

# C4AT, Radial, 2 or 4 Leads, 250 – 850 VDC/160 – 450 VAC

## Overview

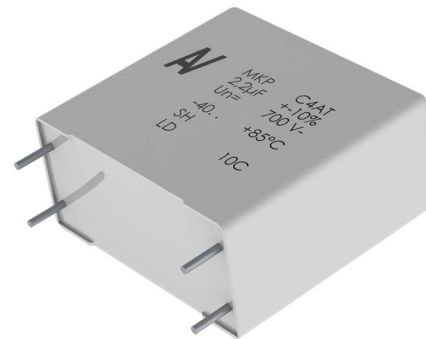
The C4AT capacitor is a polypropylene metallized film capacitor with a rectangular, plastic box-type design filled with resin, and uses 2 or 4 tinned copper wires.

## Applications

Typical applications include clamping, DC filtering, blocking, coupling/decoupling, AC harmonic filtering, and energy storage.

## Benefits

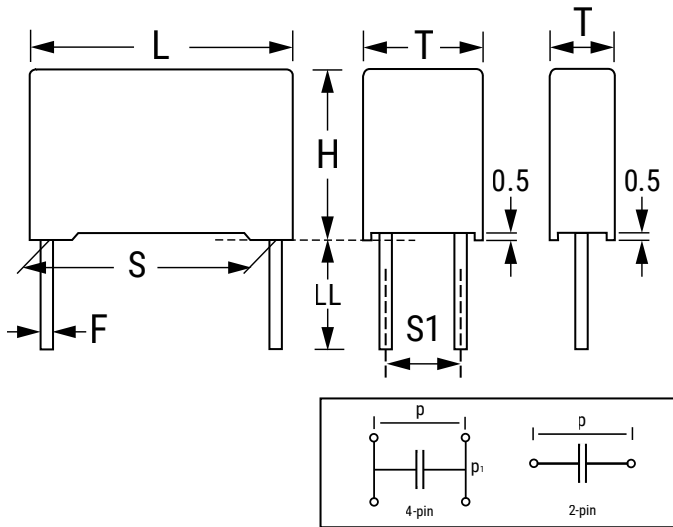
- Self-healing
- Low loss
- High ripple current
- High contact reliability
- Suitable for high frequency applications



## Part Number System

C4	AT	D	B	U	4100	A3	0	J
Series	Type	Rated Voltage (VDC)	Case	Number of Leads	Capacitance Code (pF)	Lead Diameter (mm)	Size Code	Tolerance
C4 = MKP Capacitors	AT = Radial box, switching application	D = 250 F = 400 G = 450 H = 600 J = 700 M = 850	B = Plastic box with thermosetting resin sealing	U = 2 lead W = 4 lead	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	A1 = 0.8 A3 = 1.2	See Dimension Table	J = 5% K = 10%

## Dimensions – Millimeters



Size Code	<b>S</b>	<b>S1</b>	<b>T</b>		<b>H</b>		<b>L</b>		<b>LL</b>
	±0.4	±0.4	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	+0/-2
A	27.5		10	+0/-0.7	20	+0/-0.7	32	+0/-0.7	6
B	27.5	5.1	13	+0/-0.7	22	+0/-0.7	32	+0/-0.7	6
C	27.5	5.1	14	+0/-0.7	28	+0/-0.7	32	+0/-0.7	6
E	27.5	5.1	18	+0/-0.7	33	+0/-0.7	32	+0/-0.7	6
G	27.5	10.2	22	+0/-0.7	37	+0/-0.7	32	+0/-0.7	6
F	37.5	10.2	20	+0/-0.7	40	+0/-0.7	41.5	+0/-0.7	6
H	37.5	10.2	24	+0/-0.7	44	+0/-0.7	41.5	+0/-0.7	6
J	37.5	10.2	28	+0/-0.7	37	+0/-0.7	42.5	+0/-0.7	6
L	37.5	20.3	30	+0/-0.7	45	+0/-0.7	42	+0/-0.7	6
M	52.5	20.3	30	+0/-0.7	45	+0/-0.7	57.5	+0/-0.7	6
N	52.5	20.3	35	+0/-0.7	50	+0/-0.7	57.5	+0/-0.7	6

Note 1: 250 V capacitors use a size code of "0" for all case sizes.

