

Overview

The low ESR, surge-robust T495 Automotive Series is designed for demanding applications that require high surge current and high ripple current capability. This series builds upon the proven capabilities of our industrial grade tantalum chip capacitors to offer several advantages such as low ESR, high ripple current

capability, excellent capacitance stability, and improved resistance to high in-rush currents. These benefits are achieved through a combination of proprietary design, materials, and process parameters as well as high-stress, low impedance electrical conditioning performed prior to screening.

Benefits

- Meets or exceeds EIA standard 535BAAC
- Taped and reeled per EIA 481-1
- High surge current capability
- Optional gold-plated terminations
- High ripple current capability
- 100% surge current test on C, D, E, U, V, X sizes
- 100% steady-state accelerated aging
- Capacitance values of 0.1 μ F to 680 μ F
- Tolerances of $\pm 10\%$ and $\pm 20\%$
- Voltage rating of 6.3 – 50 VDC
- Extended range values
- Available tested to DSCC 95158
- RoHS Compliant and lead-free terminations
- Operating temperature range of -55°C to $+125^{\circ}\text{C}$

Applications

Typical applications include decoupling and filtering in industrial and automotive end applications, such as DC/DC converters, portable electronics, telecommunications, and control units requiring high ripple current capability.



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 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

T	495	X	107	M	010	A	T	A080	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/ Design	Lead Material	ESR	Packaging (C-Spec)
T = Tantalum	Surge Robust Low ESR	A, B, C, D, E, T, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 V 004 = 4 V 006 = 6.3 V 010 = 10 V 016 = 16 V 020 = 20 V 025 = 25 V 035 = 35 V 050 = 50 V	A = N/A	T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) G = Gold Plated (A, B, C, D, X only) N = Non-Magnetic 100% Tin (Sn) M = Non-Magnetic (SnPb)	A = ESR Last three digits specify ESR in mΩ (080 = 80 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Performance Characteristics

Item	Performance Characteristics
Operating Temperature	-55°C to 125°C
Rated Capacitance Range	0.47 – 680 μF @ 120 Hz/25°C
Capacitance Tolerance	K Tolerance (10%), M Tolerance (20%)
Rated Voltage Range	6.3 – 50 V
DF (120 Hz)	Refer to Part Number Electrical Specification Table
ESR (100 kHz)	Refer to Part Number Electrical Specification Table
Leakage Current	≤ 0.01 CV (μA) at rated voltage after 5 minutes

Qualification

Test	Condition	Characteristics				
Endurance	85°C @ rated voltage, 2,000 hours 125°C @ 2/3 rated voltage, 2,000 hours	Δ C/C	Within ±10% of initial value			
		DF	Within initial limits			
		DCL	Within 1.25 x initial limit			
		ESR	Within initial limits			
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 initial limits			
Thermal Shock	MIL–STD–202, Method 107, Condition B, mounted, -55°C to 125°C, 1000 cycles	Δ C/C	Within ±5% of initial value			
		DF	Within initial limits			
		DCL	Within 1.25 x initial limit			
		ESR	Within initial limits			
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*	±10%	±10%	±20%
		DF	IL	IL	1.5 x IL	1.5 x IL
Surge Voltage	25°C and 85°C, 1.32 x rated voltage 1,000 cycles (125°C, 1.2 x rated voltage).	DCL	10 x IL			
		ESR	12 x IL			
		IL	n/a			
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			
		ESR	Within initial limits			

*IL = Initial limit

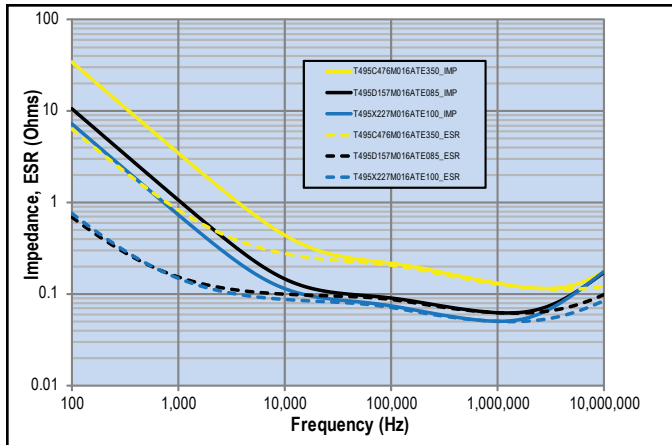
Certification

KEMET's Internal Qualification Plan for this Tantalum series of capacitors follows AEC–Q200 guidelines. Standard catalog part types ordered without a specific automotive designator, i.e., suffix AUTO or four digit customer specific designator (C Spec), are not considered KEMET Automotive Grade tantalum capacitors.

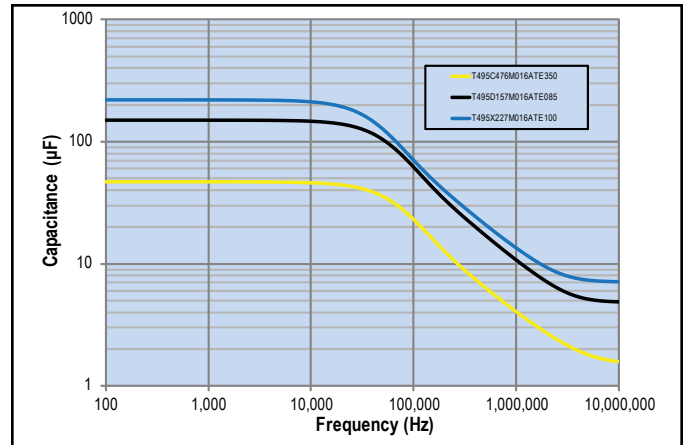
DSCC Drawing 95158

Electrical Characteristics

ESR vs. Frequency

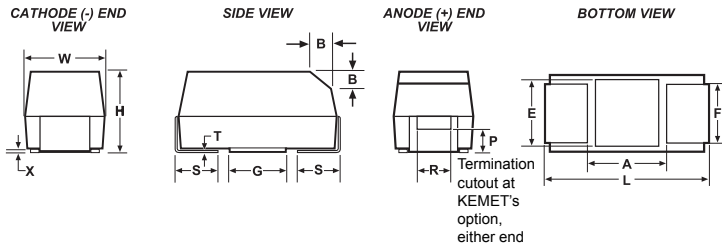


Capacitance vs. Frequency



Dimensions – Millimeters (Inches)

