

C44U-T, 900 – 1,800 VDC, Long Lifetime, High Temperature and THB

Overview

The C44U-T series is a polypropylene metallized film capacitor with a cylindrical, aluminium can-type design, filled with solid resin. It uses screw terminals for high current and a plastic deck.

Applications

Typical applications include DC link for renewable energy, traction, industrial drives and energy storage.

Benefits

- Long lifetime up to 300,000 hours
- High temperature up to 105°C Hot Spot
- Harsh-environmental conditions - 85°C/85% R.H. and Vr for 1000h
- Good self-healing properties
- Low power losses
- High ripple current withstanding
- High capacitance density



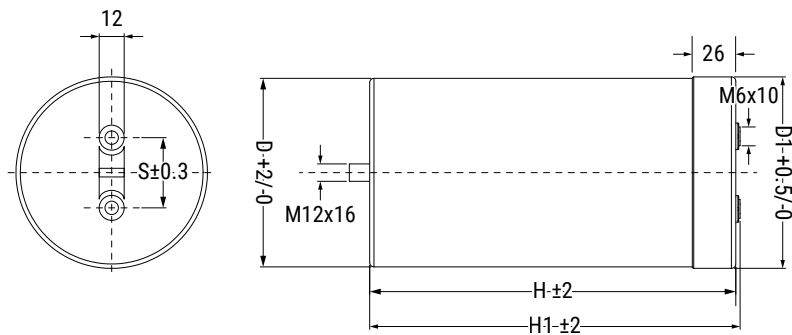
Part Number System

C4	4	U	Q	G	T	7	1	1	0	T	5	3	K	V143
Series		DC Voltage		Case and Fixing	Terminals Code	Capacitance Code (pF)				Variants	Case Diameter	Case Height	Tolerance	C-Spec
C4 = MKP Capacitors for Power Applications	4 = Cylindrical types	U = DC Link	O = 900 V Q = 1,100 V U = 1,300 V S = 1,500 V V = 1,800 V	G = Cylindrical case with threaded bolt M12 E = Cylindrical case without threaded bolt	T = M6 female terminals Q = M8 male terminals	Digits nine, ten, and eleven indicate the first three digits of capacitance value. Digit 8 indicates the number of zeros to be added.				T = Standard Other symbol = Special	8 = 85 mm 5 = 116 mm 3 = 136 mm	1 . . . Z	J = ±5% K = ±10%	V143 = Standard for traction application UNI EN 45545-2: 2015 Blank = Not inline with the traction application standard.

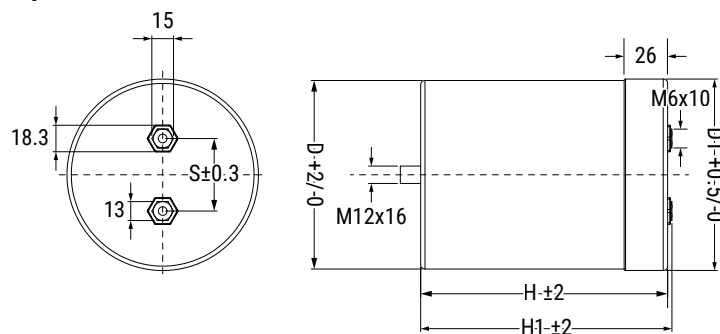
It is not possible to manufacture every part number that can be created from the coding description. Please refer to the table of standard part numbers above and contact KEMET for other possibilities.

Dimensions – Millimeters

Style 1: D = 85 mm



Style 2: D = 116 mm and 136 mm



D	D1	H	H1	S	Threaded Insert Terminations	Threaded Post Terminations	Mounting Stud
+2/-0	+0.5/-0	±2	±2	±0.3			
85	88	99.5	101	32	M6 x 10	M8 x 20	M12 x 16
85	88	114.5	116	32	M6 x 10	M8 x 20	M12 x 16
85	88	124.5	126	32	M6 x 10	M8 x 20	M12 x 16
85	88	134.5	136	32	M6 x 10	M8 x 20	M12 x 16
85	88	144.5	146	32	M6 x 10	M8 x 20	M12 x 16
85	88	178.5	180	32	M6 x 10	M8 x 20	M12 x 16
85	88	268.5	270	32	M6 x 10	M8 x 20	M12 x 16
116	119	133	136	50	M6 x 10	M8 x 20	M12 x 16
116	119	153	156	50	M6 x 10	M8 x 20	M12 x 16
116	119	233	236	50	M6 x 10	M8 x 20	M12 x 16
116	119	273	276	50	M6 x 10	M8 x 20	M12 x 16
136	139	131	134	50	M6 x 10	M8 x 20	M12 x 16
136	139	232	235	50	M6 x 10	M8 x 20	M12 x 16
136	139	282	285	50	M6 x 10	M8 x 20	M12 x 16
136	139	347	350	50	M6 x 10	M8 x 20	M12 x 16