Note 2: Wire diameter (F): See Table "Part Numbers".

## Qualifications

Reference Standards	IEC 61071, EN61071, VDE0560
Climatic Category	40/85/56 according to IEC 60068-1

## Performance Characteristics

Temperature Range	-40°C to + 85°C
Maximum Permissible Ambient Temperature	+70°C
Capacitance Tolerance	±5%, ±10%
IEC Climatic Category	40/85/56 according to IEC 68-1
Peak Non-Repetitive Maximum Current	$I_{PKR} \times 1.5$
Test Voltage Terminal to Terminal $V_{TT}$	$2 V_n$ for 10 seconds
Test Voltage Terminal to Case $V_{TC}$	3k V – 50 Hz for 60 seconds
Dissipation Factor (DF)	$\geq 5 \times 10^{-4}$ at 1 kHz and 20°C
Acceptable Relative Humidity	Annual average $\leq 70\%$ $\leq 85\%$ for $\leq 30$ intermittent days annually Dewing not admissible
Capacitance Deviation in Operating Temperature Range of -40°C to +85°C	$\pm 1.5\%$ maximum on capacitance value measured at +20°C
Change of Capacitance vs. Operating Time	-3% after 30,000 hours at $V_{RMS}$ or after 100,000 hours at $V_n$
Case Components	Solvent-resistant plastic case with epoxy resin sealing, flame retardant execution (UL Class 94V-0)
Terminals	Tinned copper 2 or 4 wires
Installation	Any position
Life Expectancy	$\geq 30,000$ hours at $V_{RMS}$ , $\geq 100,000$ hours at $V_n$
Failure Quota	300/10 <sup>9</sup> components per hour