Metric will govern



Case Size		Component													
KEMET	EIA	L*	W*	H*	F* ±0.1 ±(.004)	S* ±0.3 ±(.012)	B* ±0.15 (Ref) ±.006	X (Ref)	P (Ref)	R (Ref)	T (Ref)	A (Min)	G (Ref)	E (Ref)	
A	3216-18	3.2 ± 0.2 (.126 ± .008)	1.6 ± 0.2 (.063 ± .008)	1.6 ± 0.2 (.063 ± .008)	1.2 (.047)	0.8 (.031)	0.4 (.016)	0.10 ± 0.10 (.004 ± .004)	0.4 (.016)	0.4 (.016)	0.13 (.005)	0.8 (.31)	1.1 (.043)	1.3 (.051)	
B	3528-21	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.9 ± 0.2 (.075 ± .008)	2.2 (.087)	0.8 (.031)	0.4 (.016)	0.10 ± 0.10 (.004 ± .004)	0.5 (.020)	1.0 (.039)	0.13 (.005)	1.1 (0.043)	1.8 (.071)	2.2 (.087)	
C	6032-28	6.0 ± 0.3 (.236 ± .03)	3.2 ± 0.3 (.126 ± .012)	2.5 ± 0.3 (.098 ± .012)	2.2 (.087)	1.3 (.051)	0.5 (.020)	0.10 ± 0.10 (.004 ± .004)	0.9 (.035)	1.0 (.039)	0.13 (.005)	2.5(.098)	2.8 (.110)	2.4 (.094)	
D	7343-31	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	2.8 ± 0.3 (.110 ± .012)	2.4 (.094)	1.3 (.051)	0.5 (.020)	0.10 ± 0.10 (.004 ± .004)	0.9 (.035)	1.0 (.039)	0.13 (.005)	3.8 (.150)	3.5 (.138)	3.5 (.138)	
X	7343-43	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	4.0 ± 0.3 (.157 ± .012)	2.4 (.094)	1.3 (.051)	0.5 (.020)	0.10 ± 0.10 (.004 ± .004)	1.7 (.067)	1.0 (.039)	0.13 (.005)	3.8 (.150)	3.5 (.138)	3.5 (.138)	
E	7360-38	7.3 ± 0.3 (.287 ± .012)	6.0 ± 0.3 (.236 ± .012)	3.6 ± 0.2 (.142 ± .008)	4.1 (.161)	1.3 (.051)	0.5 (.020)	0.10 ± 0.10 (.004 ± .004)	0.9 (.035)	1.0 (.039)	0.13 (.005)	3.8 (.150)	3.5 (.138)	3.5 (.138)	
T	3528-12	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.2 (.047)	2.2 (.087)	0.8 (.031)	N/A	0.05 (.002)	N/A	N/A	0.13 (.005)	1.1 (.043)	1.8 (.071)	2.2 (.087)	
V	7343-20	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	2.0 (.079)	2.4 (.094)	1.3 (.051)	N/A	0.05 (.002)	N/A	N/A	0.13 (.005)	3.8 (.150)	3.5 (.138)	3.5 (.138)	

Notes: (Ref) – Dimensions provided for reference only. No dimensions provided for B, P or R because low profile cases do not have a bevel or a notch.

* MIL-PRF-55365/8 specified dimensions

Table 1 – Ratings & Part Number Reference

Rated Voltage	Rated Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity
VDC	μF	KEMET/EIA	(See below for part options)	μAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
6.3	2.2	A/3216-18	T495A225(1)006A(2)A5K0	0.5	6	5000	122	110	49	1
6.3	3.3	A/3216-18	T495A335(1)006A(2)A3K0	0.5	6	3000	158	142	63	1
6.3	4.7	A/3216-18	T495A475(1)006A(2)A3K5	0.5	6	3500	146	131	58	1
6.3	6.8	A/3216-18	T495A685(1)006A(2)A2K0	0.5	6	2000	194	175	78	1
6.3	10	A/3216-18	T495A106(1)006A(2)A2K0	0.6	6	2000	194	175	78	1
6.3	10	B/3528-21	T495B106(1)006A(2)A1K0	0.6	6	1000	292	263	117	1
6.3	15	A/3216-18	T495A156(1)006A(2)A2K0	0.9	6	2000	194	175	78	1
6.3	22	A/3216-18	T495A226(1)006A(2)A1K5	1.4	6	1500	224	202	90	1
6.3	22	B/3528-21	T495B226(1)006A(2)A500	1.4	6	500	412	371	165	1
6.3	22	C/6032-28	T495C226(1)006A(2)A380	1.4	6	380	538	484	215	1
6.3	33	A/3216-18	T495A336(1)006A(2)A1K0	2.1	12	1000	274	247	110	1
6.3	33	B/3528-21	T495B336(1)006A(2)A600	2.1	6	600	376	338	150	1
6.3	33	C/6032-28	T495C336(1)006A(2)A350	2.1	6	350	561	505	224	1
6.3	47	B/3528-21	T495B476(1)006A(2)A500	3.0	6	500	412	371	165	1
6.3	68	B/3528-21	T495B686(1)006A(2)A500	4.3	8	500	412	371	165	1
6.3	68	C/6032-28	T495C686(1)006A(2)A400	4.3	6	400	524	472	210	1
6.3	68	D/7343-31	T495D686(1)006A(2)A180	4.3	4	180	913	822	365	1
6.3	100	B/3528-21	T495B107(M)006A(2)A700	6.3	15	700	348	313	139	1
6.3	100	C/6032-28	T495C107(1)006A(2)A150	6.3	8	150	856	770	342	1
6.3	100	D/7343-31	T495D107(1)006A(2)A150	6.3	8	150	1000	900	400	1
6.3	100	D/7343-31	T495D107(1)006A(2)A130	6.3	8	130	1074	1019	679	1
6.3	150	D/7343-31	T495D157(1)006A(2)A100	9.5	6	100	1225	1103	490	1
6.3	150	D/7343-31	T495D157(1)006A(2)A125	9.5	6	125	1095	986	438	1
6.3	150	X/7343-43	T495X157(1)006A(2)A100	9.5	6	100	1285	1157	514	1
6.3	220	C/6032-28	T495C227(1)006A(2)A225	13.9	10	225	699	629	280	1
6.3	220	D/7343-31	T495D227(1)006A(2)A100	13.9	8	100	1225	1103	490	1
6.3	220	X/7343-43	T495X227(1)006A(2)A100	13.9	8	100	1285	1157	514	1
6.3	330	D/7343-31	T495D337(1)006A(2)A100	20.8	8	100	1225	1103	490	1
6.3	330	X/7343-43	T495X337(1)006A(2)A100	20.8	8	100	1285	1157	514	1
6.3	470	D/7343-31	T495D477(1)006A(2)A150	29.6	12	150	1000	900	400	1
6.3	470	X/7343-43	T495X477(1)006A(2)A100	29.6	10	100	1285	1157	514	1
6.3	680	X/7343-43	T495X687(1)006A(2)A100	42.8	12	100	1285	1157	514	1
10	1.5	A/3216-18	T495A155(1)010A(2)A5K0	0.5	6	5000	122	110	49	1
10	2.2	A/3216-18	T495A225(1)010A(2)A2K0	0.5	6	2000	194	175	78	1
10	3.3	A/3216-18	T495A335(1)010A(2)A5K5	0.5	6	5500	117	105	47	1
10	4.7	A/3216-18	T495A475(1)010A(2)A2K0	0.5	6	2000	194	175	78	1
10	4.7	B/3528-21	T495B475(1)010A(2)A1K5	0.5	6	1500	238	214	95	1
10	6.8	A/3216-18	T495A685(1)010A(2)A2K0	0.7	6	1800	204	184	82	1
10	6.8	B/3528-21	T495B685(1)010A(2)A1K2	0.7	6	1200	266	239	106	1
10	6.8	B/3528-21	T495B685(1)010A(2)A1K1	0.7	6	1100	278	264	176	1
10	10	A/3216-18	T495A106(1)010A(2)A2K0	1.0	6	2000	194	175	78	1
10	10	B/3528-21	T495B106(1)010A(2)A1K2	1.0	6	1200	266	239	106	1
10	10	C/6032-28	T495C106(1)010A(2)A400	1.0	6	400	524	472	210	1
10	15	A/3216-18	T495A156(1)010A(2)A1K8	1.5	6	1800	204	184	82	1
10	15	B/3528-21	T495B156(1)010A(2)A900	1.5	6	900	307	276	123	1
10	15	C/6032-28	T495C156(1)010A(2)A475	1.5	6	475	481	433	192	1
10	22	A/3216-18	T495A226(1)010A(2)A1K5	2.2	8	1500	224	202	90	1
10	22	B/3528-21	T495B226(1)010A(2)A1K5	2.2	6	2300	192	173	77	1
10	22	C/6032-28	T495C226(1)010A(2)A380	2.2	6	380	538	484	215	1
10	22	C/6032-28	T495C226(1)010A(2)A350	2.2	6	350	561	505	224	1
10	22	C/6032-28	T495C226(1)010A(2)A245	2.2	6	245	670	636	423	1
10	33	B/3528-21	T495B336(1)010A(2)A650	3.3	6	650	362	326	145	1
VDC	μF	KEMET/EIA	(See below for part options)	μAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
Rated Voltage	Rated Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity

