

# KEMET CHARGED. Surface Mount Tantalum Chip Capacitors



KEMET's family of solid tantalum chip capacitors are designed and manufactured with the requirements of surface mount technology in mind. These devices extend the advantages of solid tantalum technology to today's surface mount circuit applications.

**Operating Temperature Range:** -55°C ~ 125°C (T520 Series: -55°C ~ 105°C, T498 Series: 150°C, T499 Series: 175°C)

**T491 Series — Industrial:** The leading choice in surface mount designs. This product meets or exceeds the requirements of EIA standard 535BAAC. The physical outline and dimensions of this series conform to this global standard. This product was designed specifically for highly automated surface mount processes and equipment.

**T494 Series — Low ESR, Industrial Grade:** The T494 is a low ESR series that is available in all the same case sizes and CV ratings as the T491 Series. The T494 offers low ESR performance with the economy of an industrial grade device. This series is targeted for output filtering.

**T495 Series — Low ESR, Surge Robust:** Designed primarily for output filtering in switch-mode power supplies and DC-to-DC converters. The standard CV T495 values are an excellent choice for battery-to-ground input filter applications. This series offers several important advantages: Very low ESR, high ripple current capability, excellent capacitance stability and improved ability to withstand high inrush currents.

**T496 Series — Fused:** KEMET also offers a "fail-safe" fused solid tantalum chip capacitor. The built-in fuse element provides excellent protection from damaging short circuit conditions in applications where high fault currents exist. Protection from costly circuit damage due to reversed installation is offered with this device.

**T498 Series — High Temperature (150°C):** The T498 Series is a high temperature version of KEMET's solid tantalum chip family that offers optimal performance in applications with operating temperatures of up to 150°C. Advancements in materials and testing have allowed for the introduction of this series which delivers a reliability level of 0.5% per 1000 hours at rated voltage at rated temperature.

**T499 Series — High Temperature (175°C):** The T499 Series is a high temperature version of KEMET's solid tantalum chip family. This series is designed for use in applications with operating temperatures up to 175°C. This product offers the highest operating temperature capability in a surface mount tantalum device available in the market place.

**T510 Series — Ultra-Low ESR:** KEMET's T510 Series offers the industry's lowest ESR in the popular EIA 7343-43 case size. The ultra-low ESR and high ripple current capability make it an ideal choice for SMPS filtering and power decoupling. KEMET has developed an innovative construction platform that incorporates multiple capacitor elements, in parallel, inside a single package.

**T520 Series — KO-CAP Polymer Tantalum:** The KO-CAP is a tantalum capacitor, with Ta anode and Ta<sub>2</sub>O<sub>5</sub> dielectric. A conductive, organic, polymer replaces the MnO<sub>2</sub> as the cathode plate of the capacitor. This results in very low ESR and improved cap retention at high frequency. The KO-CAP also exhibits a benign failure mode, which eliminates the ignition failures that can occur in standard MnO<sub>2</sub> tantalum types. KO-CAPs may be operated at voltages up to 80% of rated voltage with equivalent or better reliability than standard tantalums operated at 50% of rated voltage.

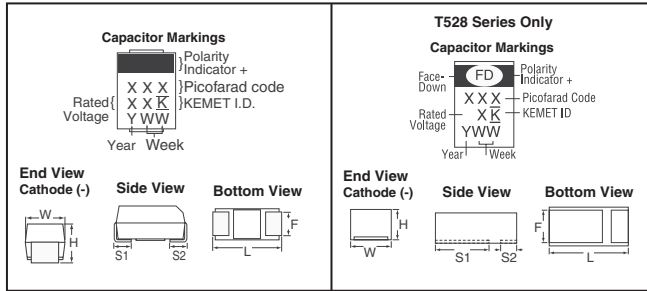
**T521 Series — KO-CAP Polymer Tantalum:** KEMET's T521 series capacitor is a surface mount polymer tantalum capacitor that has been designed to deliver low ESR, high capacitance and high volumetric efficiency in applications of up to 25V.