## 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.

**Table 1A – Ratings & Part Number Reference**

Part Number	Cap Value (µF)	VDC	VAC	Peak VDC	Size Code	Maximum Dimensions (mm)				
						S	S1	T	H	L
C4ATDBU4100(2)0(3)	1	250	160	400	0	27.5	-	10	20	32
C4ATDBU4220(2)0(3)	2.2	250	160	400	0	27.5	-	10	20	32
C4ATDBU4330(2)0(3)	3.3	250	160	400	0	27.5	-	13	22	32
C4ATDBU4500(2)0(3)	5	250	160	400	0	27.5	-	14	28	32
C4ATDBW5100(2)0(3)	10	250	160	400	0	27.5	5.1	18	33	32
C4ATDBW5200(2)0(3)	20	250	160	400	0	37.5	10.2	28	37	42.5
C4ATDBW5300(2)0(3)	30	250	160	400	0	37.5	20.3	30	45	42.5
C4ATDBW5400(2)0(3)	40	250	160	400	0	52.5	20.3	30	45	57.5
C4ATDBW5500(2)0(3)	50	250	160	400	0	52.5	20.3	35	50	57.5
C4ATDBW5600(2)0(3)	60	250	160	400	0	52.5	20.3	35	50	57.5
C4ATFBU4100(2)A(3)	1	400	250	600	A	27.5	-	10	20	32
C4ATFBU4150(2)A(3)	1.5	400	250	600	A	27.5	-	10	20	32
C4ATFBU4200(2)B(3)	2	400	250	600	B	27.5	-	13	22	32
C4ATFBW4330(2)C(3)	3.3	400	250	600	C	27.5	5.1	14	28	32
C4ATFBW4400(2)E(3)	4	400	250	600	E	27.5	5.1	18	33	32
C4ATFBW4500(2)E(3)	5	400	250	600	E	27.5	5.1	18	33	32
C4ATFBW4680(2)G(3)	6.8	400	250	600	G	27.5	10.2	22	37	32
C4ATFBW5100(2)F(3)	10	400	250	600	F	37.5	10.2	20	40	41.5
C4ATFBW5150(2)J(3)	15	400	250	600	J	37.5	10.2	28	37	42.5
C4ATFBW5200(2)L(3)	20	400	250	600	L	37.5	20.3	30	45	42
C4ATFBW5250(2)M(3)	25	400	250	600	M	52.5	20.3	30	45	57.5
C4ATFBW5300(2)M(3)	30	400	250	600	M	52.5	20.3	30	45	57.5
C4ATFBW5350(2)N(3)	35	400	250	600	N	52.5	20.3	35	50	57.5
C4ATFBW5400(2)N(3)	40	400	250	600	N	52.5	20.3	35	50	57.5
C4ATGBU4100(2)A(3)	1	450	275	660	A	27.5	-	10	20	32
C4ATGBW4330(2)E(3)	3.3	450	275	660	E	27.5	5.1	18	33	32
C4ATGBW4680(2)G(3)	6.8	450	275	660	G	27.5	10.2	22	37	32
C4ATGBW5100(2)F(3)	10	450	275	660	F	37.5	10.2	20	40	41.5
C4ATGBW5150(2)L(3)	15	450	275	660	L	37.5	20.3	30	45	42
C4ATGBW5200(2)M(3)	20	450	275	660	M	52.5	20.3	30	45	57.5
C4ATGBW5330(2)N(3)	33	450	275	660	N	52.5	20.3	35	50	57.5
C4ATHBU3680(2)A(3)	0.68	600	350	800	A	27.5	-	10	20	32
C4ATHBU4100(2)B(3)	1	600	350	800	B	27.5	-	13	22	32
C4ATHBW4200(2)E(3)	2	600	350	800	E	27.5	5.1	18	33	32
C4ATHBW4220(2)E(3)	2.2	600	350	800	E	27.5	5.1	18	33	32
C4ATHBW4330(2)G(3)	3.3	600	350	800	G	27.5	10.2	22	37	32
C4ATHBW4470(2)F(3)	4.7	600	350	800	F	37.5	10.2	20	40	41.5
C4ATHBW4500(2)F(3)	5	600	350	800	F	37.5	10.2	20	40	41.5
C4ATHBW4680(2)J(3)	6.8	600	350	800	J	37.5	10.2	28	37	42
C4ATHBW4900(2)L(3)	9	600	350	800	L	37.5	20.3	30	45	42
C4ATHBW5100(2)L(3)	10	600	350	800	L	37.5	20.3	30	45	42
C4ATHBW5120(2)M(3)	12	600	350	800	M	52.5	20.3	30	45	57.5
C4ATHBW5200(2)N(3)	20	600	350	800	N	52.5	20.3	35	50	57.5
C4ATJBU3470(2)A(3)	0.47	700	400	1000	A	27.5	-	10	20	32
C4ATJBW4100(2)D(3)	1	700	400	1000	D	27.5	5.1	15	24.5	32
C4ATJBW4150(2)E(3)	1.5	700	400	1000	E	27.5	5.1	18	33	32
C4ATJBW4220(2)E(3)	2.2	700	400	1000	E	27.5	5.1	18	33	32
C4ATJBW4300(2)G(3)	3	700	400	1000	G	27.5	10.2	22	37	32
C4ATJBW4500(2)L(3)	5	700	400	1000	L	37.5	10.2	28	37	42.5
C4ATJBW4900(2)M(3)	9	700	400	1000	M	52.5	20.3	30	45	57.5
C4ATJBW5100(2)M(3)	10	700	400	1000	M	52.5	20.3	30	45	57.5
C4ATJBW5150(2)N(3)	15	700	400	1000	N	52.5	20.3	35	50	57.5
C4ATMBU3220(2)A(3)	0.22	850	450	1200	A	27.5	-	10	20	32
C4ATMBU3470(2)B(3)	0.47	850	450	1200	B	27.5	-	13	22	32
C4ATMBW4100(2)E(3)	1	850	450	1200	E	27.5	5.1	18	33	32
C4ATMBW4150(2)G(3)	1.5	850	450	1200	G	27.5	10.2	22	37	32
C4ATMBW4330(2)J(3)	3.3	850	450	1200	J	37.5	10.2	28	37	42.5
C4ATMBW4470(2)L(3)	4.7	850	450	1200	L	37.5	20.3	30	45	42
C4ATMBW4680(2)M(3)	6.8	850	450	1200	M	52.5	20.3	30	45	57.5
C4ATMBW5100(2)N(3)	10	850	450	1200	N	52.5	20.3	35	50	57.5
Part Number	Cap Value (µF)	VDC	VAC	Peak VDC	Size Code	S	S1	T	H	L
						Maximum Dimensions (mm)				