(1) To complete KEMET part number, insert M for ± 20% or K for ± 10%. Designates Capacitance tolerance.

(2) To complete KEMET part number, insert T = 100% Matte Tin (Sn) Plated, G = Gold Plated, H = Standard Solder coated (SnPb 5% Pb minimum), N = Non-Magnetic 100% Tin (Sn), M = Non-Magnetic (SnPb). Designates Termination Finish.

Refer to Ordering Information for additional detail.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitution 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 Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity
VDC	µF	KEMET/EIA	(See below for part options)	µAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
10	33	C/6032-28	T495C336(1)010A(2)A380	3.3	6	380	538	484	215	1
10	33	C/6032-28	T495C336(1)010A(2)A300	3.3	6	300	606	545	242	1
10	47	B/3528-21	T495B476(1)010A(2)A650	4.7	6	650	362	326	145	1
10	47	C/6032-28	T495C476(1)010A(2)A300	4.7	6	300	606	545	242	1
10	47	D/7343-31	T495D476(1)010A(2)A080	4.7	4	80	1369	1232	548	1
10	47	D/7343-31	T495D476(1)010A(2)A200	4.7	4	200	866	779	346	1
10	68	D/7343-31	T495D686(1)010A(2)A100	6.8	6	100	1225	1103	490	1
10	68	X/7343-43	T495X686(1)010A(2)A150	6.8	4	150	1049	944	420	1
10	68	B/3528-21	T495B686(M)010A(2)A900	6.8	10	900	307	276	123	1
10	68	C/6032-28	T495C686(1)010A(2)A200	6.8	6	200	742	668	297	1
10	68	D/7343-31	T495D686(1)010A(2)A080	6.8	6	80	1369	1232	548	1
10	100	D/7343-31	T495D107(1)010A(2)A080	10.0	8	80	1369	1232	548	1
10	100	D/7343-31	T495D107(1)010A(2)A100	10.0	8	100	1225	1103	490	1
10	100	X/7343-43	T495X107(1)010A(2)A150	10.0	6	150	1049	944	420	1
10	100	X/7343-43	T495X107(1)010A(2)A100	10.0	6	100	1285	1157	514	1
10	150	D/7343-31	T495D157(1)010A(2)A100	15.0	8	100	1225	1103	490	1
10	150	X/7343-43	T495X157(1)010A(2)A100	15.0	8	100	1285	1157	514	1
10	220	D/7343-31	T495D227(1)010A(2)A100	22.0	8	100	1225	1103	490	1
10	220	D/7343-31	T495D227(1)010A(2)A125	22.0	8	125	1095	986	438	1
10	220	X/7343-43	T495X227(1)010A(2)A100	22.0	8	100	1285	1157	514	1
10	330	D/7343-31	T495D337(1)010A(2)A100	33.0	10	100	1225	1103	490	1
10	330	D/7343-31	T495D337(1)010A(2)A125	33.0	10	125	1095	986	438	1
10	330	D/7343-31	T495D337(1)010A(2)A150	33.0	10	150	1000	900	400	1
10	330	X/7343-43	T495X337(1)010A(2)A100	33.0	10	100	1285	1157	514	1
10	470	X/7343-43	T495X477(1)010A(2)A100	47.0	10	100	1285	1157	514	1
10	470	X/7343-43	T495X477(1)010A(2)A200	47.0	10	200	908	817	363	1
16	1	A/3216-18	T495A105(1)016A(2)A5K0	0.5	6	5000	122	110	49	1
16	1.5	A/3216-18	T495A155(1)016A(2)A5K0	0.5	6	5000	122	110	49	1
16	2.2	A/3216-18	T495A225(1)016A(2)A2K5	0.5	6	2500	173	156	69	1
16	3.3	A/3216-18	T495A335(1)016A(2)A3K0	0.5	6	3000	158	142	63	1
16	3.3	B/3528-21	T495B335(1)016A(2)A2K0	0.5	6	2000	206	185	82	1
16	4.7	A/3216-18	T495A475(1)016A(2)A2K0	0.8	6	2000	194	175	78	1
16	4.7	B/3528-21	T495B475(1)016A(2)A1K5	0.8	6	1500	238	214	95	1
16	6.8	B/3528-21	T495B685(1)016A(2)A1K2	1.1	6	1200	266	239	106	1
16	10	B/3528-21	T495B106(1)016A(2)A1K6	1.6	6	1600	230	207	92	1
16	10	B/3528-21	T495B106(1)016A(2)A2K5	1.6	6	2500	184	166	74	1
16	10	C/6032-28	T495C106(1)016A(2)A450	1.6	8	450	494	445	198	1
16	15	A/3216-18	T495A156(1)016A(2)A2K5	2.4	8	2500	173	156	69	1
16	15	B/3528-21	T495B156(1)016A(2)A800	2.4	6	800	326	293	130	1
16	15	C/6032-28	T495C156(1)016A(2)A400	2.4	6	400	524	497	262	1
16	22	B/3528-21	T495B226(1)016A(2)A700	3.5	6	700	348	313	139	1
16	22	C/6032-28	T495C226(1)016A(2)A350	3.5	6	350	561	505	224	1
16	33	B/3528-21	T495B336(1)016A(2)A350	5.3	6	350	493	444	197	1
16	33	C/6032-28	T495C336(1)016A(2)A300	5.3	6	300	606	545	242	1
16	33	D/7343-31	T495D336(1)016A(2)A200	5.3	6	200	866	779	346	1
16	47	C/6032-28	T495C476(1)016A(2)A350	7.5	6	350	561	505	224	1
16	47	D/7343-31	T495D476(1)016A(2)A100	7.5	6	100	1225	1162	775	1
16	47	D/7343-31	T495D476(1)016A(2)A150	7.5	6	150	1000	900	400	1
16	47	D/7343-31	T495D476(1)016A(2)A180	7.5	6	180	913	822	365	1
16	47	D/7343-31	T495D476(1)016A(2)A300	7.5	6	300	433	390	173	1
16	68	C/6032-28	T495C686(1)016A(2)A250	10.9	6	250	663	597	265	1
16	68	D/7343-31	T495D686(1)016A(2)A150	10.9	6	150	1000	900	400	1
VDC	µF	KEMET/EIA	(See below for part options)	µAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
Rated Voltage	Rated Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity

(1) To complete KEMET part number, insert M for ± 20% or K for ± 10%. Designates Capacitance tolerance.