**T525 Series — KO-CAP Polymer Tantalum:** The T525 has been targeted for power management applications. This series offers all of the same advantages as the T520 KO-CAP including very low ESR, improved capacitance retention at high frequency and a benign failure mode, to go along with 125°C capability.

**T528 Series — Face Down Termination Tantalum:** The T528 is an organic tantalum chip capacitor with face down termination, that features Low ESL and has a wide tolerance range of ±20%.

**T530 Series — KO-MAT Polymer Tantalum:** The KO-MAT is an extremely low ESR, volumetrically efficient, organic tantalum chip capacitor that offers high capacitance retention while preventing thermal events (ignition failures). Organic polymer does not give up oxygen if the dielectric fails short, thus preventing ignition. Organic polymer is more conductive than MnO<sub>2</sub> — lower ESR. Higher capacitance retention at higher frequencies means fewer parts are required to achieve the desired capacitance.

The KO-MAT allows tantalum capacitors to be used in circuits never considered possible before, such as input filters. Initial focus is for power supplies and microprocessor circuits.



Size Code	EIA Code	Dimensions - mm			F ±0.1	S1 ±0.3	S2 ±0.3
		L	W	H			
A	3216-18	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2	1.2	0.8	0.8
B	3528-21	3.5 ±0.2	2.8 ±0.2	1.9 ±0.2 (T520 Series: ±0.1)	2.2	0.8	0.8
C	6032-28	6.0 ±0.3	3.2 ±0.3	2.5 ±0.3	2.2	1.3	1.3
D	7343-31	7.3 ±0.3	4.3 ±0.3	2.8 ±0.3	2.4	1.3	1.3
E	7290-38	7.3 ±0.3	6.0 ±0.3	3.6 ±0.3	4.1	1.3	1.3
I	3216-10	3.2 ±0.2	1.3 ±0.2	1.0	1.2 Max.	1.0 ±0.2	0.7 ±0.2
K	3528-10	3.5 ±0.2	2.8 ±0.2	1.0 Max.	2.0	1.2	0.6
L	6032-19	6.0 ±0.3	3.2 ±0.3	1.9 Max.	2.2	1.3	1.3
M	3528-15	3.5 ±0.2	2.8 ±0.2	1.5 Max.	2.2	1.2	0.8
R	2012-12	2.0 ±0.2	1.3 ±0.2	1.2 Max.	0.9	0.5	0.5
T	3528-12	3.5 ±0.2	2.8 ±0.2	1.2 Max.	2.2	0.8	0.8
U	6032-15	6.0 ±0.3	3.2 ±0.3	1.5 Max.	2.2	1.3	1.3
V	7343-20	7.3 ±0.3	4.3 ±0.3	2.0 Max.	2.4	1.3	1.3
W	7343-15	7.3 ±0.3	4.3 ±0.3	1.5 Max.	2.4	1.3	1.3
X	7343-43	7.3 ±0.3	4.3 ±0.3	4.0 ±0.3	2.4	1.3	1.3
Y	7343-40	7.3 ±0.3	4.3 ±0.3	4.0 Max.	2.4	1.3	1.3
Z	7343-17	7.3 ±0.4	4.3 ±0.3	1.7 Max.	2.8	5.1 ±0.2	1.3 ±0.2