(2) Lead Diameter: A1 = 0.8, A3 = 1.2

(3) K = ±10%, J = ±5%

**Table 1B – Ratings & Part Number Reference**

Part Number	Ripple Current			Peak Current	ESR (Maximum)			dV/dt (V/μs)	Packaging Quantity
	100 kHz 70°C (A)				100 kHz (mΩ)				
	2 wires		4 wires	(A)	2 wires		4 wires		
	F=0.8	F=1.2	F=1.2		F=0.8	F=1.2	F=1.2		
C4ATDBU4100(2)0(3)	5	5	-	30	23.3	22.6	-	30	288
C4ATDBU4220(2)0(3)	7	8	-	66	11.8	11	-	30	288
C4ATDBU4330(2)0(3)	7	10	-	99	8.7	7.8	-	30	234
C4ATDBU4500(2)0(3)	7	12	-	150	6.8	5.8	-	30	96
C4ATDBW5100(2)0(3)	7	12	20	300	5.2	4	3.1	30	80
C4ATDBW5200(2)0(3)	7	12	22	400	5.5	4.2	3.1	20	36
C4ATDBW5300(2)0(3)	7	12	22	600	5.3	3.7	2.6	20	36
C4ATDBW5400(2)0(3)	7	12	22	600	5.7	4.2	3.1	15	27
C4ATDBW5500(2)0(3)	7	12	22	750	5.7	4.1	2.8	15	23
C4ATDBW5600(2)0(3)	7	12	22	900	5.7	3.9	2.6	15	21
C4ATFBU4100(2)A(3)	8	8	-	74	10.8	10.2	-	74	288
C4ATFBU4150(2)A(3)	8	10	-	111	7.7	7.1	-	74	288
C4ATFBU4200(2)B(3)	9	11	-	148	6.3	5.6	-	74	234
C4ATFBW4330(2)C(3)	9	13	18	244	4.8	4	3.1	74	96
C4ATFBW4400(2)E(3)	9	14	21	296	4.5	3.6	2.6	74	80
C4ATFBW4500(2)E(3)	9	14	23	370	4	3.2	2.2	74	80
C4ATFBW4680(2)G(3)	9	14	25	504	3.8	2.8	1.7	74	64
C4ATFBW5100(2)F(3)	9	14	28	502	4.3	3.3	2.2	50	58
C4ATFBW5150(2)J(3)	9	14	25	753	4	2.9	1.7	50	36
C4ATFBW5200(2)L(3)	9	14	29	1004	3.7	2.6	1.4	50	36
C4ATFBW5250(2)M(3)	9	14	29	846	4.4	3.3	2	34	27
C4ATFBW5300(2)M(3)	9	14	29	1015	4.1	3	1.7	34	27
C4ATFBW5350(2)N(3)	9	14	29	1184	4.2	2.9	1.6	34	23
C4ATFBW5400(2)N(3)	9	14	29	1350	4	2.8	1.4	34	23
C4ATGBU4100(2)A(3)	8	8	-	82	10	9.4	-	82	288
C4ATGBW4330(2)E(3)	9	14	21	269	4.8	3.8	2.9	82	80
C4ATGBW4680(2)G(3)	9	14	29	554	3.6	2.7	1.6	82	64
C4ATGBW5100(2)F(3)	9	14	29	552	4.5	3.3	2.1	55	58
C4ATGBW5150(2)L(3)	9	14	29	828	3.9	2.8	1.6	55	36
C4ATGBW5200(2)M(3)	9	14	29	744	4.6	3.5	2.2	37	27
Part Number	F=0.8	F=1.2	F=1.2	(A)	F=0.8	F=1.2	F=1.2	dV/dt (V/μs)	Packaging Quantity
	2 wires		4 wires	Peak Current	2 wires		4 wires		
	Ripple Current				ESR (Maximum)				

