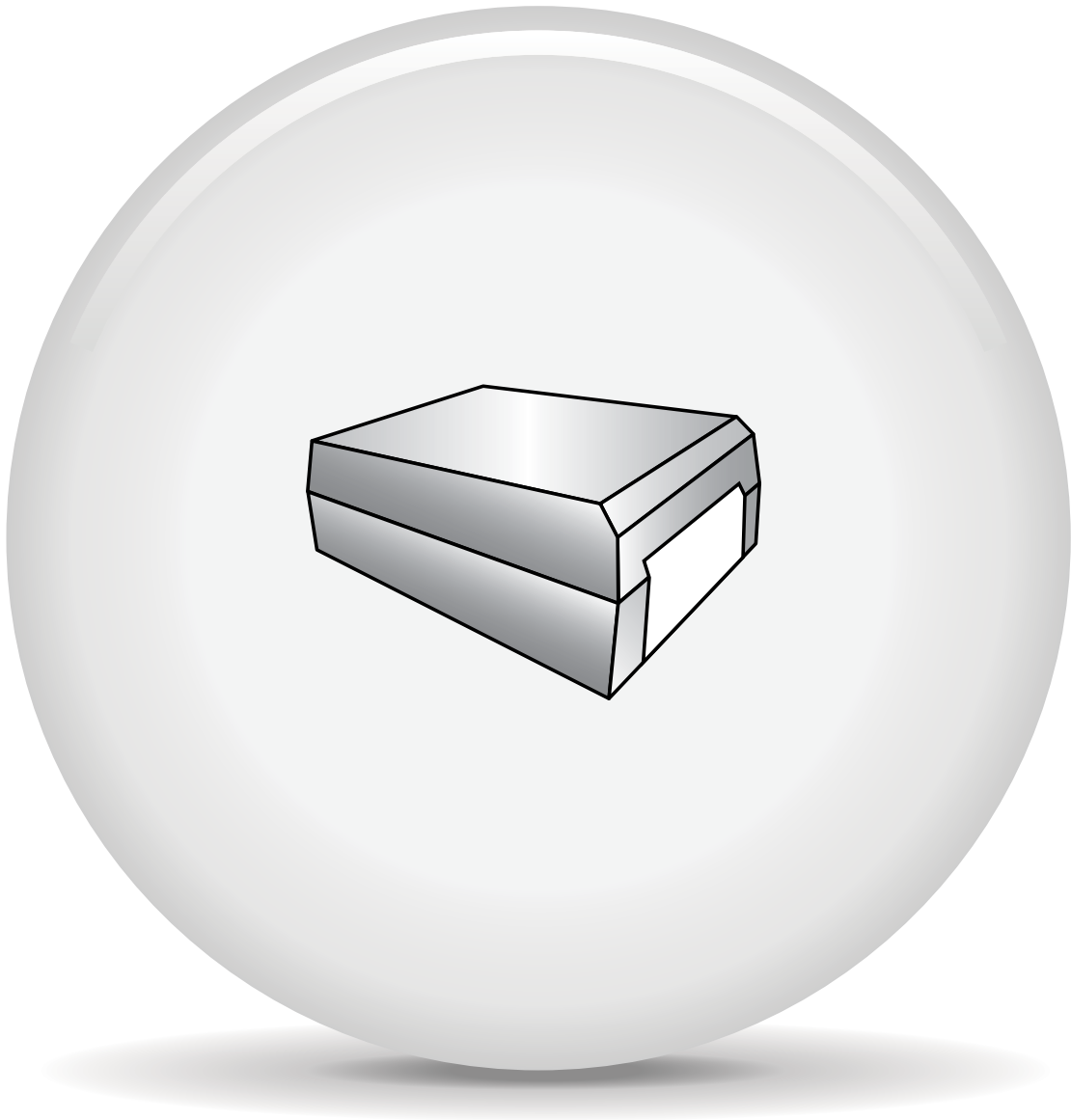


# Aluminum Surface Mount Capacitors

Aluminum Polymer

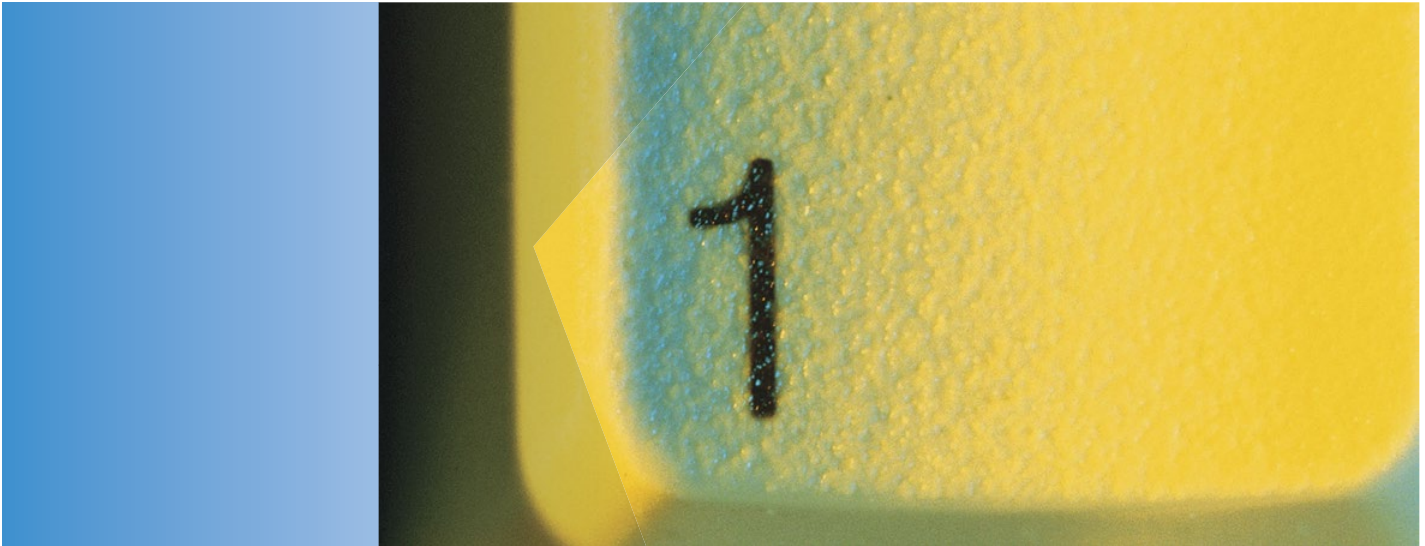


One world. One KEMET.

Electronic Components  
**KEMET**  
CHARGED.®

# Polymer Aluminum Surface Mount Capacitors

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## One world. One source. One KEMET.

When you partner with KEMET, our entire global organization provides you with the coordinated service you need. No bouncing from supplier to supplier. No endless phone calls and web browsing. We're your single, integrated source for electronic component solutions worldwide.

## Less hassles. More solutions.

Our commitment to product quality and on-time delivery has helped customers succeed for over 90 years. There's a reason KEMET components can be found in defense and aerospace equipment. Our reputation is built on a history of consistency, reliability and service.

## The "Easy-to-Buy-From" company.

KEMET offers a level of responsiveness that far surpasses any other supplier. Our passion for customer service is evident throughout our global sales organization, which offers localized support bolstered by our worldwide logistics capabilities. Whether you need rush samples, technical assistance, in-person consultation, accelerated custom design, design collaboration or prototype services, we have a solution.



## Made for you.

When you need custom products delivered on a tight schedule, you can trust KEMET. Get direct design consultation from global experts, who help you get the job done on time and within budget.

## Working for a better world.

KEMET is dedicated to economically, environmentally and socially sustainable development. We've adopted the Electronic Industry Code of Conduct (EICC) to address all aspects of corporate responsibility. Our manufacturing facilities have won numerous environmental excellence awards and recognitions, and our supply chain is certified. We believe doing the right thing is in everyone's interest.

## About KEMET.

KEMET Corporation is a leading global supplier of electronic components. We offer our customers the broadest selection of capacitor technologies in the industry across multiple dielectrics, along with an expanding range of electromechanical devices, and electromagnetic compatibility solutions. Our vision is to be the preferred supplier of electronic component solutions for customers demanding the highest standards of quality, delivery and service.