WV (DC)	Cap. (µF)	Cap. Tol. (%)	DC Leakage µA @ 25°C Max.	DF % @ 25°C 120Hz Max.	ESR Ω @ 25°C 100kHz Max.	Size Code	Digi-Key Part No.	Cut Tape Pricing			Digi-Key Part No.	Tape and Pricing		Kemet Part No.	
								1	10	25		Qty.	Price		
<b>T491 Series, Industrial</b>															
4	68	±10	2.7	6	0.8	D	399-1549-1-ND	1.05	8.83	18.12	—	—	—	T491D686K004AS	
	150	±20	6	12	2.0	B	399-3340-1-ND	1.05	8.85	19.07	—	—	—	T491B157M004AS	
	25	±20	1.7	6	1.9	C	399-1632-1-ND	.64	5.35	10.97	—	—	—	T491C685M025AS	
<b>T491 Series, Industrial — ROHS Compliant</b>															
2.5	220	±10	5.5	8	0.3	D	399-4771-1-ND	4.44	36.82	87.99	399-4771-2-ND	500	866.31	T491D227K2R5AT	
	33	±10	1.3	8	5.0	T	399-5172-1-ND	1.68	13.80	31.14	399-5172-2-ND	2,500	471.31/M	T491T336K004ZT	
	47	±10	1.9	12	6.0	T	399-5173-1-ND	1.77	14.50	32.70	399-5173-2-ND	2,500	494.88/M	T491T476K004ZT	
	68	±10	2.8	30	4.0	A	399-3701-1-ND	9.00	7.52	15.43	399-3701-2-ND	2,000	179.55/M	T491A686K004AT	
	68	±10	2.7	6	0.8	D	399-3801-1-ND	1.17	9.76	20.03	399-3801-2-ND	500	145.66	T491D686K004AT	
	100	±20	4	30	4.0	A	399-3688-1-ND	.85	7.15	14.66	399-3688-2-ND	2,000	170.57/M	T491A107M004AT	
	100	±20	4	8	1.0	B	399-3709-1-ND	1.17	9.76	21.02	399-3709-2-ND	2,000	300.74/M	T491B107M004AT	
	100	±20	4	8	0.8	D	399-3771-1-ND	1.17	9.76	20.03	399-3771-2-ND	500	145.66	T491D107M004AT	
	150	±20	6	12	2.0	B	399-3713-1-ND	1.17	9.76	21.02	399-3713-2-ND	2,000	300.74/M	T491B157M004AT	
	220	±20	8.8	18	0.5	B	399-4625-1-ND	1.17	9.76	21.02	399-4625-2-ND	2,000	300.74/M	T491B227M004AT	
	330	±10	13.2	10	1.2	C	399-3751-1-ND	2.24	18.40	41.52	399-3751-2-ND	500	381.53	T491C337K004AT	
	10	±10	0.6	6	4.0	A	399-3683-1-ND	.47	3.73	7.86	399-3683-2-ND	2,000	80.80/M	T491A106K006AT	
	10	±20	0.6	6	4.0	A	399-3685-1-ND	1.47	3.73	7.86	399-3685-2-ND	2,000	80.80/M	T491A106M006AT	
	10	±10	0.6	6	3.5	B	399-3704-1-ND	.66	5.24	11.05	399-3704-2-ND	2,000	113.34/M	T491B106K006AT	
	15	±10	0.9	6	5.0	T	399-5170-1-ND	1.63	13.34	30.11	399-5170-2-ND	2,500	455.60/M	T491T156K006ZT	
	22	±10	1.4	6	3.5	B	399-3716-1-ND	.70	5.50	11.59	399-3716-2-ND	2,000	118.95/M	T491B226K006AT	
	22	±10	1.4	6	1.8	C	399-3742-1-ND	.71	5.91	12.13	399-3742-2-ND	500	88.20	T491C226K006AT	
	47	±20	3	12	3.5	A	399-3700-1-ND	.85	7.15	14.66	399-3700-2-ND	2,000	170.57/M	T491A476M006AT	
	47	±10	2.9	6	1.6	C	399-3756-1-ND	.76	6.41	13.15	399-3756-2-ND	500	95.61	T491C476K006AT	
	68	±20	4.1	8	1.0	B	399-3729-1-ND	1.17	9.76	21.02	399-3729-2-ND	2,000	300.74/M	T491B686M006AT	
	68	±10	4.1	6	1.2	C	399-3764-1-ND	.93	7.81	16.04	399-3764-2-ND	500	116.59	T491C686K006AT	