(2) Lead Diameter: A1 = 0.8, A3 = 1.2

(3) K = ±10%, J = ±5%

**Table 1B – Ratings & Part Number Reference cont.**

Part Number	Ripple Current			Peak Current	ESR (Maximum)			dV/dt (V/μs)	Packaging Quantity
	100 kHz 70°C (A)				100 kHz (mΩ)				
	2 wires		4 wires	(A)	2 wires		4 wires		
	F=0.8	F=1.2	F=1.2		F=0.8	F=1.2	F=1.2		
C4ATGBW5330(2)N(3)	9	14	29	1228	4.1	2.9	1.5	37	23
C4ATHBU3680(2)A(3)	8	8	-	70	11.5	10.9	-	104	288
C4ATHBU4100(2)B(3)	9	10	-	103	8.4	7.7	-	104	234
C4ATHBW4200(2)E(3)	9	14	18	207	5.6	4.7	3.7	104	80
C4ATHBW4220(2)E(3)	9	14	19	228	5.3	4.4	3.4	104	80
C4ATHBW4330(2)G(3)	9	14	25	342	4.4	3.5	2.4	104	64
C4ATHBW4470(2)F(3)	9	14	22	330	5.3	4.4	3.3	70	58
C4ATHBW4500(2)F(3)	9	14	22	351	5.2	4.2	3.1	70	58
C4ATHBW4680(2)J(3)	9	14	28	477	4.8	3.6	2.4	70	36
C4ATHBW4900(2)L(3)	9	14	29	632	4.3	3.2	1.9	70	36
C4ATHBW5100(2)L(3)	9	14	29	702	4.1	3	1.8	70	36
C4ATHBW5120(2)M(3)	9	14	29	568	5.2	4	2.8	47	27
C4ATHBW5200(2)N(3)	9	14	29	947	4.5	3.2	1.9	47	23
C4ATJBU3470(2)A(3)	7	7	-	55	14.3	13.6	-	119	288
C4ATJBW4100(2)D(3)	9	12	13	119	7.9	7.1	6.3	119	192
C4ATJBW4150(2)E(3)	9	14	17	178	6.2	5.3	4.3	119	80
C4ATJBW4220(2)E(3)	9	14	20	260	4.9	4	3	119	80
C4ATJBW4300(2)G(3)	9	14	25	355	4.4	3.4	2.3	119	64
C4ATJBW4500(2)L(3)	8	14	27	400	4.8	3.8	2.8	80	36
C4ATJBW4900(2)M(3)	9	14	29	487	5.6	4.5	3.2	54	27
C4ATJBW5100(2)M(3)	9	14	29	540	5.3	4.2	2.9	54	27
C4ATJBW5150(2)N(3)	9	14	29	811	4.7	3.5	2.1	54	23
C4ATMBU3220(2)A(3)	5	5	-	32.6	23.8	23.1	-	148	288
C4ATMBU3470(2)B(3)	8	8	-	69	12.1	11.4	-	148	234
C4ATMBW4100(2)E(3)	9	14	16	148	7.1	6.2	5.2	148	80
C4ATMBW4150(2)G(3)	9	14	21	222	5.6	4.7	3.6	148	64
C4ATMBW4330(2)J(3)	9	14	24	331	5.7	4.6	3.3	100	36
C4ATMBW4470(2)L(3)	9	14	29	471	4.8	3.7	2.5	100	36
C4ATMBW4680(2)M(3)	9	14	28	460	5.8	4.6	3.4	68	27
C4ATMBW5100(2)N(3)	9	14	29	676	5.1	3.8	2.5	68	23
Part Number	F=0.8	F=1.2	F=1.2	(A)	F=0.8	F=1.2	F=1.2	dV/dt (V/μs)	Packaging Quantity
	Ripple Current			Peak Current	ESR (Maximum)				
	2 wires		4 wires		2 wires		4 wires		

(2) Lead Diameter: A1 = 0.8, A3 = 1.2

(3) K = ±10%, J = ±5%

## 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.

## Dissipation Factor

Dissipation factor is a complex function involved with capacitor inefficiency. The  $\tan\delta$  may vary up and down with increased temperature. For more information, refer to Performance Characteristics.