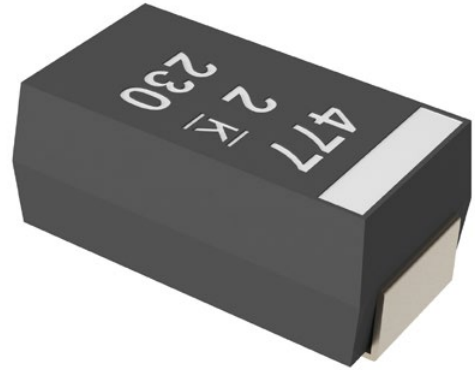
## Overview

The KEMET Aluminum Organic Capacitor (AO-CAP) is a solid state aluminum capacitor with an aluminum oxide dielectric and conductive polymer cathode. The use of the conductive polymer cathode results in very low ESR and improved capacitance retention at high frequency. AO-CAP's may be operated at steady state voltages up to 100% of rated voltage (no derating) with equivalent or better reliability than tantalum capacitors operating at the recommended derated voltage.

The A700 Series AO-CAP offers the same advantages as the polymer tantalum capacitors but also has the added advantages of 125°C performance capability, higher ripple current handling capability and a lower ESR range. Packaged with multiple anodes/elements to reduce the depth that the signal must penetrate, this parallel arrangement reduces the ESR further still to achieve lower ESR than other types of surface mount capacitors with similar capacitance ranges. With reduced ESR, the enhanced capacitance retention at higher frequencies provides the lowest total capacitance and an economical solution for power applications.

## Benefits

- ESR: 5 mΩ to 70 mΩ
- Voltage: 2 V to 16 V
- Capacitance: 6.8 μF to 560 μF
- Operating Temperature: -55°C to 125°C
- Polymer cathode technology
- High frequency capacitance retention
- Non-ignition failure mode
- 100% accelerated steady state aging
- 100% surge current tested
- Volumetric efficiency
- Self-healing mechanism
- EIA standard case sizes



## Applications

Typical applications include DC/DC converters, notebook PCs, telecommunications, displays, and industrial applications.

## Environmental Compliance

RoHS Compliant (6/6) according to Directive 2002/95/EC when ordered with 100% Sn solder.



RoHS Compliant

## SPICE

For a detailed analysis of specific part numbers, please visit [www.kemet.com](http://www.kemet.com) for a free download of KEMET's SPICE software. The KEMET SPICE program is freeware intended to aid design engineers in analyzing the performance of these capacitors over frequency, temperature, ripple, and DC bias conditions.

## Ordering Information

A	700	V	476	M	006	A	T	E018	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/Design	Lead Material	ESR Code	Packaging (C-Spec)
A = Aluminum	700 = Aluminum Polymer	D, V, W, X	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	002 = 2 V 2R5 = 2.5 V 004 = 4 V 006 = 6.3 V 008 = 8 V 010 = 10 V 12R = 12.5 V 016 = 16 V	A = N/A	T = 100% Matte Tin (Sn) Plated	E = ESR Last three digits specify ESR in m $\Omega$ (018 = 18 m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

## Performance Characteristics

Item	Performance Characteristics
Operating Temperature	-55°C to 125°C
Rated Capacitance Range	6.8 – 560 $\mu\text{F}$ @ 120 Hz/25°C
Capacitance Tolerance	M Tolerance (20%)
Rated Voltage Range	2 – 16 V
DF (120 Hz)	6%
ESR (100 kHz)	Refer to Part Number Electrical Specification Table
Leakage Current	$\leq 4$ V Rating: $\leq 0.06$ CV ( $\mu\text{A}$ ) at rated voltage after 5 minutes $> 4$ V Rating: $\leq 0.04$ CV ( $\mu\text{A}$ ) at rated voltage after 5 minutes

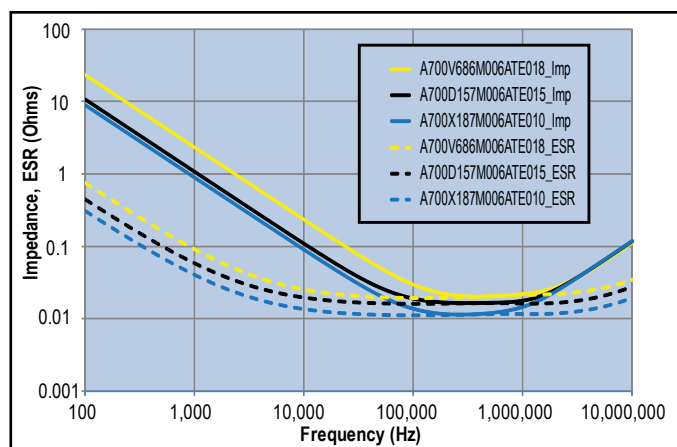
## Qualification

Test	Condition	Characteristics					
Endurance	125°C @ rated voltage, 2,000 hours	Δ C/C	Within ±10% of initial value				
		DF	≤ initial limit				
		DCL	Within 1.25 x initial limit				
		ESR	Within 2.0 x initial limit				
Storage Life	125°C @ 0 volts, 2,000 hours	Δ C/C	Within ±10% of initial value				
		DF	Within initial limits				
		DCL	Within 1.25 x initial limit				
		ESR	Within 2.0 x initial limit				
Humidity	60°C, 90% RH, 1,000 hours, rated voltage 60°C, 90% RH, 500 hours, No Load	Δ C/C	Within -5%/+30% of initial value				
		DF	≤ initial limit				
		DCL	Within 5.0 x initial limit				
Temperature Stability	Extreme temperature exposure at a succession of continuous steps at +25°C, -55°C, +25°C, +85°C, +125°C, +25°C	+25°C	-55°C	+85°C	+125°C		
		Δ C/C	IL*	±15%	±15%	±20%	
		DF	IL	IL	1.2 x IL	1.5 x IL	
DCL		IL	n/a	10 x IL	10 x IL		
		Surge Voltage	125°C, 1.32 x rated voltage, 33 Ω Resistance, 1,000 cycles	Δ C/C	Within ±10% of initial value		
		DF		Within initial limits			
DCL	Within initial limits						
ESR	Within initial limits						
Mechanical Shock/Vibration	MIL-STD-202, Method 213, Condition I, 100 G peak MIL-STD-202, Method 204, Condition D, 10 Hz to 2,000 Hz, 20 G peak	Δ C/C	Within ±10% of initial value				
		DF	Within initial limits				
		DCL	Within initial limits				

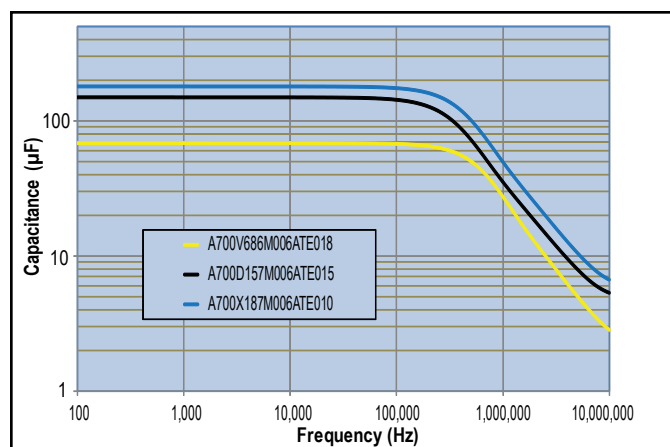
\*IL = Initial Limit

## Electrical Characteristics

ESR vs. Frequency



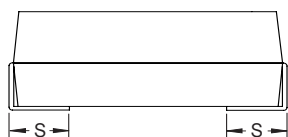
Capacitance vs. Frequency



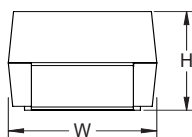
## Dimensions – Millimeters (Inches)