Maximum Driving Torque [Nm]		
Terminals	Female	Male
	M6	M8
	4	7
Bolt M12	12	

Qualifications

Reference Standards	IEC 61071 - EN61071 - VDE0560 – UL810 Construction only - E208772
Reference Standard for traction applications	According to UNI EN 45545-2: 2015 for Hazard Levels HL1 - HL2 for Requirements Set R22 and Hazard Levels HL1 - HL2 - HL3 for Requirements Set R23 Available with C-spec
Climatic Category	40/85/56
Damp Heat	IEC 60068-2-78
Change of Temperature	IEC 60068-2-14
Vibration Strength	IEC 60068-2-6

General Technical Data

Dielectric	Polypropylene Metallized Film, non-inductive type, self-healing property
Application	DC Filtering/DC Link
Operational Temperature Range for can diameter 85 and 116mm	-40°C to 105°C
Operational Temperature Range for can diameter 136mm	-40°C to 90°C
Voltage Deratings	- Rated voltage up to T_{hs} of 90°C (all diameters) - Voltage derating of 2% per °C for T_{hs} 90°C ÷ 95°C (for can diameter 85 and 116 mm only) - Voltage derating of 2.5% per °C for T_{hs} 95°C ÷ 105°C (for can diameter 85 and 116 mm only)
Harsh-Environmental Withstanding	1,000 hours at V _R , 85°C, 85% Relative Humidity Capacitance change ($\Delta C/C$): ≤ 10%
Protection	Aluminium case with or without, threaded bolt M12
	Plastic deck flame retardant execution UL 94 V-0
	Plastic cap flame retardant execution UL 94 V-0
	Thermosetting resin sealing
Installation	Any position
Leads	High current M6 or M8 terminals
Packaging	Packed in cardboard boxes with protection for the terminals
RoHS Compliant	Compliant with Directive 2002/95/EC and Directive 2011/65/EU of the European Parliament and of the Council on 8 June 2011, including Commission Delegated Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Electrical Characteristics

Capacitance Tolerance	$\pm 10\%$ at $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Dielectric Dissipation Factor (DF)	≤ 0.0002 at 10 kHz with $T = 25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Surge Voltage	$1.5 \times V_{\text{NDC}}$ for maximum 10 times in lifetime at $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Over-Voltage (IEC 61071)	$1.15 \times V_{\text{NDC}}$ for maximum 30 minutes, once per day
	$1.3 \times V_{\text{NDC}}$ for maximum 1 minute, once per day
Peak Non-Repetitive Current	$1.5 \times I_{\text{pkf}}$ maximum 1,000 times in lifetime
Insulation Resistance	$IR \times C \geq 30,000$ seconds at 100 VDC 1 minute at $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Capacitance Deviation in Operation	$\pm 1.5\%$ maximum on capacitance value measured at $+25^{\circ}\text{C}$
Storage Ambient Temperature Limits	-40 to $+85^{\circ}\text{C}$

Test Method

Test Voltage Between Terminals	$1.5 \times U_{\text{NDC}}$ for 10 seconds or $1.65 \times V_{\text{NDC}}$ for 2 seconds at 25°C
Test Voltage Between Terminals and Case	4.0 kVAC 50 Hz for 2 seconds