## Sealing

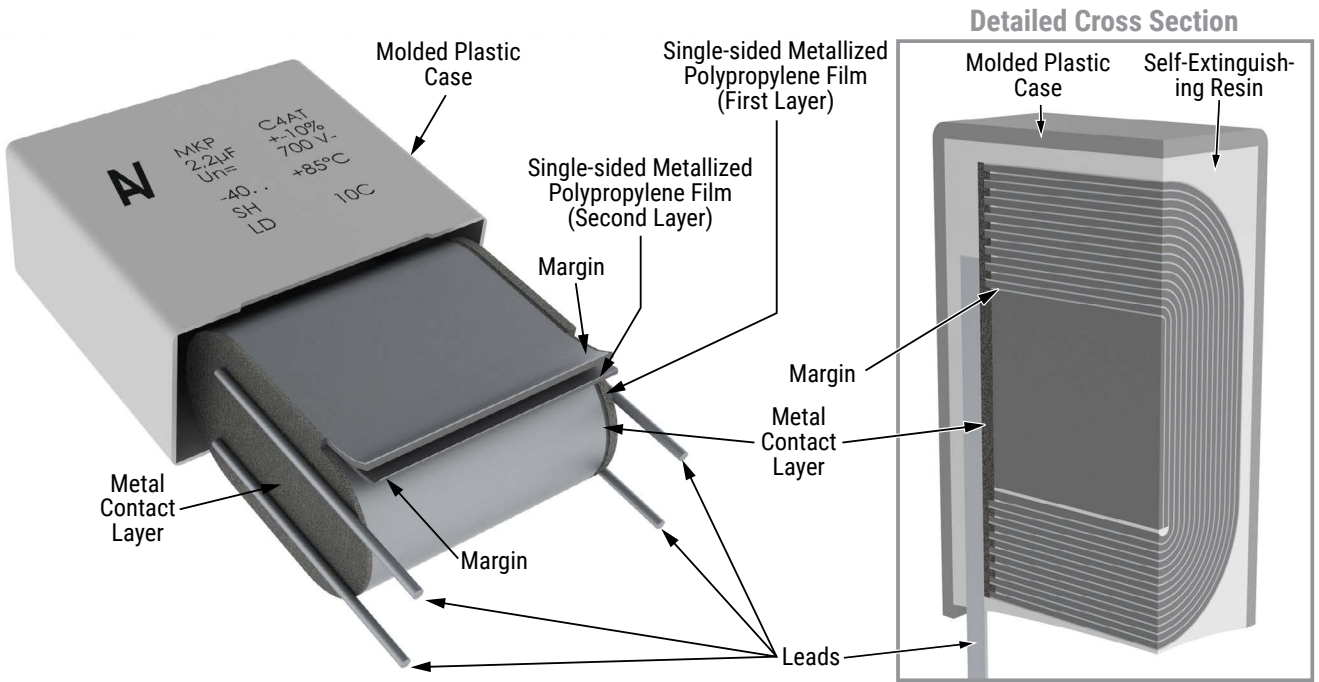
### Hermetically Sealed Capacitors

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.

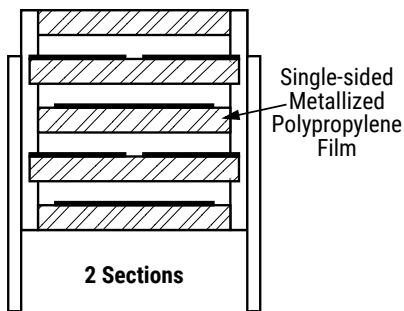
### Barometric Pressure

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.