(2) To complete KEMET part number, insert T = 100% Matte Tin (Sn) Plated, G = Gold Plated, H = Standard Solder coated (SnPb 5% Pb minimum), N = Non-Magnetic 100% Tin (Sn), M = Non-Magnetic (SnPb). Designates Termination Finish.

Refer to Ordering Information for additional detail.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitution 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 Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity
VDC	μF	KEMET/EIA	(See below for part options)	μAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
16	68	X/7343-43	T495X686(1)016A(2)A150	10.9	8	150	1049	944	420	1
16	100	D/7343-31	T495D107(1)016A(2)A100	16.0	8	100	1225	1162	775	1
16	100	D/7343-31	T495D107(1)016A(2)A150	16.0	8	150	1000	900	400	1
16	100	X/7343-43	T495X107(1)016A(2)A100	16.0	8	100	1285	1157	514	1
16	150	D/7343-31	T495D157(1)016A(2)A130	24.0	8	130	1074	967	430	1
16	150	D/7343-31	T495D157(1)016A(2)A150	24.0	8	150	1000	900	400	1
16	150	X/7343-43	T495X157(1)016A(2)A100	24.0	8	100	1285	1157	514	1
16	220	X/7343-43	T495X227(1)016A(2)A100	35.2	8	100	1285	1157	514	1
20	1	A/3216-18	T495A105(1)020A(2)A5K0	0.5	4	5000	122	110	49	1
20	1.5	A/3216-18	T495A155(1)020A(2)A4K5	0.5	6	4500	129	116	52	1
20	2.2	A/3216-18	T495A225(1)020A(2)A3K0	0.5	6	3000	158	142	63	1
20	2.2	B/3528-21	T495B225(1)020A(2)A1K5	0.5	6	1500	238	214	95	1
20	3.3	B/3528-21	T495B335(1)020A(2)A1K5	0.7	6	1500	238	214	95	1
20	4.7	A/3216-18	T495A475(1)020A(2)A2K0	0.9	6	2000	194	175	78	1
20	4.7	B/3528-21	T495B475(1)020A(2)A1K0	0.9	6	1000	292	263	117	1
20	6.8	B/3528-21	T495B685(1)020A(2)A1K0	1.4	6	1000	292	263	117	1
20	6.8	C/6032-28	T495C685(1)020A(2)A480	1.4	6	480	479	431	192	1
20	10	B/3528-21	T495B106(1)020A(2)A1K0	2.0	6	1000	292	263	117	1
20	10	C/6032-28	T495C106(1)020A(2)A475	2.0	6	475	481	433	192	1
20	15	C/6032-28	T495C156(1)020A(2)A400	3.0	6	400	524	472	210	1
20	15	D/7343-31	T495D156(1)020A(2)A275	3.0	4	275	739	665	296	1
20	22	D/7343-31	T495D226(1)020A(2)A180	4.4	4	180	913	822	365	1
20	33	D/7343-31	T495D336(1)020A(2)A200	6.6	6	200	866	779	346	1
20	33	X/7343-43	T495X336(1)020A(2)A200	6.6	8	200	908	817	363	1
20	47	D/7343-31	T495D476(1)020A(2)A250	9.4	6	250	775	698	310	1
20	47	X/7343-43	T495X476(1)020A(2)A150	9.4	4	150	1049	944	420	1
20	47	X/7343-43	T495X476(1)020A(2)A100	9.4	4	100	1285	1219	812	1
20	68	D/7343-31	T495D686(1)020A(2)A300	13.6	8	300	707	636	283	1
20	68	X/7343-43	T495X686(1)020A(2)A120	13.6	6	120	1173	1056	469	1
20	100	X/7343-43	T495X107(1)020A(2)A150	20.0	8	150	1049	944	420	1
25	1	A/3216-18	T495A105(1)025A(2)A5K0	0.5	4	5000	122	110	49	1
25	1.5	B/3528-21	T495B155(1)025A(2)A1K5	0.5	6	1500	238	214	95	1
25	2.2	B/3528-21	T495B225(1)025A(2)A1K2	0.6	6	1200	266	239	106	1
25	2.2	C/6032-28	T495C225(1)025A(2)A1K3	0.6	6	1300	291	262	116	1
25	3.3	B/3528-21	T495B335(1)025A(2)A1K2	0.8	6	1200	266	239	106	1
25	3.3	C/6032-28	T495C335(1)025A(2)A750	0.8	6	750	383	345	153	1
25	4.7	B/3528-21	T495B475(1)025A(2)A1K0	1.2	6	1000	292	263	117	1
25	4.7	C/6032-28	T495C475(1)025A(2)A575	1.2	6	575	437	393	175	1
25	6.8	B/3528-21	T495B685(1)025A(2)A1K5	1.7	6	1500	238	214	95	1
25	6.8	C/6032-28	T495C685(1)025A(2)A500	1.7	6	500	469	422	188	1
25	10	C/6032-28	T495C106(1)025A(2)A450	2.5	6	450	494	445	198	1
25	10	D/7343-31	T495D106(1)025A(2)A125	2.5	6	1200	354	319	142	1
25	15	C/6032-28	T495C156(1)025A(2)A300	3.8	6	300	606	545	242	1
25	15	D/7343-31	T495D156(1)025A(2)A275	3.8	6	275	739	665	296	1
25	15	X/7343-43	T495X156(1)025A(2)A200	3.8	4	200	908	817	363	1
25	22	C/6032-28	T495C226(1)025A(2)A900	5.5	6	900	350	315	140	1
25	22	D/7343-31	T495D226(1)025A(2)A200	5.5	6	200	866	779	346	1
25	22	X/7343-43	T495X226(1)025A(2)A230	5.5	4	230	847	762	339	1
25	33	D/7343-31	T495D336(1)025A(2)A200	8.3	6	200	866	779	346	1
25	33	X/7343-43	T495X336(1)025A(2)A200	8.3	4	200	908	817	363	1
25	47	D/7343-31	T495D476(1)025A(2)A120	11.8	10	120	1118	1006	447	1
25	47	D/7343-31	T495D476(1)025A(2)A150	11.8	10	150	1000	900	400	1
VDC	μF	KEMET/EIA	(See below for part options)	μAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
Rated Voltage	Rated Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity

(1) To complete KEMET part number, insert M for ± 20% or K for ± 10%. Designates Capacitance tolerance.

(2) To complete KEMET part number, insert T = 100% Matte Tin (Sn) Plated, G = Gold Plated, H = Standard Solder coated (SnPb 5% Pb minimum), N = Non-Magnetic 100% Tin (Sn), M = Non-Magnetic (SnPb). Designates Termination Finish.

Refer to Ordering Information for additional detail.