Table 1 – Ratings & Part Number Reference

Part Number C44U-T Series	C	U _{NDC}	dV/dt	I _{pkr}	ESL	ESR(*)	Ripple Current	R _{th}	Dimensions (mm)			SPQ	Weight(***)
	(μF)	(VDC)	(V/μs)	(Apk)	(nH)	(mOhm)	I _{rms} at 55°C (**) (A)	(°C/W)	Ø	H	H1	(pcs)	(kg)
C44UOGT6500T83K	500	900	7	3545	50	2	50	5.8	85	124.5	126	5	5.1
C44UOGT6550T84K	550	900	6	3520	55	2.2	49	5.6	85	134.5	136	5	5.3
C44UOGT6600T85K	600	900	6	3505	55	2.4	49	5.1	85	144.5	146	5	5.6
C44UOGT7120T87K	1,200	900	6	7010	80	2	76	2.6	85	268.5	270	5	9.1
C44UOGT6900T51K	900	900	7	6380	45	1.2	82	3.7	116	133	136	4	7.2
C44UOGT7110T52K	1,100	900	6	6425	55	1.4	81	3.2	116	153	156	4	8.0
C44UOGT7180T53K	1,800	900	7	12765	75	1.2	100	2.1	116	233	236	4	11.4
C44UOGT7210T54K	2,100	900	6	12265	80	1.5	100	1.8	116	273	276	4	13.1
C44UOGT7145T31K	1450	900	5	7,400	40	0.95	60	4.3	136	131	134	4	8.5
C44UOGT7274T32K	2740	900	4	11,000	80	1	100	2.6	136	232	235	4	15.0
C44UOGT7340T33K	3400	900	4	13,200	85	1.16	100	1.6	136	282	285	2	10.1
C44UOGT7450T34K	4500	900	4	14,000	90	0.95	100	1.5	136	347	350	2	12.1
C44UQGT6240T81K	240	1,100	12	2,905	45	1.8	48	7.1	85	99.5	101	5	4.4
C44UQGT6290T82K	290	1,100	10	2,880	50	2.1	47	6.4	85	114.5	116	5	4.8
C44UQGT6320T83K	320	1,100	9	2,835	50	2.4	46	5.8	85	124.5	126	5	5.1
C44UQGT6360T84K	360	1,100	8	2,880	55	2.6	45	5.6	85	134.5	136	5	5.3
C44UQGT6400T85K	400	1,100	7	2,920	55	2.8	45	5.1	85	144.5	146	5	5.6
C44UQGT6460T86K	460	1,100	12	5,565	60	1.5	72	3.8	85	178.5	180	5	6.6
C44UQGT6760T87K	760	1,100	7	5,550	80	2.3	70	2.6	85	268.5	270	5	9.1
C44UQGT6560T51K	560	1,100	9	4,965	45	1.5	73	3.7	116	133	136	4	7.2
C44UQGT6700T52K	700	1,100	7	5,110	55	1.7	74	3.2	116	153	156	4	8.0
C44UQGT7110T53K	1,100	1,100	9	9,750	75	1.4	100	2.1	116	233	236	4	11.5
C44UQGT7140T54K	1,400	1,100	7	10,220	80	1.6	100	1.8	116	273	276	4	13.1
C44UQGT6910T31K	910	1,100	6	5,400	40	0.85	60	4.3	136	131	134	4	8.5
C44UQGT7178T32K	1780	1,100	6	9,700	80	1	100	2.5	136	232	235	4	15.0
C44UQGT7220T33K	2200	1,100	5	9,400	85	1.17	100	1.6	136	282	285	2	10.1
C44UQGT7275T34K	2750	1,100	5	13,000	90	0.95	100	1.8	136	347	350	2	12.1
C44UQGT7255T35K	2550	1,100	8	14,000	85	0.75	100	1.8	136	347	350	2	12.1
C44UUGT6165T81K	165	1,300	15	2,395	45	2.1	44	7.1	85	99.5	101	5	4.4
C44UUGT6200T82K	200	1,300	12	2,380	50	2.5	43	6.4	85	114.5	116	5	4.8
C44UUGT6220T83K	220	1,300	11	2,340	50	2.8	42	5.8	85	124.5	126	5	5.1
C44UUGT6250T84K	250	1,300	10	2,400	55	3	42	5.6	85	134.5	136	5	5.3
C44UUGT6270T85K	270	1,300	9	2,365	55	3.3	42	5.1	85	144.5	146	5	5.6
C44UUGT6320T86K	320	1,300	15	4,645	60	1.7	68	3.8	85	178.5	180	5	6.6
C44UUGT6530T87K	530	1,300	9	4,640	80	2.6	66	2.6	85	268.5	270	5	9.1
C44UUGT6400T51K	400	1,300	11	4,255	45	1.7	69	3.7	116	133	136	4	7.2
Part Number	C	U _{NDC}	dV/dt	I _{pkr}	ESL	ESR	Ripple Current	R _{th}	Dimensions			SPQ	Weight

*The ESR value for can diameter 85 and 116mm is at 10kHz and for can diameter 136mm is at 1kHz

** The indicated current inside the table is for ripple current at 10kHz for can diameter 85 and 116mm and at 1kHz for can diameter 136mm, considering natural convection and maximum self-heating of 30°C.

For preliminary evaluation of complex current spectrum the following formula shall be used:

$$\sqrt{\sum_i I_{(f_i)}^2} \leq I_{RMS}$$

KEMET is available for additional technical support

*** Approximative packaging weight

Table 1 – Ratings & Part Number Reference cont.