	68	±10	4.1	6	0.8	D	399-3802-1-ND	1.17	9.76	20.03	399-3802-2-ND	500	145.66	T491D686K006AT	
	68	±10	5	30	4.0	A	399-4698-1-ND	.90	7.52	15.43	399-4698-2-ND	2,000	179.55/M	T491A686K006AT	
	100	±20	6.3	15	3.0	B	399-3710-1-ND	1.17	9.76	21.02	399-3710-2-ND	2,000	300.74/M	T491B107M006AT	
	100	±10	6.3	20	1.0	M	399-5155-1-ND	1.53	12.48	28.17	399-5155-2-ND	2,000	426.42/M	T491M107K006ZT	
	100	±20	6.3	20	1.0	M	399-5156-1-ND	1.53	12.48	28.17	399-5156-2-ND	2,000	426.42/M	T491M107M006ZT	
	150	±10	10	8	1.0	U	399-5174-1-ND	1.63	13.34	30.11	399-5174-2-ND	1,250	488.14/M	T491U157K006ZT	
	220	±20	13.2	10	1.2	C	399-3748-1-ND	2.19	17.94	40.49	399-3748-2-ND	500	372.00	T491C227M006AT	
	470	±10	29.6	10	0.4	E	399-4626-1-ND	7.41	69.57	162.71	399-4626-2-ND	500	1571.02	T491E477K006AT	
	470	±20	28.2	12	0.5	D	399-3798-1-ND	4.25	35.29	84.34	399-3798-2-ND	500	830.40	T491D477M006AT	
	680	±20	40.8	12	0.5	E	399-3805-1-ND	7.04	66.10	154.58	399-3805-2-ND	500	1492.47	T491E687K006AT	
	1000	±10	63	20	0.6	X	399-5123-1-ND	4.35	36.14	86.38	399-5123-2-ND	400	765.31	T491X108K006ZT	
	2.2	±10	0.5	6	8.0	A	399-3690-1-ND	.59	4.71	9.65	399-3690-2-ND	2,000	85.74/M	T491A225K010AT	
	3.3	±10	0.5	6	6.0	A	399-3694-1-ND	.59	4.71	9.65	399-3694-2-ND	2,000	85.74/M	T491A335K010AT	
	3.3	±10	0.3	8	15.0	R	399-3807-1-ND	1.47	12.23	26.36	399-3807-2-ND	2,500	377.05/M	T491R335K010AT	
	4.7	±10	0.5	6	6.0	A	399-3696-1-ND	.59	4.71	9.65	399-3696-2-ND	2,000	85.74/M	T491A475K010AT	
	4.7	±20	0.5	6	6.0	A	399-3698-1-ND	.59	4.71	9.65	399-3698-2-ND	2,000	85.74/M	T491A475M010AT	
	4.7	±10	0.5	6	3.5	B	399-3721-1-ND	.86	5.24	11.05	399-3721-2-ND	2,000	113.34/M	T491B475K010AT	
	4.7	±20	0.5	6	3.5	B	399-3724-1-ND	.86	5.24	11.05	399-3724-2-ND	2,000	113.34/M	T491B475M010AT	
	6.8	±10	0.7	6	3.5	B	399-3727-1-ND	.86	5.24	11.05	399-3727-2-ND	2,000	113.34/M	T491B685K010AT	
	10	±10	1	6	4.0	A	399-3684-1-ND	.52	4.07	8.58	399-3684-2-ND	2,000	88.27/M	T491A106K010AT	
	10	±20	1	6	4.0	A	399-3686-1-ND	.52	4.07	8.58	399-3686-2-ND	2,000	88.27/M	T491A106M010AT	
	10	±10	1	6	3.5	B	399-3705-1-ND	.86	5.24	11.05	399-3705-2-ND	2,000	113.34/M	T491B106K010AT	
	10	±20	1	6	3.5	B	399-3707-1-ND	.86	5.24	11.05	399-3707-2-ND	2,000	113.34/M	T491B106M010AT	
	10	±10	1	6	1.8	C	399-3731-1-ND	.71	5.91	12.13	399-3731-2-ND	500	88.20	T491C106K010AT	
	15	±10	1.5	8	5.0	T	399-5171-1-ND	1.68	13.80	31.14	399-5171-2-ND	2,500	471.31/M	T491T156K010ZT	
	15	±10	1.5	6	3.5	B	399-3712-1-ND	.70	5.50	11.59	399-3712-2-ND	2,000	118.95/M	T491B156K010AT	