacitance change: ≤ ±1% tg δ change : ≤0,0010 at 1kHz Visual inspection No visible damage

DESIGNS



Designs L60



Designs L70

U_{NDC} 700V Us 1050V Ur 150V U_{TT} 1050V/10s U_{TC} 3000VAC/10s

Cn (µF)	D (mm)	L (mm)	Ipk (A)	Imax (A)	Ls (nH)	Rs (mΩ)	Ordering code
60	35	60	300	19	40	6.4	KD9701K606L600
80	40	60	400	22	40	4.9	KD9701K806L600
100	45	60	500	24	40	4.0	KD9701K107L600
130	50	60	650	26	40	3.2	KD9701K137L600
75	35	70	300	18	45	7.3	KD9701K756L700
100	40	70	400	21	45	5.6	KD9701K107L700
130	45	70	520	23	45	4.4	KD9701K137L700
160	50	70	640	25	45	3.6	KD9701K167L700

U_{NDC} 900V Us 1350V Ur 200V U_{TT} 1350V/10s U_{TC} 3000VAC/10s

Cn (µF)	D (mm)	L (mm)	Ipk (A)	Imax (A)	Ls (nH)	Rs (mΩ)	Ordering code
50	35	60	300	19	40	6.8	KD9901K506L600
65	40	60	390	22	40	5.3	KD9901K656L600
80	45	60	480	24	40	4.4	KD9901K806L600
100	50	60	600	26	40	3.6	KD9901K107L600
60	35	70	300	18	45	7.9	KD9901K606L700
80	40	70	400	21	45	6.0	KD9901K806L700
100	45	70	500	23	45	4.9	KD9901K107L700
125	50	70	575	25	45	4.0	KD9901K127L700

GENERAL SAFETY ADVICES

Cautions and warnings

_ In case of dents of more than 1 mm depth or any other mechanical damage, capacitors must not be used at all.

_ Check tightness of the connections/terminals periodically.

_ The energy stored in capacitors may be lethal. To prevent any chance of shock, discharge and short-circuit the capacitor before handling.

_ Failure to follow cautions may result, worst case, in premature failures, bursting and fire.

_ SCR is not responsible for any kind of possible damages to persons or things due to improper installation and application of capacitors for power electronics.

Safety

_ Electrical or mechanical misapplication of capacitors may be hazardous. Personal injury or property damage may result from bursting of the capacitor or from expulsion of oil or melted material due to mechanical disruption of the capacitor.

_ Ensure good, effective grounding for capacitor enclosures.

_ Observe appropriate safety precautions during operation (self-recharging phenomena and the high energy contained in capacitors).

_ Handle capacitors carefully, because they may still be charged even after disconnection.

_ The terminals of capacitors, connected bus bars and cables as well as other devices may also be energized.

_ Follow good engineering practice.

Thermal load

After installation of the capacitor it is necessary to verify that maximum hot-spot temperature is not exceeded at extreme service conditions.

Mechanical protection

The capacitor has to be installed in a way that mechanical damages and dents in the aluminum can are avoided.

Storage and operating conditions

Do not use or store capacitors in corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. In dusty environments regular maintenance and cleaning especially of the terminals is required to avoid conductive path between phases and/or phases and ground.

The maximum storage temperature is 85 °C.

Service life expectancy

Electrical components do not have an unlimited service life expectancy; this applies to self-healing capacitors, too. The maximum service life expectancy may vary depending on the application the capacitor is used in.

The following applies to all products named in this publication:

1. Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. As a rule, SCR is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an SCR product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.
3. The warnings, cautions and product-specific notes must be observed.
4. In order to satisfy certain technical requirements, some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as “hazardous”). Useful information on this will be found in our Material Data Sheets on the Internet. Should you have any more detailed questions, please contact our sales offices.
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NOTE