Part Number C44U-T Series	C	U _{NDC}	dV/dt	I _{pk}	ESL	ESR(*)	Ripple Current	R _{th}	Dimensions (mm)			SPQ	Weight(***)
	(μF)	(VDC)	(V/μs)	(Apk)	(nH)	(mOhm)	I _{rms} at 55°C (**) (A)	(°C/W)	Ø	H	H1	(pcs)	(kg)
C44UUGT6470T52K	470	1,300	9	4,120	55	2	68	3.2	116	153	156	4	8.1
C44UUGT6780T53K	780	1,300	11	8,295	75	1.5	97	2.1	116	233	236	4	11.4
C44UUGT6950T54K	950	1,300	9	8,325	80	1.8	96	1.8	116	273	276	4	13.1
C44UUGT6600T31K	600	1,300	7	4,000	40	1.2	60	4.6	136	131	134	4	8.5
C44UUGT7119T32K	1190	1,300	7	7,000	80	1.15	100	2.6	136	232	235	4	15.0
C44UUGT7142T33K	1420	1,300	7	8,400	85	1.35	100	2.1	136	282	285	2	10.1
C44UUGT7185T34K	1850	1,300	8	13,600	85	1	100	1.9	136	347	350	2	12.1
C44UUGT7180T35K	1800	1,300	8	14,000	85	0.78	100	1.9	136	347	350	2	12.1
C44USGT6120T81K	120	1,500	17	2,030	50	2.5	41	7.1	85	99.5	101	5	4.4
C44USGT6145T82K	145	1,500	14	2,015	50	2.9	40	6.4	85	114.5	116	5	4.8
C44USGT6165T83K	165	1,500	12	2,045	50	3.2	40	5.8	85	124.5	126	5	5.1
C44USGT6180T84K	180	1,500	11	2,015	55	3.5	39	5.6	85	134.5	136	5	5.4
C44USGT6200T85K	200	1,500	10	2,045	55	3.8	39	5.1	85	144.5	146	5	5.6
C44USGT6230T86K	230	1,500	17	3,895	60	1.9	64	3.8	85	178.5	180	5	6.7
C44USGT6400T87K	400	1,500	10	4,085	80	2.8	64	2.6	85	268.5	270	5	9.1
C44USGT6300T51K	300	1,500	12	3,720	50	1.9	65	3.7	116	133	136	4	7.2
C44USGT6350T52K	350	1,500	10	3,575	55	2.3	63	3.2	116	153	156	4	8.1
C44USGT6550T53K	550	1,500	12	6,825	75	1.7	91	2.1	116	233	236	4	11.7
C44USGT6700T54K	700	1,500	10	7,155	80	1.9	93	1.8	116	273	276	4	13.1
C44USGT6460T31K	460	1,500	9	3,900	40	1.2	60	4.7	136	131	134	4	8.5
C44USGT6950T32K	950	1,500	9	8,100	80	1.15	100	2.6	136	232	235	4	15.0
C44USGT7113T33K	1130	1,500	8	8,000	80	1.3	100	2.2	136	282	285	2	10.1
C44USGT7145T34K	1450	1,500	9	12,000	80	1	100	1.9	136	347	350	2	12.1
C44USGT7140T35K	1400	1,500	13	13,000	80	0.78	100	1.8	136	347	350	2	12.1
C44UVGT5900T81K	90	1,800	19	1,740	50	2.8	38	7.1	85	99.5	101	5	4.4
C44UVGT6110T82K	110	1,800	16	1,745	50	3.3	37	6.4	85	114.5	116	5	4.8
C44UVGT6125T83K	125	1,800	14	1,770	50	3.6	37	5.8	85	124.5	126	5	5.1
C44UVGT6140T84K	140	1,800	13	1,795	55	3.9	37	5.6	85	134.5	136	5	5.4
C44UVGT6150T85K	150	1,800	12	1,750	55	4.3	37	5.1	85	144.5	146	5	5.7
C44UVGT6175T86K	175	1,800	19	3,385	60	2.1	61	3.8	85	178.5	180	5	6.7
C44UVGT6300T87K	300	1,800	12	3,505	80	3.2	60	2.6	85	268.5	270	5	9.1
C44UVGT6220T51K	220	1,800	14	3,120	50	2.2	60	3.7	116	133	136	4	7.3
C44UVGT6275T52K	275	1,800	12	3,210	55	2.5	61	3.2	116	153	156	4	8.1
C44UVGT6450T53K	450	1,800	14	6,380	75	1.8	89	2.1	116	233	236	4	11.4
C44UVGT6550T54K	550	1,800	12	6,425	80	2.1	89	1.8	116	273	276	4	13.1
C44UVGT6350T31K	350	1,800	10	3,500	40	1.35	60	4.8	136	131	134	4	8.5
C44UVGT6700T32K	700	1,800	10	6,800	80	1.25	90	2.7	136	232	235	4	15.0
C44UVGT6860T33K	860	1,800	8	6,800	75	1.45	90	2.2	136	282	285	2	10.1
C44UVGT7105T34K	1050	1,800	9	9,000	80	1.1	95	1.9	136	347	350	2	12.1
C44UVGT7102T35K	1020	1,800	12	11,800	75	0.82	95	1.7	136	347	350	2	12.1
Part Number	C	U _{NDC}	dV/dt	I _{pk}	ESL	ESR	Ripple Current	R _{th}	Dimensions			SPQ	Weight

*The ESR value for can diameter 85 and 116mm is at 10kHz and for can diameter 136mm is at 1kHz