Higher voltage ratings and tighter tolerance product including ESR may be substituted within the same size at KEMET's option. Voltage substitution 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 Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity
VDC	µF	KEMET/EIA	(See below for part options)	µAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
25	47	D/7343-31	T495D476(1)025A(2)A250	11.8	10	250	775	735	490	1
25	47	X/7343-43	T495X476(1)025A(2)A120	11.8	6	120	1173	1056	469	1
25	47	X/7343-43	T495X476(1)025A(2)A100	11.8	6	100	1285	1157	514	1
25	68	D/7343-31	T495D686(1)025A(2)A200	17.0	10	200	866	779	346	1
25	68	X/7343-43	T495X686(1)025A(2)A200	17.0	8	200	908	817	363	1
25	100	X/7343-43	T495X107(1)025A(2)A150	25.0	10	150	1049	944	420	1
35	0.33	A/3216-18	T495A334(1)035A(2)A7K0	0.5	4	7000	104	94	42	1
35	0.47	A/3216-18	T495A474(1)035A(2)A7K0	0.5	4	7000	104	94	42	1
35	0.47	B/3528-21	T495B474(1)035A(2)A2K5	0.5	4	2500	184	166	74	1
35	0.68	A/3216-18	T495A684(1)035A(2)A6K0	0.5	4	6000	112	101	45	1
35	1	A/3216-18	T495A105(1)035A(2)A7K0	0.5	4	7000	104	94	42	1
35	1	B/3528-21	T495B105(1)035A(2)A2K0	0.5	4	2000	206	185	82	1
35	1.5	B/3528-21	T495B155(1)035A(2)A2K0	0.5	6	2000	206	185	82	1
35	2.2	B/3528-21	T495B225(1)035A(2)A2K0	0.8	6	2000	206	185	82	1
35	2.2	C/6032-28	T495C225(1)035A(2)A750	0.8	6	750	383	345	153	1
35	3.3	B/3528-21	T495B335(1)035A(2)A1K0	1.2	6	1000	292	263	117	1
35	3.3	C/6032-28	T495C335(1)035A(2)A600	1.2	6	600	428	385	171	1
35	4.7	B/3528-21	T495B475(1)035A(2)A1K0	1.6	6	1000	292	263	117	1
35	4.7	C/6032-28	T495C475(1)035A(2)A700	1.6	6	700	396	356	158	1
35	4.7	D/7343-31	T495D475(1)035A(2)A300	1.6	6	300	707	636	283	1
35	6.8	C/6032-28	T495C685(1)035A(2)A350	2.4	6	350	561	505	224	1
35	6.8	D/7343-31	T495D685(1)035A(2)A400	2.4	6	400	612	551	245	1
35	6.8	X/7343-43	T495X685(1)035A(2)A300	2.4	4	300	742	668	297	1
35	10	D/7343-31	T495D106(1)035A(2)A250	3.5	6	250	775	698	310	1
35	10	D/7343-31	T495D106(1)035A(2)A260	3.5	6	260	760	720	480	1
35	10	X/7343-43	T495X106(1)035A(2)A260	3.5	4	260	797	717	319	1
35	15	D/7343-31	T495D156(1)035A(2)A260	5.3	6	260	760	684	304	1
35	15	X/7343-43	T495X156(1)035A(2)A260	5.3	6	260	797	717	319	1
35	22	D/7343-31	T495D226(1)035A(2)A200	7.7	6	200	866	779	346	1
35	22	D/7343-31	T495D226(1)035A(2)A260	7.7	6	260	760	684	304	1
35	22	X/7343-43	T495X226(1)035A(2)A200	7.7	6	200	908	817	363	1
35	22	X/7343-43	T495X226(1)035A(2)A260	7.7	6	260	797	717	319	1
35	33	D/7343-31	T495D336(1)035A(2)A300	11.6	6	300	707	636	283	1
35	33	X/7343-43	T495X336(1)035A(2)A260	11.6	6	260	797	717	319	1
35	47	X/7343-43	T495X476(1)035A(2)A300	16.5	8	300	742	668	297	1
50	1	C/6032-28	T495C105(1)050A(2)A1K6	0.5	4	1600	262	236	105	1
50	1.5	C/6032-28	T495C155(1)050A(2)A1K5	0.8	6	1500	271	244	108	1
50	2.2	D/7343-31	T495D225(1)050A(2)A800	1.1	6	800	433	390	173	1
50	3.3	D/7343-31	T495D335(1)050A(2)A700	1.7	6	700	463	417	185	1
50	4.7	D/7343-31	T495D475(1)050A(2)A300	2.4	6	300	707	636	283	1
50	4.7	X/7343-43	T495X475(1)050A(2)A300	2.4	4	300	742	704	469	1
50	6.8	D/7343-31	T495D685(1)050A(2)A400	3.4	6	400	612	551	245	1
50	10	X/7343-43	T495X106(1)050A(2)A300	5.0	6	300	742	668	297	1
50	15	X/7343-43	T495X156(1)050A(2)A300	7.5	8	300	742	668	297	1
VDC	µF	KEMET/EIA	(See below for part options)	µAmps +20°C Max/5 Min	% @ +20°C 120 Hz Max	mΩ @ 20°C 100 kHz Max	(mA) 100 kHz 25°C	(mA) 100 kHz +85°C	(mA) 100 kHz +125°C	Reflow Temp ≤ 260°C
Rated Voltage	Rated Cap	Case Code/ Case Size	KEMET Part Number	DC Leakage	DF	ESR	Maximum Allowable Ripple Current			Moisture Sensitivity

(1) To complete KEMET part number, insert M for ± 20% or K for ± 10%. Designates Capacitance tolerance.

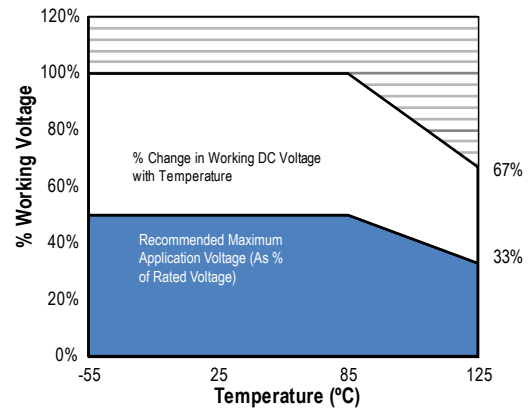
(2) To complete KEMET part number, insert T = 100% Matte Tin (Sn) Plated, G = Gold Plated, H = Standard Solder coated (SnPb 5% Pb minimum), N = Non-Magnetic 100% Tin (Sn), M = Non-Magnetic (SnPb). Designates Termination Finish.

Refer to Ordering Information for additional detail.

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

Recommended Voltage Derating Guidelines

	-55°C to 85°C	85°C to 125°C
% Change in Working DC Voltage with Temperature	V _R	67% of V _R
Recommended Maximum Application Voltage	50% of V _R	33% of V _R



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.

The maximum power dissipation by case size can be determined using the table at right. The maximum power dissipation rating stated in the table must be reduced with increasing environmental operating temperatures. Refer to the table below for temperature compensation requirements.

KEMET Series and Case Code	EIA Case Code	Maximum Power Dissipation (P max) mWatts @ 25°C with +20°C Rise
A	3216–18	75
B	3528–21	85
C	6032–28	110
D	7343–31	150
X	7343–43	165
E	7360–38	200
S	3216–12	60
T	3528–12	70
U	6032–15	90
V	7343–20	125
T510X	7343–43	270
T510E	7360–38	285

The maximum power dissipation rating must be reduced with increasing environmental operating temperatures. Refer to the Temperature Compensation Multiplier table for details.