Metric will govern

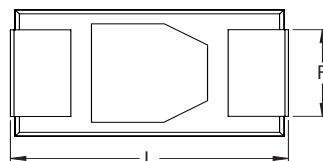
SIDE VIEW



END VIEW



BOTTOM VIEW



Case Size		Component				
KEMET	EIA	L*	W*	H*	F* ±0.1 ±(.004)	S* ±0.3 ±(.012)
D	7343-31	7.3 ±0.3 (0.287 ±0.012)	4.3 ±0.3 (0.169 ±0.012)	2.8 ±0.3 (0.098 ±0.012)	2.4 (.094)	1.3 (.051)
V	7343-20	7.3 ±0.3 (0.287 ±0.012)	4.3 ±0.3 (0.169 ±0.012)	2.0 (0.079) Maximum	2.4 (.094)	1.3 (.051)
W	7343-15	7.3 ±0.3 (0.287 ±0.012)	4.3 ±0.3 (0.169 ±0.012)	1.5 (0.059) Maximum	2.4 (.094)	1.3 (.051)
X	7343-43	7.3 ±0.3 (0.287 ±0.012)	4.3 ±0.3 (0.169 ±0.012)	4.0 ±0.3 (0.157 ±0.012)	2.4 (.094)	1.3 (.051)



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

Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
2	100	V/7343-20	A700V107M002ATE016	12	6	16	4100	3	125
2	100	V/7343-20	A700V107M002ATE018	12	6	18	3900	3	125
2	100	V/7343-20	A700V107M002ATE025	12	6	25	3300	3	125
2	100	V/7343-20	A700V107M002ATE028	12	6	28	3100	3	125
2	150	V/7343-20	A700V157M002ATE015	18	6	15	4200	3	125
2	150	V/7343-20	A700V157M002ATE018	18	6	18	3900	3	125
2	150	V/7343-20	A700V157M002ATE025	18	6	25	3300	3	125
2	150	V/7343-20	A700V157M002ATE028	18	6	28	3100	3	125
2	180	D/7343-31	A700D187M002ATE015	22	6	15	4100	3	125
2	180	D/7343-31	A700D187M002ATE018	22	6	18	3700	3	125
2	220	V/7343-20	A700V227M002ATE009	26	6	9	5500	3	125
2	220	V/7343-20	A700V227M002ATE015	26	6	15	4200	3	125
2	220	V/7343-20	A700V227M002ATE018	26	6	18	3900	3	125
2	220	D/7343-31	A700D227M002ATE009	26	6	9	5300	3	125
2	220	D/7343-31	A700D227M002ATE015	26	6	15	4100	3	125
2	220	D/7343-31	A700D227M002ATE018	26	6	18	3700	3	125
2	270	D/7343-31	A700D277M002ATE012	32	6	12	4600	3	125
2	270	X/7343-43	A700X277M002ATE010	32	6	10	4700	3	125
2	270	X/7343-43	A700X277M002ATE012	32	6	12	4300	3	125
2	270	X/7343-43	A700X277M002ATE015	32	6	15	3900	3	125
2	330	D/7343-31	A700D337M002ATE007	40	6	7	6000	3	125
2	330	D/7343-31	A700D337M002ATE009	40	6	9	5300	3	125
2	330	D/7343-31	A700D337M002ATE012	40	6	12	4600	3	125
2	330	X/7343-43	A700X337M002ATE010	40	6	10	4700	3	125
2	330	X/7343-43	A700X337M002ATE015	40	6	15	3900	3	125
2	390	X/7343-43	A700X397M002ATE010	47	6	10	4700	3	125
2	390	X/7343-43	A700X397M002ATE015	47	6	15	3900	3	125
2	470	D/7343-31	A700D477M002ATE005	56	6	5	7100	3	125
2	470	D/7343-31	A700D477M002ATE006	56	6	6	6500	3	125
2	470	X/7343-43	A700X477M002ATE005	56	6	5	6700	3	125
2	470	X/7343-43	A700X477M002ATE007	56	6	7	5700	3	125
2	470	X/7343-43	A700X477M002ATE010	56	6	10	4700	3	125
2	470	X/7343-43	A700X477M002ATE015	56	6	15	3900	3	125
2	560	X/7343-43	A700X567M002ATE005	67	6	5	6700	3	125
2.5	68	V/7343-20	A700V686M2R5ATE020	10	6	20	3700	3	125
2.5	68	V/7343-20	A700V686M2R5ATE028	10	6	28	3100	3	125
2.5	82	V/7343-20	A700V826M2R5ATE018	12	6	18	3900	3	125
2.5	82	V/7343-20	A700V826M2R5ATE025	12	6	25	3300	3	125
2.5	82	V/7343-20	A700V826M2R5ATE028	12	6	28	3100	3	125
2.5	100	D/7343-31	A700D107M2R5ATE018	15	6	18	3700	3	125
2.5	100	D/7343-31	A700D107M2R5ATE025	15	6	25	3200	3	125
2.5	100	D/7343-31	A700D107M2R5ATE028	15	6	28	3000	3	125
2.5	120	D/7343-31	A700D127M2R5ATE015	18	6	15	4100	3	125
2.5	120	D/7343-31	A700D127M2R5ATE018	18	6	18	3700	3	125
2.5	150	D/7343-31	A700D157M2R5ATE015	23	6	15	4100	3	125
2.5	150	D/7343-31	A700D157M2R5ATE018	23	6	18	3700	3	125
2.5	180	D/7343-31	A700D187M2R5ATE015	27	6	15	4100	3	125
2.5	180	D/7343-31	A700D187M2R5ATE018	27	6	18	3700	3	125
2.5	180	X/7343-43	A700X187M2R5ATE010	27	6	10	4700	3	125
2.5	180	X/7343-43	A700X187M2R5ATE015	27	6	15	3900	3	125
2.5	180	X/7343-43	A700X187M2R5ATE018	27	6	18	3500	3	125
2.5	220	X/7343-43	A700X227M2R5ATE009	33	6	9	5000	3	125
2.5	220	X/7343-43	A700X227M2R5ATE010	33	6	10	4700	3	125
2.5	220	X/7343-43	A700X227M2R5ATE015	33	6	15	3900	3	125
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp

Also available on large (13 inch) reels. Add 7280 to the end of the part number.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitutions will be marked with the higher voltage rating. Substitutions can include better than series.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
2.5	330	X/7343-43	A700X337M2R5ATE010	50	6	10	4700	3	125
2.5	330	X/7343-43	A700X337M2R5ATE015	50	6	15	3900	3	125
4	68	VI/7343-20	A700V686M004ATE020	16	6	20	3700	3	125
4	68	VI/7343-20	A700V686M004ATE028	16	6	28	3100	3	125
4	82	VI/7343-20	A700V826M004ATE016	20	6	16	4100	3	125
4	82	VI/7343-20	A700V826M004ATE018	20	6	18	3900	3	125
4	82	VI/7343-20	A700V826M004ATE025	20	6	25	3300	3	125
4	82	VI/7343-20	A700V826M004ATE028	20	6	28	3100	3	125
4	100	D/7343-31	A700D107M004ATE018	24	6	18	3700	3	125
4	100	D/7343-31	A700D107M004ATE025	24	6	25	3200	3	125
4	100	D/7343-31	A700D107M004ATE028	24	6	28	3000	3	125
4	100	VI/7343-20	A700V107M004ATE025	24	6	25	3300	3	125
4	100	VI/7343-20	A700V107M004ATE028	24	6	28	3100	3	125
4	120	D/7343-31	A700D127M004ATE015	29	6	15	4100	3	125
4	120	D/7343-31	A700D127M004ATE018	29	6	18	3700	3	125
4	150	D/7343-31	A700D157M004ATE015	36	6	15	4100	3	125
4	150	D/7343-31	A700D157M004ATE018	36	6	18	3700	3	125
4	150	VI/7343-20	A700V157M004ATE016	36	6	16	4100	3	125
4	180	D/7343-31	A700D187M004ATE012	43	6	12	4600	3	125
4	180	D/7343-31	A700D187M004ATE015	43	6	15	4100	3	125
4	180	D/7343-31	A700D187M004ATE018	43	6	18	3700	3	125
4	180	X/7343-43	A700X187M004ATE010	43	6	10	4700	3	125
4	180	X/7343-43	A700X187M004ATE015	43	6	15	3900	3	125
4	180	X/7343-43	A700X187M004ATE018	43	6	18	3500	3	125
4	220	D/7343-31	A700D227M004ATE009	53	6	9	5300	3	125
4	220	D/7343-31	A700D227M004ATE010	53	6	10	5000	3	125
4	220	D/7343-31	A700D227M004ATE015	53	6	15	4100	3	125
4	220	X/7343-43	A700X227M004ATE009	53	6	9	5000	3	125
4	220	X/7343-43	A700X227M004ATE010	53	6	10	4700	3	125
4	220	X/7343-43	A700X227M004ATE015	53	6	15	3900	3	125
4	270	X/7343-43	A700X277M004ATE010	65	6	10	4700	3	125
4	270	X/7343-43	A700X277M004ATE015	65	6	15	3900	3	125
4	330	X/7343-43	A700X337M004ATE008	79	6	8	5300	3	125
4	330	X/7343-43	A700X337M004ATE010	79	6	10	4700	3	125
4	330	X/7343-43	A700X337M004ATE015	79	6	15	3900	3	125
4	10	VI/7343-20	A700V106M006ATE055	3	6	55	2200	3	125
6.3	22	VI/7343-20	A700V226M006ATE028	6	6	28	3100	3	125
6.3	22	VI/7343-20	A700V226M006ATE045	6	6	45	2400	3	125
6.3	33	VI/7343-20	A700V336M006ATE018	8	6	18	3900	3	125
6.3	33	VI/7343-20	A700V336M006ATE025	8	6	25	3300	3	125
6.3	33	VI/7343-20	A700V336M006ATE028	8	6	28	3100	3	125
6.3	47	VI/7343-20	A700V476M006ATE018	12	6	18	3900	3	125
6.3	47	VI/7343-20	A700V476M006ATE025	12	6	25	3300	3	125
6.3	47	VI/7343-20	A700V476M006ATE028	12	6	28	3100	3	125
6.3	56	VI/7343-20	A700V566M006ATE018	14	6	18	3900	3	125
6.3	56	VI/7343-20	A700V566M006ATE025	14	6	25	3300	3	125
6.3	56	VI/7343-20	A700V566M006ATE028	14	6	28	3100	3	125
6.3	68	VI/7343-20	A700V686M006ATE015	17	6	15	4200	3	125
6.3	68	VI/7343-20	A700V686M006ATE018	17	6	18	3900	3	125
6.3	68	VI/7343-20	A700V686M006ATE025	17	6	25	3300	3	125
6.3	68	VI/7343-20	A700V686M006ATE028	17	6	28	3100	3	125
6.3	82	VI/7343-20	A700V826M006ATE018	21	6	18	3900	3	125
6.3	82	VI/7343-20	A700V826M006ATE025	21	6	25	3300	3	125
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp

Also available on large (13 inch) reels. Add 7280 to the end of the part number.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitutions will be marked with the higher voltage rating. Substitutions can include better than series.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
6.3	82	V/7343-20	A700V826M006ATE028	21	6	28	3100	3	125
6.3	100	V/7343-20	A700V107M006ATE015	25	6	15	4200	3	125
6.3	100	V/7343-20	A700V107M006ATE018	25	6	18	3900	3	125
6.3	100	V/7343-20	A700V107M006ATE025	25	6	25	3300	3	125
6.3	100	D/7343-31	A700D107M006ATE015	25	6	15	4100	3	125
6.3	100	D/7343-31	A700D107M006ATE018	25	6	18	3700	3	125
6.3	120	D/7343-31	A700D127M006ATE012	30	6	12	4600	3	125
6.3	120	D/7343-31	A700D127M006ATE015	30	6	15	4100	3	125
6.3	120	D/7343-31	A700D127M006ATE018	30	6	18	3700	3	125
6.3	150	D/7343-31	A700D157M006ATE010	38	6	10	5000	3	125
6.3	150	D/7343-31	A700D157M006ATE012	38	6	12	4600	3	125
6.3	150	D/7343-31	A700D157M006ATE015	38	6	15	4100	3	125
6.3	150	X/7343-43	A700X157M006ATE010	38	6	10	4700	3	125
6.3	150	X/7343-43	A700X157M006ATE012	38	6	12	4300	3	125
6.3	150	X/7343-43	A700X157M006ATE015	38	6	15	3900	3	125
6.3	180	D/7343-20	A700D187M006ATE010	45	6	10	5000	3	125
6.3	180	X/7343-43	A700X187M006ATE010	45	6	10	4700	3	125
6.3	180	X/7343-43	A700X187M006ATE015	45	6	15	3900	3	125
6.3	220	X/7343-20	A700X227M006ATE010	55	6	10	4700	3	125
6.3	220	X/7343-43	A700X227M006ATE015	55	6	15	3900	3	125
8	10	V/7343-20	A700V106M008ATE055	3	6	55	2200	3	125
8	22	V/7343-20	A700V226M008ATE028	7	6	28	3100	3	125
8	22	V/7343-20	A700V226M008ATE045	7	6	45	2400	3	125
8	33	V/7343-20	A700V336M008ATE018	11	6	18	3900	3	125
8	33	V/7343-20	A700V336M008ATE025	11	6	25	3300	3	125
8	33	V/7343-20	A700V336M008ATE028	11	6	28	3100	3	125
8	56	D/7343-31	A700D566M008ATE015	18	6	15	4100	3	125
8	56	D/7343-31	A700D566M008ATE018	18	6	18	3700	3	125
8	68	D/7343-31	A700D686M008ATE015	22	6	15	4100	3	125
8	68	D/7343-31	A700D686M008ATE018	22	6	18	3700	3	125
8	100	X/7343-43	A700X107M008ATE010	32	6	10	4700	3	125
8	100	X/7343-43	A700X107M008ATE012	32	6	12	4300	3	125
8	100	X/7343-43	A700X107M008ATE015	32	6	15	3900	3	125
10	10	V/7343-20	A700V106M010ATE055	4	6	55	2200	3	125
10	22	V/7343-20	A700V226M010ATE028	9	6	28	3100	3	125
10	22	V/7343-20	A700V226M010ATE045	9	6	45	2400	3	125
10	33	V/7343-20	A700V336M010ATE018	13	6	18	3900	3	125
10	33	V/7343-20	A700V336M010ATE025	13	6	25	3300	3	125
10	33	V/7343-20	A700V336M010ATE028	13	6	28	3100	3	125
10	47	V/7343-20	A700V476M010ATE025	19	6	25	3300	3	125
10	47	V/7343-20	A700V476M010ATE028	19	6	28	3100	3	125
10	56	D/7343-31	A700D566M010ATE015	22	6	15	4100	3	125
10	56	D/7343-31	A700D566M010ATE018	22	6	18	3700	3	125
10	68	D/7343-31	A700D686M010ATE015	27	6	15	4100	3	125
10	68	D/7343-31	A700D686M010ATE018	27	6	18	3700	3	125
10	100	X/7343-43	A700X107M010ATE010	40	6	10	4700	3	125
10	100	X/7343-43	A700X107M010ATE015	40	6	15	3900	3	125
10	120	X/7343-43	A700X127M010ATE010	48	6	10	4700	3	125
10	120	X/7343-43	A700X127M010ATE015	48	6	15	3900	3	125
10	150	X/7343-43	A700X157M010ATE010	60	6	10	4700	3	125
10	150	X/7343-43	A700X157M010ATE015	60	6	15	3900	3	125
12.5	10	V/7343-20	A700V106M12RATE040	5	6	40	2600	3	125
12.5	10	V/7343-20	A700V106M12RATE055	5	6	55	2200	3	125
VDC	µF	KEMET/EIA	(See below for part options)	µA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp

Also available on large (13 inch) reels. Add 7280 to the end of the part number.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitutions will be marked with the higher voltage rating. Substitutions can include better than series.