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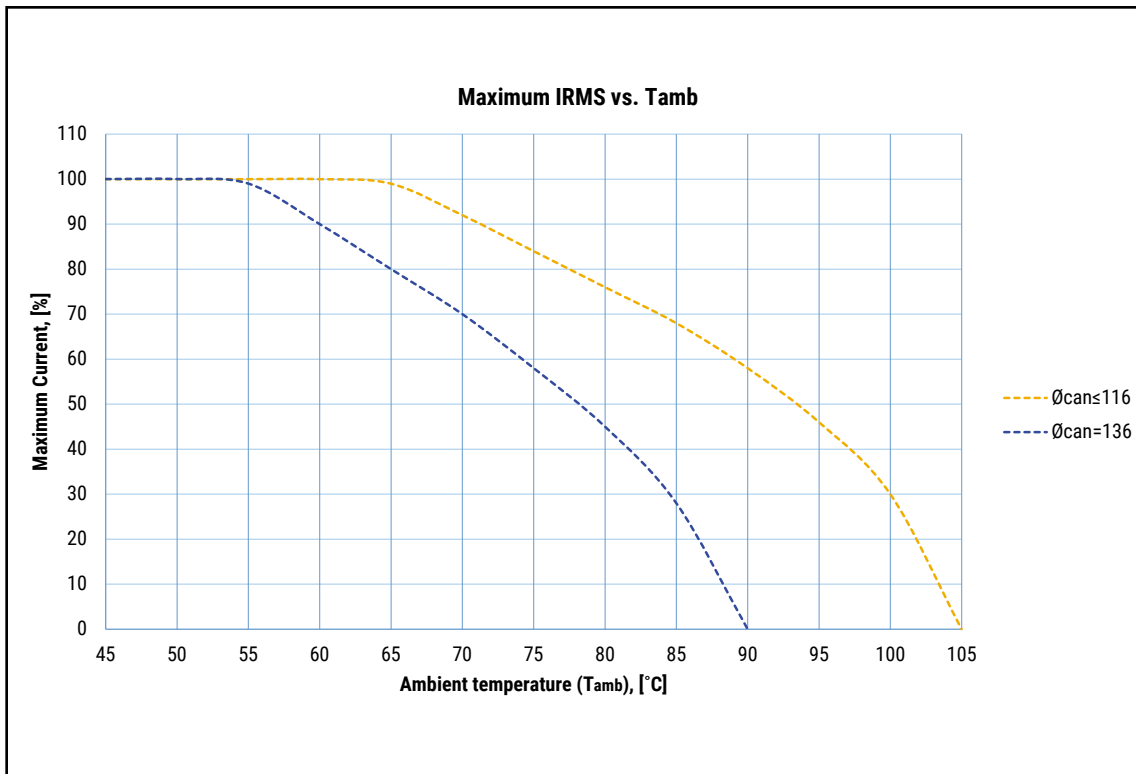
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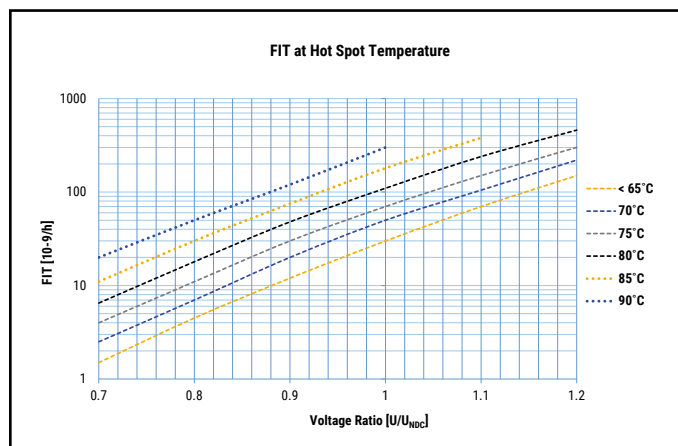