Temperature Compensation Multipliers for Maximum Power Dissipation		
≤ 25°C	85°C	125°C
1.00	0.90	0.40

T = Environmental Temperature

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)

Reverse Voltage

Solid tantalum capacitors are polar devices and may be permanently damaged or destroyed if connected with the wrong polarity. The positive terminal is identified on the capacitor body by a stripe plus in some cases a beveled edge. A small degree of transient reverse voltage is permissible for short periods per the table. The capacitors should not be operated continuously in reverse mode, even within these limits.

Temperature	Permissible Transient Reverse Voltage
25°C	15% of Rated Voltage
85°C	5% of Rated Voltage
125°C	1% of Rated Voltage

Table 2 – Land Dimensions/Courtyard

KEMET	Metric Size Code	Density Level A: Maximum (Most) Land Protrusion (mm)					Density Level B: Median (Nominal) Land Protrusion (mm)					Density Level C: Minimum (Least) Land Protrusion (mm)				
		Case	EIA	W	L	S	V1	V2	W	L	S	V1	V2	W	L	S
A	3216-18	1.35	2.20	0.62	6.02	2.80	1.23	1.80	0.82	4.92	2.30	1.13	1.42	0.98	4.06	2.04
B	3528-21	2.35	2.21	0.92	6.32	4.00	2.23	1.80	1.12	5.22	3.50	2.13	1.42	1.28	4.36	3.24
C	6032-25	2.35	2.77	2.37	8.92	4.50	2.23	2.37	2.57	7.82	4.00	2.13	1.99	2.73	6.96	3.74
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
L	6032-19	2.35	2.77	2.37	8.92	4.50	2.23	2.37	2.57	7.82	4.00	2.13	1.99	2.73	6.96	3.74
M	3528-15	2.35	2.20	0.92	6.32	4.00	2.23	1.80	1.12	5.22	3.50	2.13	1.42	1.28	4.36	3.24
H	7360-20	4.25	2.77	3.67	10.22	7.30	4.13	2.37	3.87	9.12	6.80	4.03	1.99	4.03	8.26	6.54
E ¹	7360-38	4.25	2.77	3.67	10.22	7.30	4.13	2.37	3.87	9.12	6.80	4.03	1.99	4.03	8.26	6.54
Q	7343-12	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
R ²	2012-12	1.05	1.83	0.15	4.82	2.50	0.93	1.50	0.22	3.72	2.00	0.83	1.12	0.38	2.86	1.74
S ²	3216-12	1.35	2.20	0.62	6.02	2.80	1.23	1.80	0.82	4.92	2.30	1.13	1.42	0.98	4.06	2.04
T	3528-12	2.35	2.20	0.92	6.32	4.00	2.23	1.80	1.12	5.22	3.50	2.13	1.42	1.28	4.36	3.24
U	6032-15	2.35	2.77	2.37	8.92	4.50	2.23	2.37	2.57	7.82	4.00	2.13	1.99	2.73	6.96	3.74
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 ¹	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
Y ¹	7343-40	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

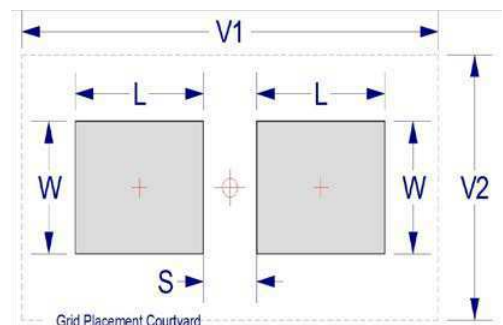
Density Level A: For low-density product applications. Recommended for wave solder applications and provides a wider process window for reflow solder processes.

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).

¹ Height of these chips may create problems in wave soldering.

² 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.

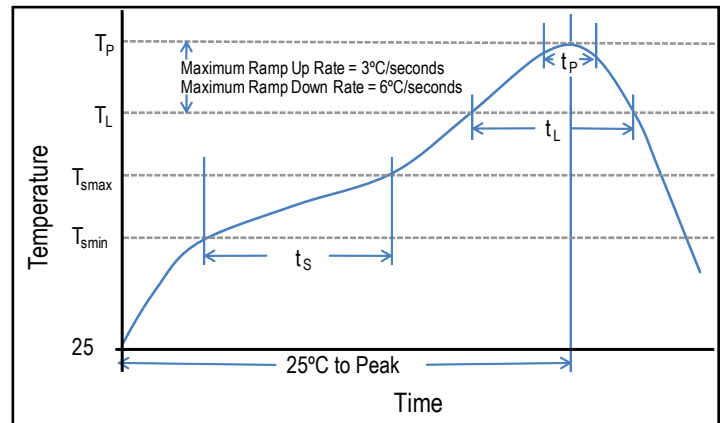
During typical reflow operations, a slight darkening of the gold-colored epoxy may be observed. This slight darkening is normal and not harmful to the product. Marking permanency is not affected by this change.

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

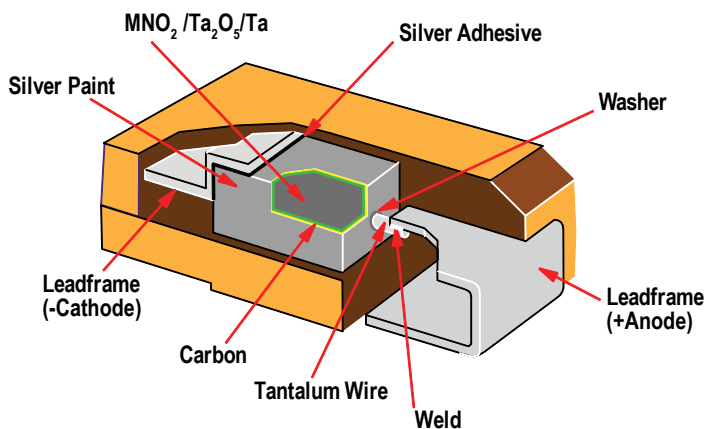
Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.

*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

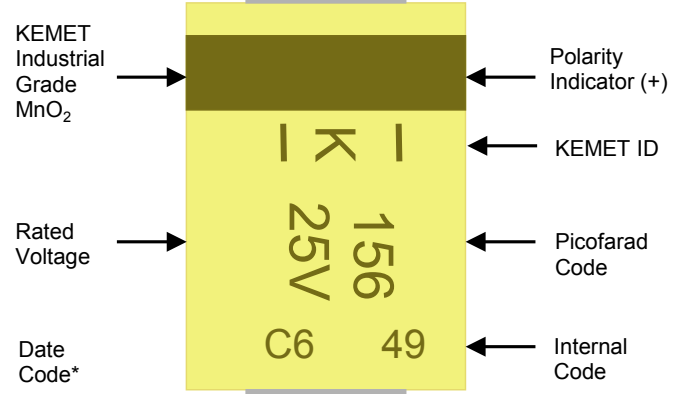
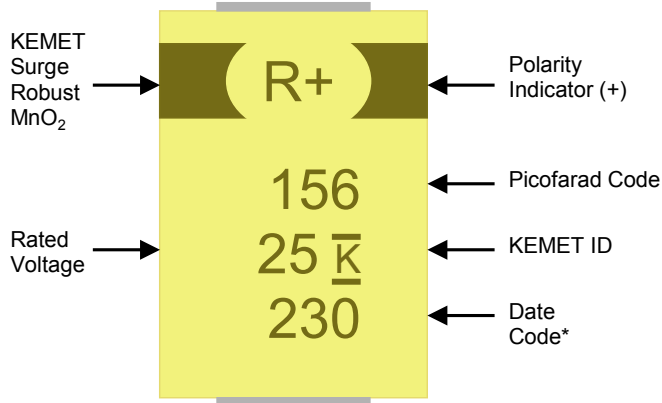