Table 1 – Ratings &amp; Part Number Reference cont'd

Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp
VDC	μF	KEMET/EIA	(See below for part options)	μA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
12.5	10	V/7343-20	A700V106M12RATE060	5	6	60	2100	3	125
12.5	15	V/7343-20	A700V156M12RATE040	8	6	40	2600	3	125
12.5	15	V/7343-20	A700V156M12RATE045	8	6	45	2400	3	125
12.5	22	V/7343-20	A700V226M12RATE030	11	6	30	3000	3	125
12.5	33	V/7343-20	A700V336M12RATE025	17	6	25	3300	3	125
12.5	56	D/7343-31	A700D566M12RATE020	28	6	20	3500	3	125
12.5	47	D/7343-31	A700D476M12RATE020	24	6	20	3500	3	125
12.5	47	D/7343-31	A700D476M12RATE025	24	6	25	3200	3	125
12.5	100	X/7343-43	A700X107M12RATE012	50	6	12	4300	3	125
12.5	100	X/7343-43	A700X107M12RATE015	50	6	15	3900	3	125
16	6.8	V/7343-20	A700V685M016ATE070	4	6	70	2000	3	125
16	8.2	V/7343-20	A700V825M016ATE045	5	6	45	2400	3	125
16	10	V/7343-20	A700V106M016ATE045	6	6	45	2400	3	125
16	10	V/7343-20	A700V106M016ATE060	6	6	60	2100	3	125
16	15	V/7343-20	A700V156M016ATE040	10	6	40	2600	3	125
16	22	D/7343-31	A700D226M016ATE018	14	6	18	3700	3	125
16	22	D/7343-31	A700D226M016ATE025	14	6	25	3200	3	125
16	22	D/7343-31	A700D226M016ATE030	14	6	30	2900	3	125
VDC	μF	KEMET/EIA	(See below for part options)	μA @ +20°C Maximum/5 Minutes	% @ +20°C 120 Hz Maximum	mΩ @ 20°C 100 kHz Maximum	(mA) @ 100 kHz with/T = +20°C @ -55°C to 125°C	Reflow Temperature ≤ 260°C	(°C)
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Ripple Current	Moisture Sensitivity	Rated Temp

Also available on large (13 inch) reels. Add 7280 to the end of the part number.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitutions will be marked with the higher voltage rating. Substitutions can include better than series.

## Derating Guidelines

Voltage Rating	Maximum Recommended Steady State Voltage	Maximum Recommended Transient Voltage (1 ms – 1 μs)
-55°C to 125°C		
$2 V \leq V_R \leq 16 V$	$V_R$	$V_R$

$V_R$  = Rated Voltage

## Ripple Current/Ripple Voltage

Permissible AC ripple voltage and current are related to equivalent series resistance (ESR) and the power dissipation capabilities of the device. Permissible AC ripple voltage which may be applied is limited by two criteria

1. The positive peak AC voltage plus the DC bias voltage, if any, must not exceed the DC voltage rating of the capacitor.
2. The negative peak AC voltage, in combination with bias voltage, if any, must not exceed the allowable limits specified for reverse voltage. See the Reverse Voltage section for allowable limits

Power capability is determined based on a 20°C temperature rise. A higher temperature rise and therefore higher power capability is allowable as long as the ambient temperature plus temperature rise due to ripple current does not exceed the rated temperature of the part.

The maximum power dissipation by case size can be determined using the below table.

KEMET Series and Case Code	EIA Case Code	Maximum Power Dissipation (P max) mWatts @ 25°C with +20°C Rise
A700W	7343-15	290
A700V	7343-20	270
A700D	7343-31	250
A700X	7343-43	225

Using the P max of the device, the maximum allowable rms ripple current or voltage may be determined.

$$I(max) = \sqrt{P_{max}/R}$$

$$E(max) = Z \sqrt{P_{max}/R}$$

$I$  = rms ripple current (amperes)

$E$  = rms ripple voltage (volts)

$P_{max}$  = maximum power dissipation(watts)

$R$  = ESR at specified frequency (ohms)

$Z$  = Impedance at specified frequency (Ohms)

Refer to part number listings for permissible Arms limits.

## Reverse Voltage

Polymer aluminum capacitors are polar devices and may be permanently damaged or destroyed if connected in the wrong polarity. These devices will withstand a certain degree of transient voltage reversal for short periods as shown in the below table. Please note that these parts may not be operated continuously in reverse, even within these limits.

Temperature	Permissible Transient Reverse Voltage
25°C	60% of Rated Voltage
55°C	50% of Rated Voltage
85°C	40% of Rated Voltage
125°C	30% of Rated Voltage

**Table 2 – Land Dimensions/Courtyard**

KEMET Case	Metric Size Code EIA	Density Level A: Maximum (Most) Land Protrusion (mm)					Density Level B: Median (Nominal) Land Protrusion (mm)					Density Level C: Minimum (Least) Land Protrusion (mm)				
		W	L	S	V1	V2	W	L	S	V1	V2	W	L	S	V1	V2
D	7343-31	2.55	2.77	3.67	10.22	5.60	2.43	2.37	3.87	9.12	5.10	2.33	1.99	4.03	8.26	4.84
V	7343-20	2.55	2.77	3.67	10.22	5.60	2.43	2.37	3.87	9.12	5.10	2.33	1.99	4.03	8.26	4.84
W	7343-15	2.55	2.77	3.67	10.22	5.60	2.43	2.37	3.87	9.12	5.10	2.33	1.99	4.03	8.26	4.84
X <sup>1</sup>	7343-43	2.55	2.77	3.67	10.22	5.60	2.43	2.37	3.87	9.12	5.10	2.33	1.99	4.03	8.26	4.84

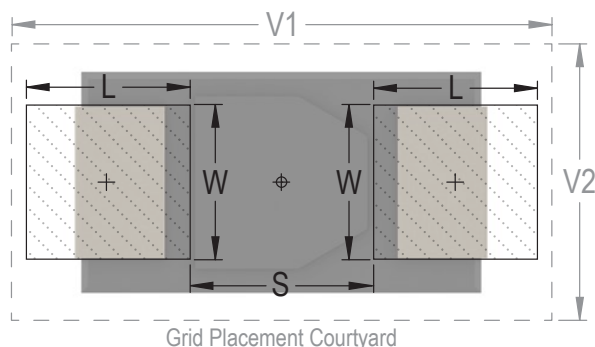
**Density Level A:** For low-density product applications. Recommended for wave solder applications and provides a wider process window for reflow solder processes.

**Density Level B:** For products with a moderate level of component density. Provides a robust solder attachment condition for reflow solder processes.

**Density Level C:** For high component density product applications. Before adapting the minimum land pattern variations the user should perform qualification testing based on the conditions outlined in IPC standard 7351 (IPC-7351).

<sup>1</sup> Height of these chips may create problems in wave soldering.

<sup>2</sup> Land pattern geometry is too small for silkscreen outline.



## Soldering Process

KEMET's families of surface mount capacitors are compatible with wave (single or dual), convection, IR, or vapor phase reflow techniques. Preheating of these components is recommended to avoid extreme thermal stress. KEMET's recommended profile conditions for convection and IR reflow reflect the profile conditions of the IPC/J-STD-020D standard for moisture sensitivity testing. The devices can safely withstand a maximum of three reflow passes at these conditions.

Please note that although the X/7343-43 case size can withstand wave soldering, the tall profile (4.3 mm maximum) dictates care in wave process development.

Hand soldering should be performed with care due to the difficulty in process control. If performed, care should be taken to avoid contact of the soldering iron to the molded case. The iron should be used to heat the solder pad, applying solder between the pad and the termination, until reflow occurs. Once reflow occurs, the iron should be removed immediately. "Wiping" the edges of a chip and heating the top surface is not recommended.

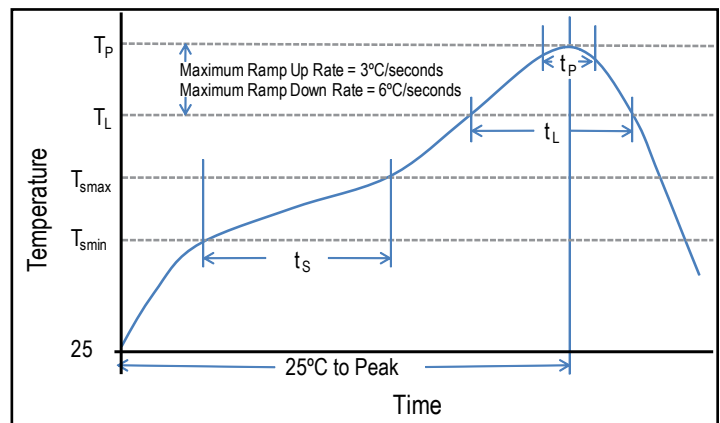
During typical reflow operations, a slight darkening of the gold-colored epoxy may be observed. This slight darkening is normal and not harmful to the product. Marking permanency is not affected by this change.