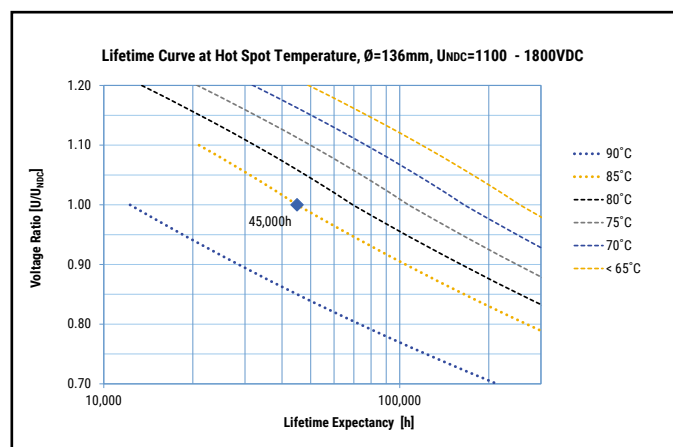
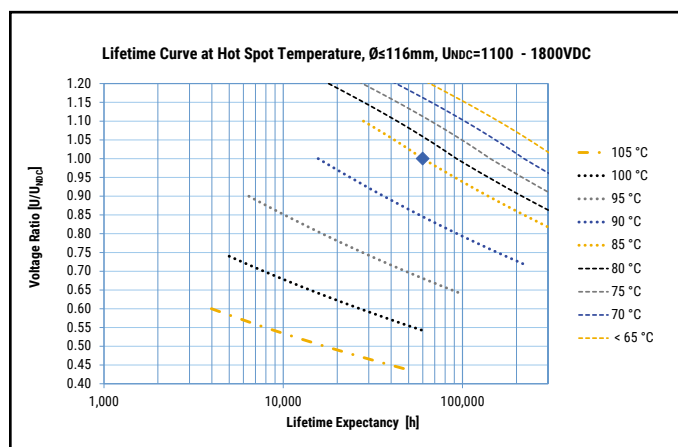
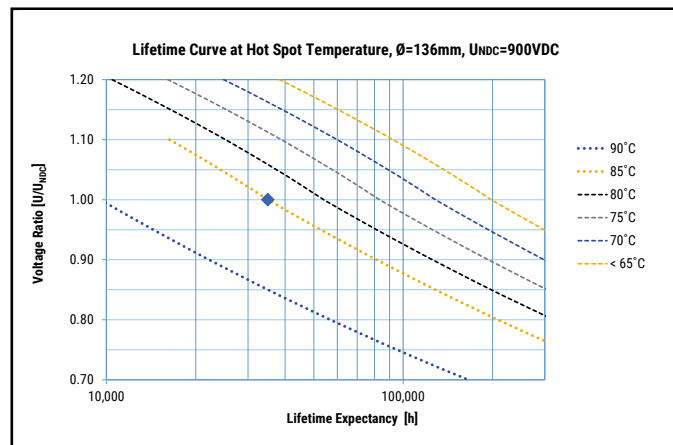
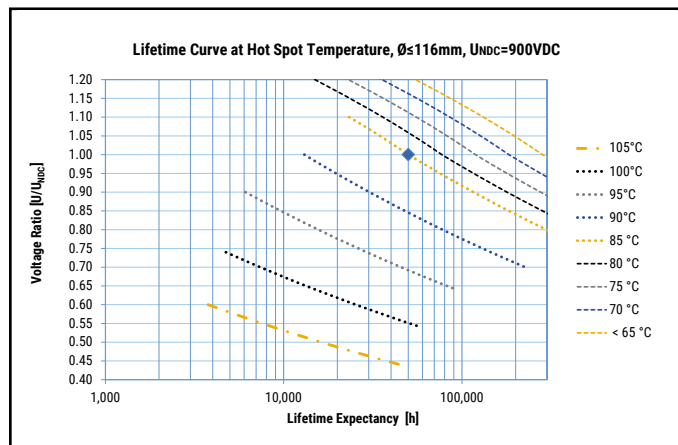
*** Approximative packaging weight