## Construction

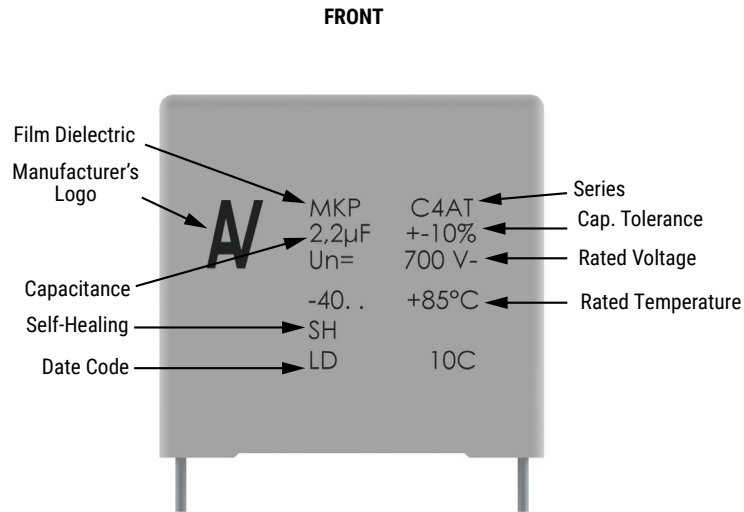


## Winding Scheme

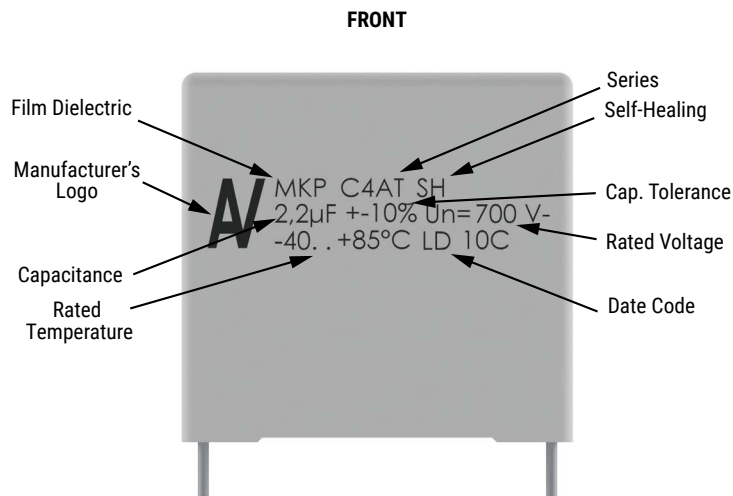




## Marking



**OR**



*\*Marking layout depends on the production line*

*Slight change in the layout can be possible but this does not affect the content of the information of the current marking.*

*This change will be achieved without impact to product form, fit or function, as the products are equivalent with respect to physical, mechanical, quality and reliability characteristics.*

Manufacturing Date Code (IEC 60062)									
Year	Code	Year	Code	Year	Code	Month	Code	Month	Code
2020	M	2027	V	2034	E	January	1	July	7
2021	N	2028	W	2035	F	February	2	August	8
2022	P	2029	X	2036	G	March	3	September	9
2023	R	2030	A	2037	H	April	4	October	0
2024	S	2031	B	2038	K	May	5	November	N
2025	T	2032	C	2039	L	June	6	December	D
2026	U	2033	D	2040	M				

## KEMET Electronics Corporation Sales Offices

For a complete list of our global sales offices, please visit [www.kemet.com/sales](http://www.kemet.com/sales).

---

### Disclaimer

All product specifications, statements, information and data (collectively, the "Information") in this datasheet are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

Statements of suitability for certain applications are based on KEMET Electronics Corporation's ("KEMET") knowledge of typical operating conditions for such applications, but are not intended to constitute – and KEMET specifically disclaims – any warranty concerning suitability for a specific customer application or use. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by KEMET with reference to the use of KEMET's products is given gratis, and KEMET assumes no obligation or liability for the advice given or results obtained.

Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

*KEMET is a registered trademark of KEMET Electronics Corporation.*