Profile Feature	SnPb Assembly	Pb-Free Assembly
Preheat/Soak		
Temperature Minimum ( $T_{smin}$ )	100°C	150°C
Temperature Maximum ( $T_{smax}$ )	150°C	200°C
Time ( $t_s$ ) from $T_{smin}$ to $T_{smax}$	60 – 120 seconds	60 – 120 seconds
Ramp-up Rate ( $T_L$ to $T_P$ )	3°C/seconds maximum	3°C/seconds maximum
Liquidous Temperature ( $T_L$ )	183°C	217°C
Time Above Liquidous ( $t_L$ )	60 – 150 seconds	60 – 150 seconds
Peak Temperature ( $T_P$ )	220°C* 235°C**	250°C* 260°C**
Time within 5°C of Maximum Peak Temperature ( $t_p$ )	20 seconds maximum	30 seconds maximum
Ramp-down Rate ( $T_P$ to $T_L$ )	6°C/seconds maximum	6°C/seconds maximum
Time 25°C to Peak Temperature	6 minutes maximum	8 minutes maximum

Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.

\*Case Size D, E, P, Y, and X

\*\*Case Size A, B, C, H, I, K, M, R, S, T, U, V, W, and Z

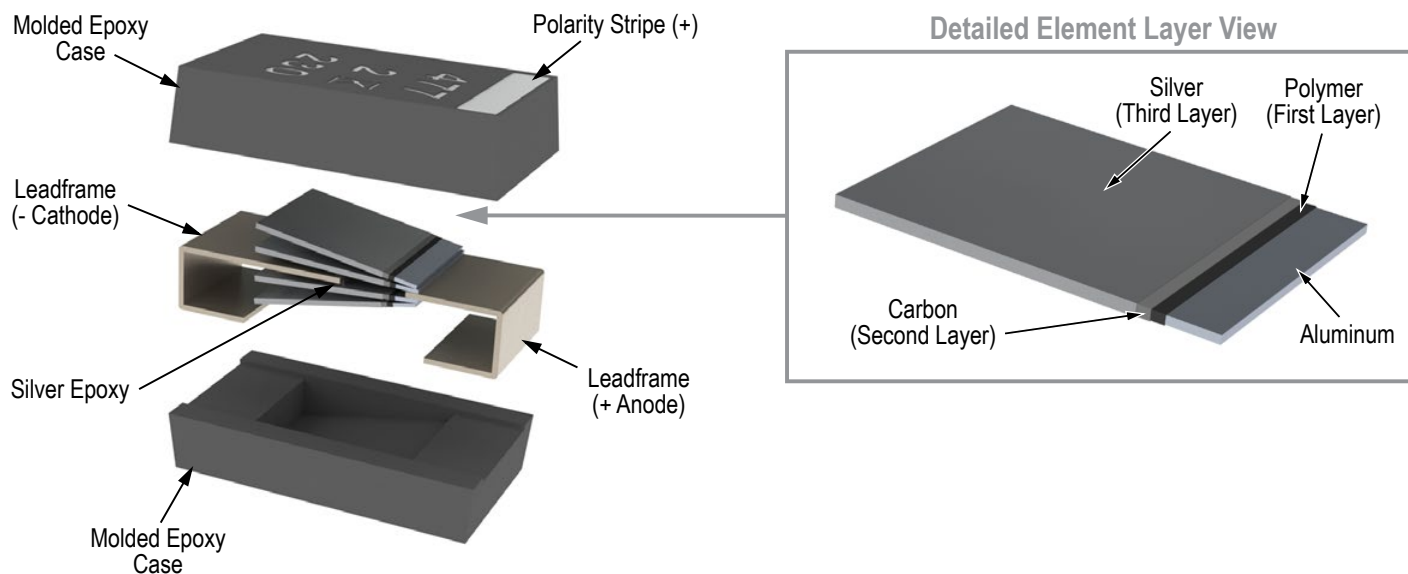


## Storage

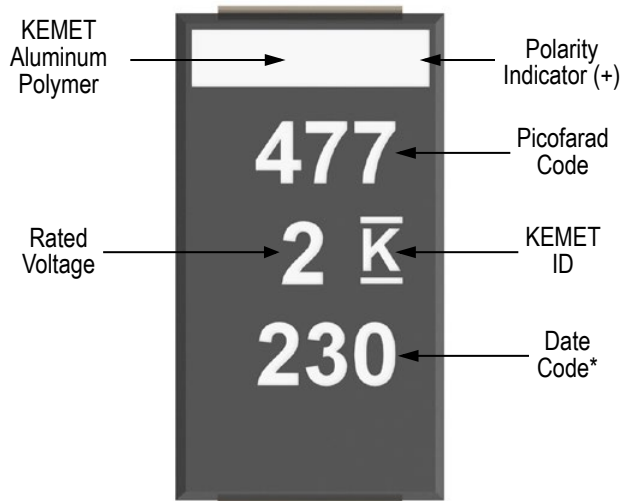
All AO-CAP series are shipped in moisture barrier bags with a desiccant and moisture indicator card. These series are classified as MSL3 (Moisture Sensitivity Level 3). Product contained within the moisture barrier bags should be stored in normal working environments with temperatures not to exceed 40°C and humidity not in excess of 60% RH.



## Construction



## Capacitor Marking



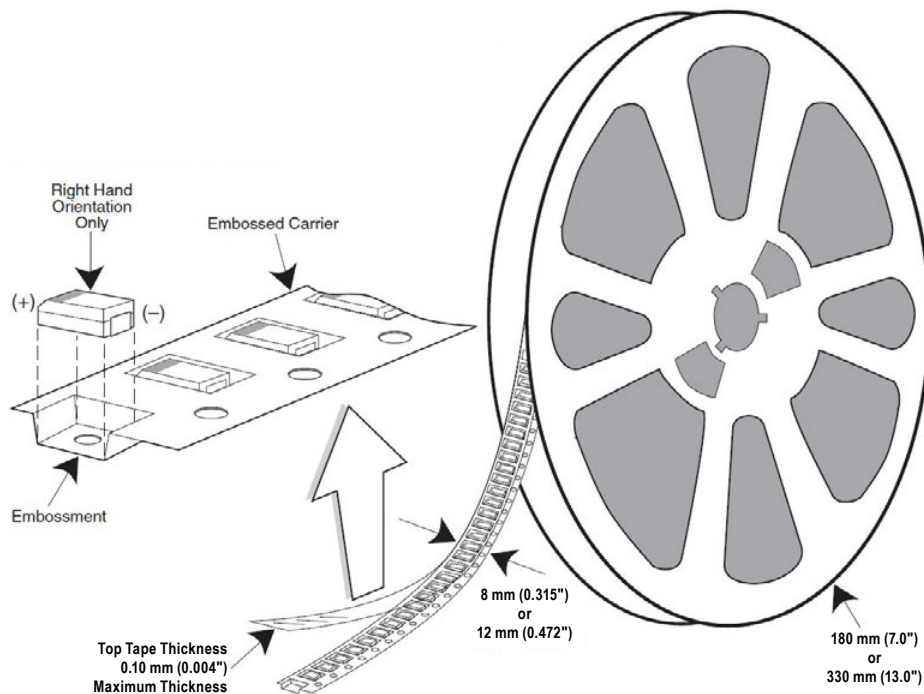
\* 230 = 30<sup>th</sup> week of 2012

Date Code *	
1 <sup>st</sup> digit = Last number of Year	9 = 2009 0 = 2010 1 = 2011 2 = 2012 3 = 2013 4 = 2014
2 <sup>nd</sup> and 3 <sup>rd</sup> digit = Week of the Year	01 = 1 <sup>st</sup> week of the Year to 52 = 52 <sup>nd</sup> week of the Year



## Tape & Reel Packaging Information

KEMET's molded tantalum and aluminum chip capacitor families are packaged in 8 and 12 mm plastic tape on 7" and 13" reels in accordance with *EIA Standard 481: Embossed Carrier Taping of Surface Mount Components for Automatic Handling*. This packaging system is compatible with all tape-fed automatic pick-and-place systems.