Construction



Capacitor Marking

C, D, X Case Sizes



* 230 = 30th week of 2012

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

Date Code*		
Year	Month	
X = 2009	1 = Jan	7 = Jul
A = 2010	2 = Feb	8 = Aug
B = 2011	3 = Mar	9 = Spt
C = 2012	4 = Apr	O = Oct
D = 2013	5 = May	N = Nov
E = 2014	6 = Jun	D = Dec

Storage

Tantalum chip capacitors should be stored in normal working environments. While the chips themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage. In addition, packaging materials will be degraded by high temperature—reels may soften or warp and tape peel force may increase. KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 60% relative humidity. Temperature fluctuations should be minimized to avoid condensation on the parts and atmospheres should be free of chlorine and sulphur bearing compounds. For optimized solderability chip stock should be used promptly, preferably within three years of receipt.

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 481-1: Embossed Carrier Taping of Surface Mount Components for Automatic Handling*. This packaging system is compatible with all tape-fed automatic pick-and-place systems.

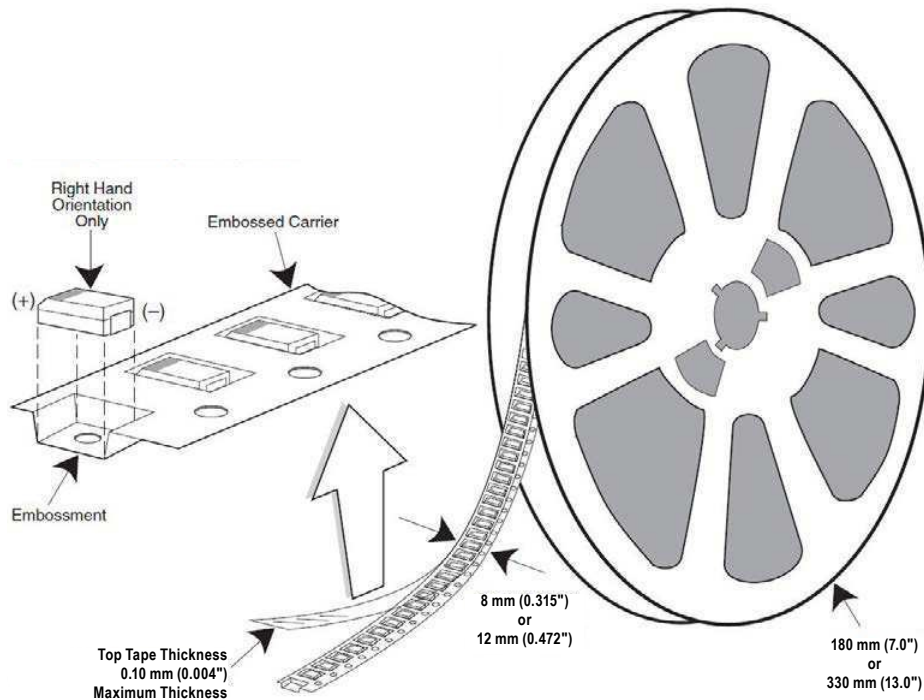


Table 3 – Packaging Quantity

Case Code		Tape Width (mm)	7" Reel*	13" Reel*
KEMET	EIA			
I	3216-10	8	3,000	12,000
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
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

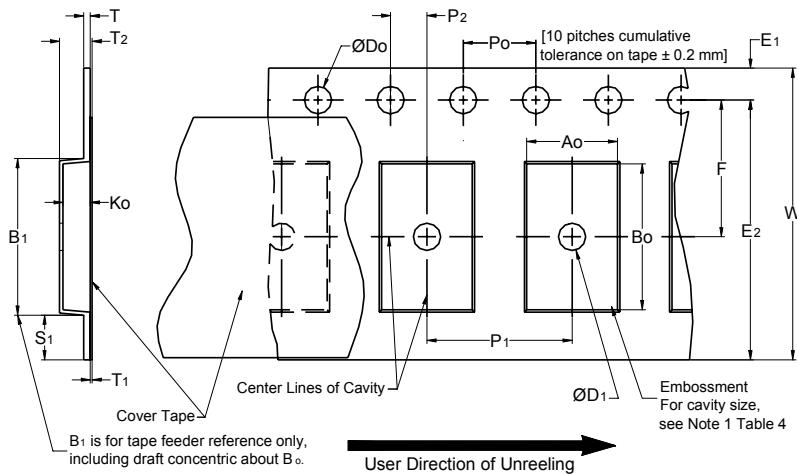


Table 4 – Embossed (Plastic) Carrier Tape Dimensions

Metric will govern

Constant Dimensions — Millimeters (Inches)									
Tape Size	D ₀	D ₁ Minimum Note 1	E ₁	P ₀	P ₂	R Reference Note 2	S ₁ Minimum Note 3	T Maximum	T ₁ 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)				30 (1.181)			
16 mm									
Variable Dimensions — Millimeters (Inches)									
Tape Size	Pitch	B ₁ Maximum Note 4	E ₂ Minimum	F	P ₁	T ₂ Maximum	W Maximum	A ₀ , B ₀ & K ₀	
8 mm	Single (4 mm)	4.35 (0.171)	6.25 (0.246)	3.5 ±0.05 (0.138 ±0.002)	4.0 ±0.10 (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)	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)	5.5 ±0.05 (0.217 ±0.002)	8.0 ±0.10 (0.315 ±0.004)	4.6 (0.181)	16.3 (0.642)		

- 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.
- The tape, with or without components, shall pass around R without damage (see Figure 5).
- If S₁ < 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).
- B₁ dimension is a reference dimension for tape feeder clearance only.
- The cavity defined by A₀, B₀ and K₀ shall surround the component with sufficient clearance that:
 - the component does not protrude above the top surface of the carrier tape.
 - the component can be removed from the cavity in a vertical direction without mechanical restriction, after the top cover tape has been removed.
 - 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).
 - 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).
 - see Addendum in EIA Standard 481–D for standards relating to more precise taping requirements.

Packaging Information Performance Notes

- 1. Cover Tape Break Force:** 1.0 Kg minimum.
- 2. 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.