Current Derating



Note: See also the life expectancy graphs

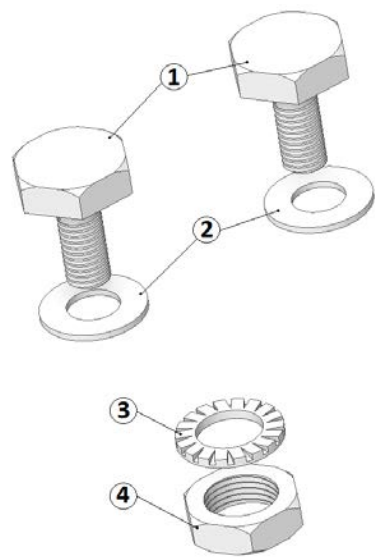
Lifetime Expectancy/Failure Quota Graphs



Note: Capacitance drop at the end of life is -3%

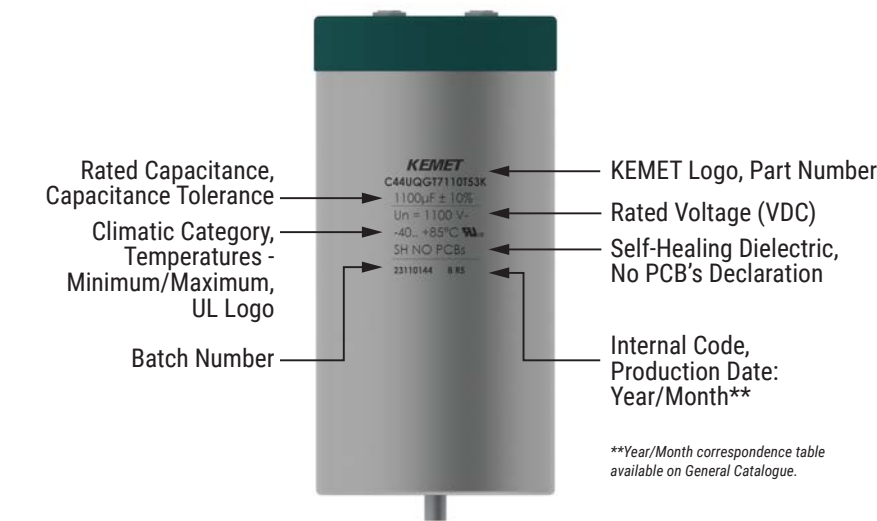
Mounting Accesories

Mounting accessories delivered in plastic bag with each capacitor

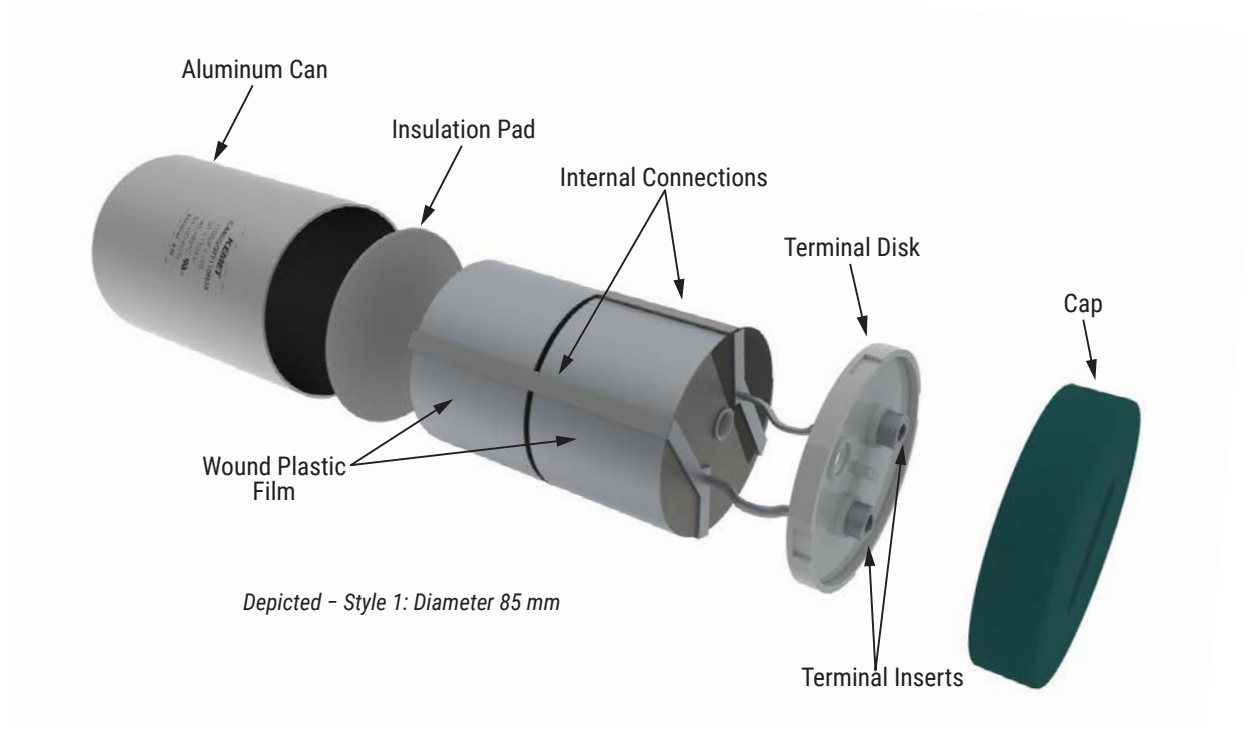


Mounting Accessories Delivered	
Position	Description
1	Bolts for the terminals
2	Washers for the terminals
3	Washer for the mouting bolt M12x16
4	Nut for the mouting bolt M12x16