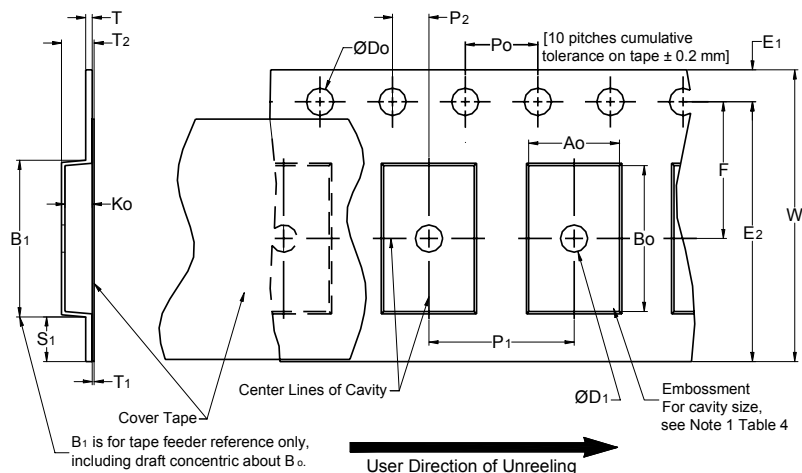


**Table 3 – Packaging Quantity**

Case Code		Tape Width (mm)	7" Reel*	13" Reel*
KEMET	EIA			
S	3216-12	8	2,500	10,000
T	3528-12	8	2,500	10,000
M	3528-15	8	2,000	8,000
U	6032-15	12	1,000	5,000
L	6032-19	12	1,000	5,000
W	7343-15	12	1,000	3,000
Z	7343-17	12	1,000	3,000
V	7343-20	12	1,000	3,000
A	3216-18	8	2,000	9,000
B	3528-21	8	2,000	8,000
C	6032-28	12	500	3,000
D	7343-31	12	500	2,500
Q	7343-12	12	1,000	3,000
Y	7343-40	12	500	2,000
X	7343-43	12	500	2,000
E/T428P	7360-38	12	500	2,000
H	7360-20	12	1,000	2,500

\* No C-Spec required for 7" reel packaging. C-7280 required for 13" reel packaging.

**Figure 1 – Embossed (Plastic) Carrier Tape Dimensions**



**Table 4 – Embossed (Plastic) Carrier Tape Dimensions**

Metric will govern

Constant Dimensions — Millimeters (Inches)									
Tape Size	D <sub>0</sub>	D <sub>1</sub> Minimum Note 1	E <sub>1</sub>	P <sub>0</sub>	P <sub>2</sub>	R Reference Note 2	S <sub>1</sub> Minimum Note 3	T Maximum	T <sub>1</sub> Maximum
8 mm	1.5 +0.10/-0.0 (0.059 +0.004/-0.0)	1.0 (0.039)	1.75 ±0.10 (0.069 ±0.004)	4.0 ±0.10 (0.157 ±0.004)	2.0 ±0.05 (0.079 ±0.002)	25.0 (0.984)	0.600 (0.024)	0.600 (0.024)	0.100 (0.004)
12 mm		1.5 (0.059)			2.0 ±0.1 (0.079 ±0.059)				
16 mm									
Variable Dimensions — Millimeters (Inches)									
Tape Size	Pitch	B <sub>1</sub> Maximum Note 4	E <sub>2</sub> Minimum	F	P <sub>1</sub>	T <sub>2</sub> Maximum	W Maximum	A <sub>0</sub> , B <sub>0</sub> & K <sub>0</sub>	
8 mm	Single (4 mm)	4.35 (0.171)	6.25 (0.246)	3.5 ±0.05 (0.138 ±0.002)	2.0 ±0.05 or 4.0 ±0.10 (0.079 ±0.002 or 0.157 ±0.004)	2.5 (0.098)	8.3 (0.327)	Note 5	
12 mm	Single (4 mm) & Double (8 mm)	8.2 (0.323)	10.25 (0.404)	5.5 ±0.05 (0.217 ±0.002)	2.0 ±0.05 (0.079 ±0.002) or 4.0 ±0.10 (0.157 ±0.004) or 8.0 ±0.10 (0.315 ±0.004)	4.6 (0.181)	12.3 (0.484)		
16 mm	Triple (12 mm)	12.1 (0.476)	14.25 (0.561)	7.5 ±0.10 (0.295 ±0.004)	4.0 ±0.10 (0.157 ±0.004) to 12.0 ±0.10 (0.472 ±0.004)	8.0 (0.315)	16.3 (0.642)		

1. The embossment hole location shall be measured from the sprocket hole controlling the location of the embossment. Dimensions of embossment location and hole location shall be applied independent of each other.
2. The tape, with or without components, shall pass around R without damage (see Figure 4).
3. If S<sub>1</sub> < 1.0 mm, there may not be enough area for cover tape to be properly applied (see EIA Standard 481–D, paragraph 4.3, section b).
4. B<sub>1</sub> dimension is a reference dimension for tape feeder clearance only.
5. The cavity defined by A<sub>0</sub>, B<sub>0</sub> and K<sub>0</sub> shall surround the component with sufficient clearance that:
  - (a) the component does not protrude above the top surface of the carrier tape.
  - (b) the component can be removed from the cavity in a vertical direction without mechanical restriction, after the top cover tape has been removed.
  - (c) rotation of the component is limited to 20° maximum for 8 and 12 mm tapes and 10° maximum for 16 mm tapes (see Figure 2).
  - (d) lateral movement of the component is restricted to 0.5 mm maximum for 8 mm and 12 mm wide tape and to 1.0 mm maximum for 16 mm tape (see Figure 3).
  - (e) see Addendum in EIA Standard 481–D for standards relating to more precise taping requirements.

## Packaging Information Performance Notes

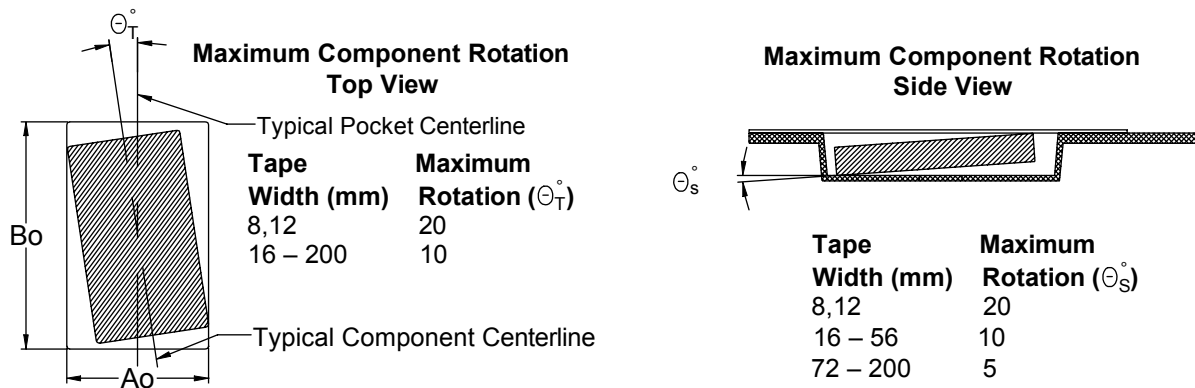
- Cover Tape Break Force:** 1.0 Kg minimum.
- Cover Tape Peel Strength:** The total peel strength of the cover tape from the carrier tape shall be:

Tape Width	Peel Strength
8 mm	0.1 to 1.0 Newton (10 to 100 gf)
12 and 16 mm	0.1 to 1.3 Newton (10 to 130 gf)

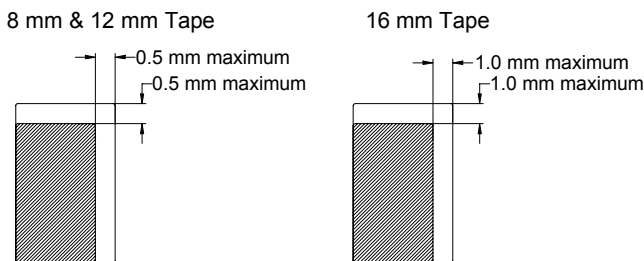
The direction of the pull shall be opposite the direction of the carrier tape travel. The pull angle of the carrier tape shall be 165° to 180° from the plane of the carrier tape. During peeling, the carrier and/or cover tape shall be pulled at a velocity of 300 ±10 mm/minute.