- 3. 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

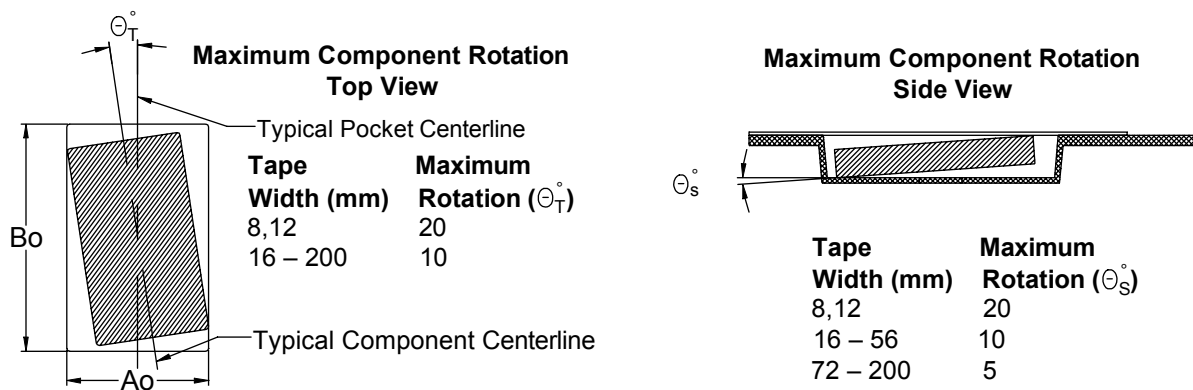


Figure 3 – Maximum Lateral Movement

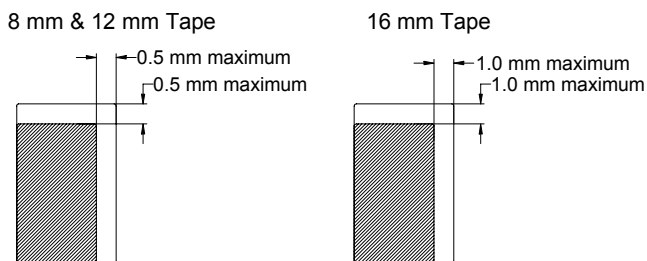


Figure 4 – Bending Radius

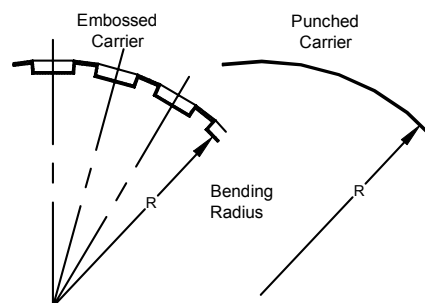
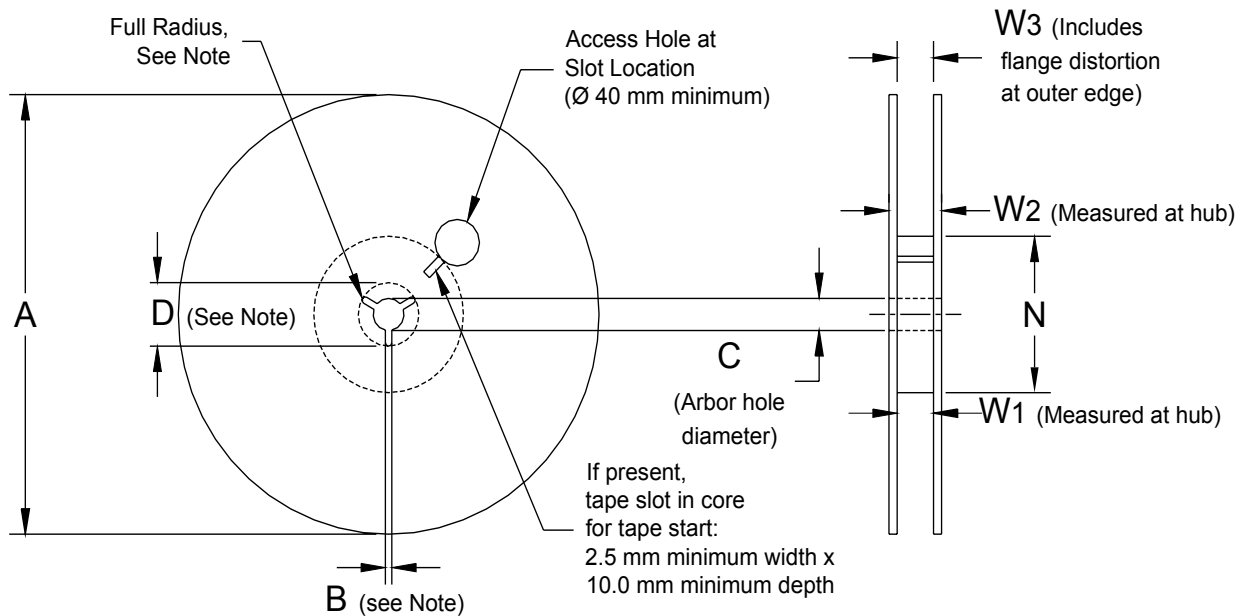


Figure 5 – Reel Dimensions



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)	1.5 (0.059)	13.0 +0.5/-0.2 (0.521 +0.02/-0.008)	20.2 (0.795)
12 mm	or			
16 mm	330 ±0.20 (13.000 ±0.008)			
Variable Dimensions — Millimeters (Inches)				
Tape Size	N Minimum	W ₁	W ₂ Maximum	W ₃
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

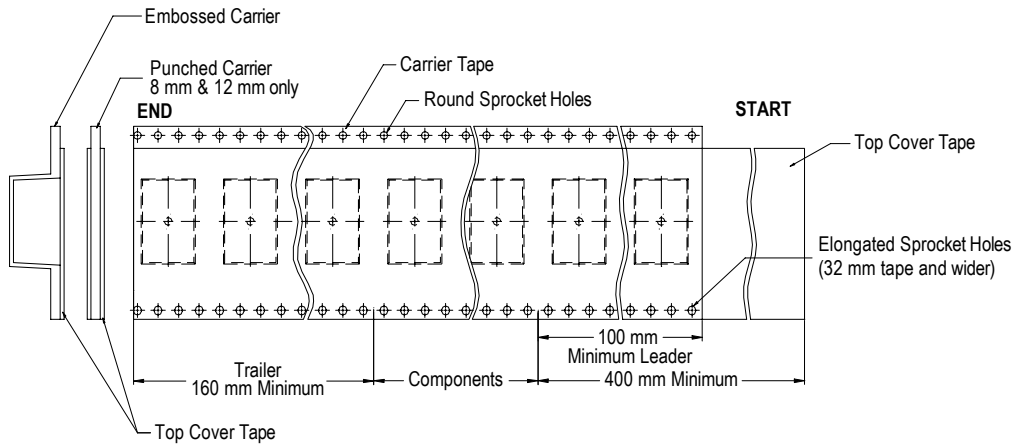
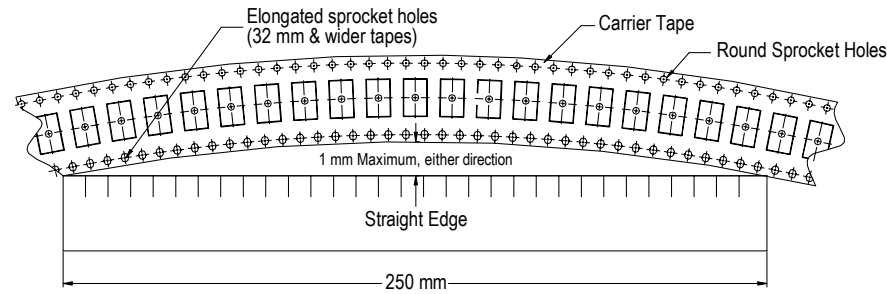


Figure 7 – Maximum Camber



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Search Our FAQs: KnowledgeEdge	http://www.kemet.com/keask
Electrolytic LifeCalculator	http://www.kemet.com:8080/elc

Product Information	
Resource	Location
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