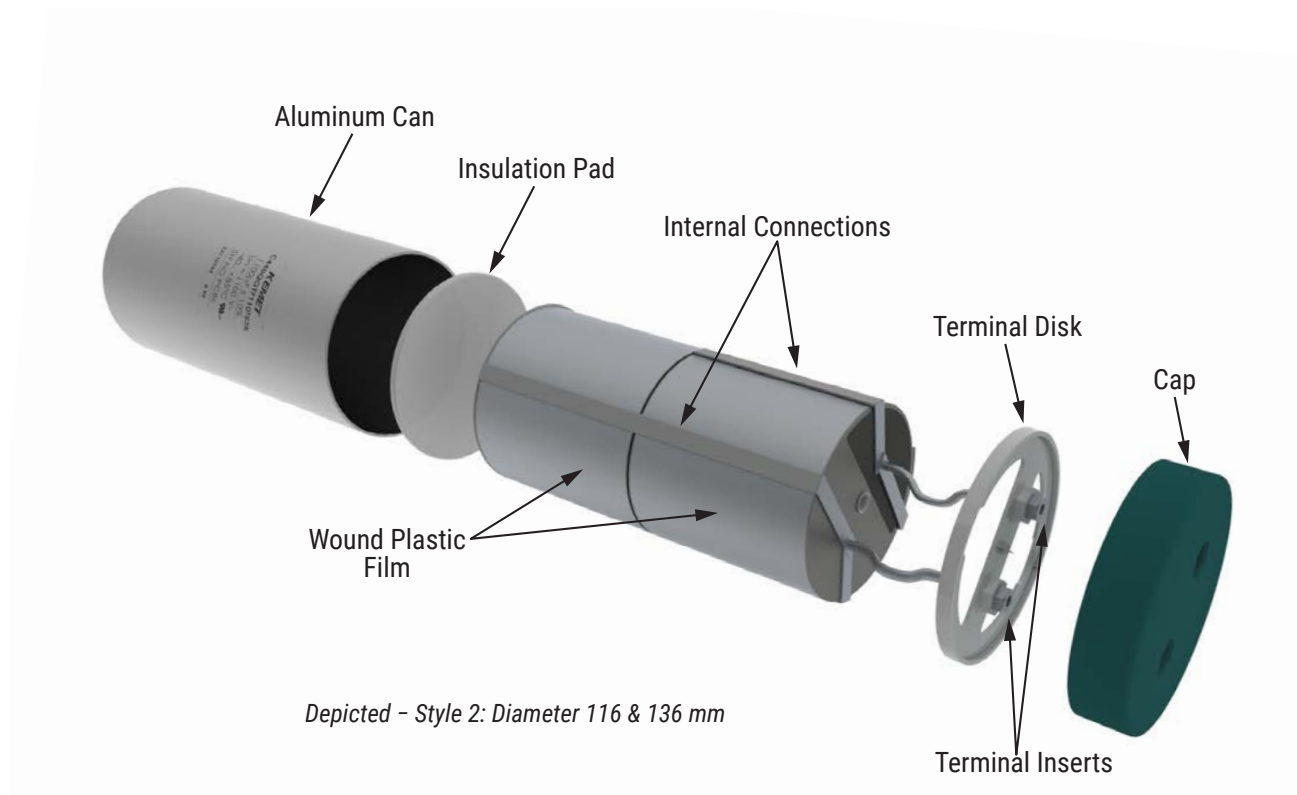
Marking



Construction



Style 1 Diameter 85 mm



Style 2 Diameter 116 & 136 mm

Environmental Compliance

As a leading global supplier of electronic components and an environmentally conscious company, KEMET continually aspires to improve the environmental effects of our manufacturing processes and our finished electronic components.

In Europe (RoHS Directive) and in some other geographical areas such as China (China RoHS), legislation has been enacted to prevent or otherwise limit the use of certain hazardous materials, including lead (Pb), in electronic equipment. KEMET monitors legislation globally to ensure compliance and endeavors to adjust our manufacturing processes and/or electronic components as may be required by applicable law.

For military, medical, automotive, and some commercial applications, the use of lead (Pb) in the termination is necessary and/or required by design. KEMET is committed to communicating RoHS compliance to our customers. Information related to RoHS compliance will be provided in data sheets and using specific identifiers on the packaging labels.

All KEMET power film capacitors are RoHS compliant.

Materials & Environment

The selection of raw materials that KEMET uses for the production of its electronic components is the result of extensive experience. KEMET directs specific attention toward environmental protection. KEMET selects its suppliers according to ISO 9001 standards and performs statistical analyses on raw materials before acceptance for use in manufacturing our electronic components. All materials are, to the best of KEMET's knowledge, non-toxic and free from cadmium; mercury; chrome and compounds; polychlorine triphenyl (PCB); bromide and chlorinedioxins bromurate clorurate; CFC and HCFC; and asbestos.

Sealing

Hermetically Sealed Capacitors

As the temperature increases, the pressure inside the capacitor increases. If the internal pressure is high enough, it can cause a breach in the capacitor. Such a breach can result in leakage, impregnation, filling fluid, or moisture susceptibility.

Barometric Pressure

The altitude at which hermetically sealed capacitors are operated controls the capacitor's voltage rating. As the barometric pressure decreases, the susceptibility to terminal arc-over increases. Non-hermetic capacitors can be affected by internal stresses due to pressure changes. These effects can be in the form of capacitance changes, dielectric arc-over, and/or low insulation resistance. Altitude can also affect heat transfer. Heat that is generated in an operation cannot be dissipated properly, and high RI^2 losses and eventual failure can result.

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