- Labeling:** Bar code labeling (standard or custom) shall be on the side of the reel opposite the sprocket holes. Refer to EIA Standards 556 and 624.

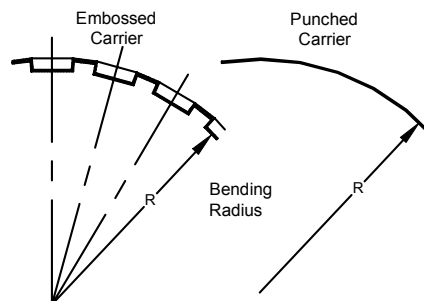
### Figure 2 – Maximum Component Rotation



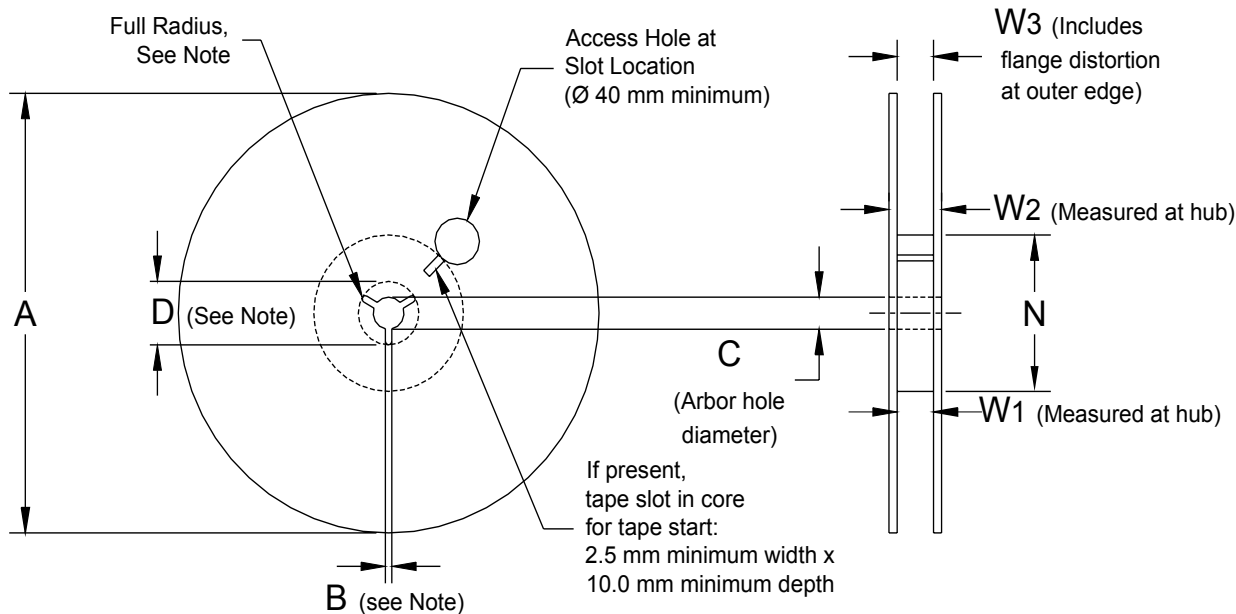
### Figure 3 – Maximum Lateral Movement



### Figure 4 – Bending Radius



**Figure 5 – Reel Dimensions**



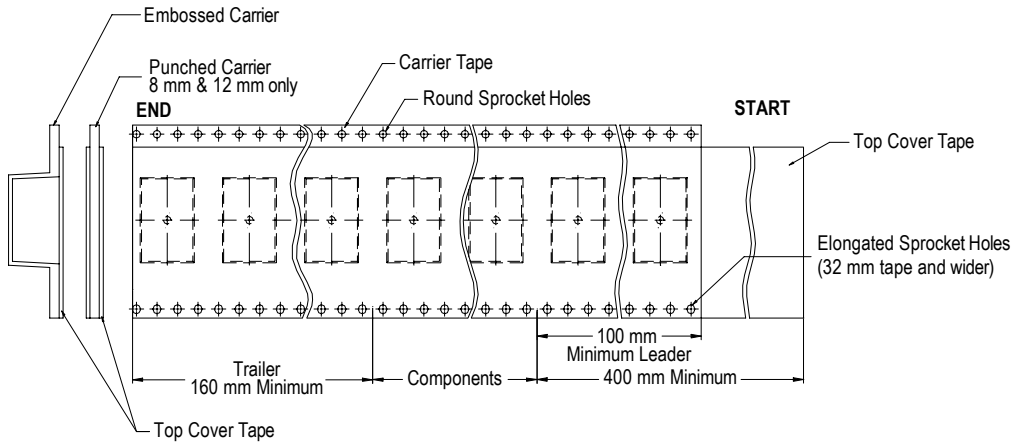
Note: Drive spokes optional; if used, dimensions B and D shall apply.

**Table 5 – Reel Dimensions**

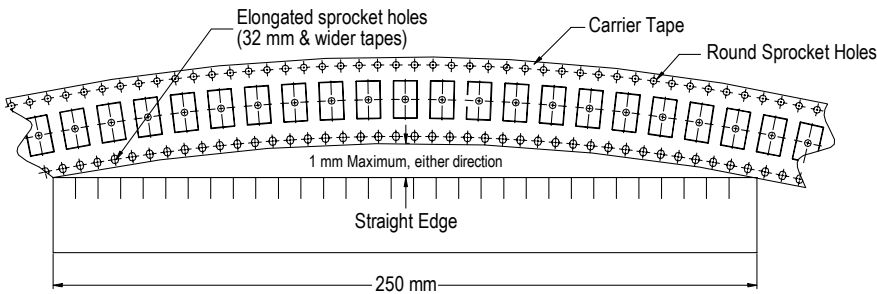
Metric will govern

Constant Dimensions — Millimeters (Inches)				
Tape Size	A	B Minimum	C	D Minimum
8 mm	178 ±0.20 (7.008 ±0.008) or 330 ±0.20 (13.000 ±0.008)	1.5 (0.059)	13.0 +0.5/-0.2 (0.521 +0.02/-0.008)	20.2 (0.795)
12 mm				
16 mm				
Variable Dimensions — Millimeters (Inches)				
Tape Size	N Minimum	W <sub>1</sub>	W <sub>2</sub> Maximum	W <sub>3</sub>
8 mm	50 (1.969)	8.4 +1.5/-0.0 (0.331 +0.059/-0.0)	14.4 (0.567)	Shall accommodate tape width without interference
12 mm		12.4 +2.0/-0.0 (0.488 +0.078/-0.0)	18.4 (0.724)	
16 mm		16.4 +2.0/-0.0 (0.646 +0.078/-0.0)	22.4 (0.882)	

**Figure 6 – Tape Leader & Trailer Dimensions**



**Figure 7 – Maximum Camber**



## KEMET Corporation World Headquarters

2835 KEMET Way  
 Simpsonville, SC 29681

Mailing Address:  
 P.O. Box 5928  
 Greenville, SC 29606

www.kemet.com  
 Tel: 864-963-6300  
 Fax: 864-963-6521

**Corporate Offices**  
 Fort Lauderdale, FL  
 Tel: 954-766-2800

## North America

**Southeast**  
 Lake Mary, FL  
 Tel: 407-855-8886

**Northeast**  
 Wilmington, MA  
 Tel: 978-658-1663

**Central**  
 Novi, MI  
 Tel: 248-306-9353

**West**  
 Milpitas, CA  
 Tel: 408-433-9950

**Mexico**  
 Guadalajara, Jalisco  
 Tel: 52-33-3123-2141

## Europe

**Southern Europe**  
 Paris, France  
 Tel: 33-1-4646-1006

Sasso Marconi, Italy  
 Tel: 39-051-939111

**Central Europe**  
 Landsberg, Germany  
 Tel: 49-8191-3350800

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# KEMET Production System



**Corporate Office**

KEMET Corporation  
2835 KEMET Way  
Simpsonville, SC 29681  
USA

Tel: 864.963.6300

Fax: 864.963.6521

[www.kemet.com](http://www.kemet.com)

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