

Type T491 Solid Tantalum Chip Capacitors

Solid Tantalum Chip Capacitors for Surface Mount Applications



Highlights

- ♦ Low DF and DC Leakage
- ♦ Temperature Stable
- ♦ 260 °C for 10 Seconds Soldering
- ♦ Meets IECQ Standard QC300801/US0001
- ♦ Meets EIA Standard 535BAAC

Specifications

Capacitance Range: 0.10 μ F to 330 μ F

Voltage Range: 4 Vdc to 50 VDC

Tolerance: $\pm$ 10% standard, $\pm$ 20% available

Operating Temperature: -55 °C to +125 °C (with proper derating)

Cap Change From Initial Limit: -10% @ -55 °C; +10% @ +85 °C; +12% @ +125 °C

DC Leakage: At 25 °C — See Ratings
At 85 °C — 10 x 25 °C limit
At 125 °C — 12 x 25 °C limit

Dissipation Factor: 0.1 μ F to 1.0 μ F — 4%
1.5 μ F to 68 μ F — 6%
100 μ F to 330 μ F — 8%

Standard Packaging Tape and Reel: EIA RS-481-1

Case Code	EIA IECQ	Qty per 7" Reel	Tape	
			Width	Pitch
S	3216L	2,500	8mm	4mm
T	3528L	2,500	8mm	4mm
A	3216	2,000	8mm	4mm
B	3528	2,000	8mm	4mm
C	6032	500	12mm	8mm
D	7343	500	12mm	8mm
X	7343H	500	12mm	8mm

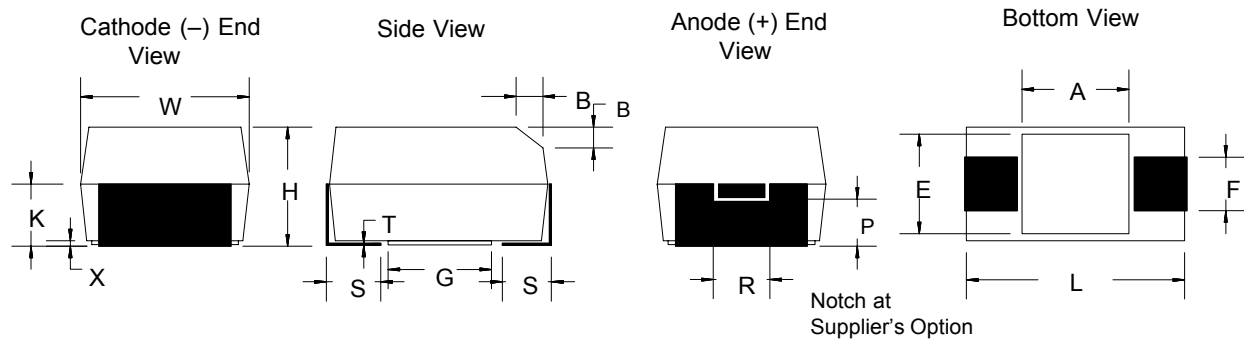
13" Reels Available on Special Order



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

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Capacitor Outline Drawing



Dimensions ————— Millimeters (Inches)

	EIA/ CDE IECQ	L	W	H	K	F	S	B (Ref)	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)	0.9 ± 0.2 (.035 ± .008)	1.2 ± 0.1 (.047 ± .004)	0.8 ± 0.3 (.031 ± .012)	0.4 ± 0.15 (.016 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.4 (0.016)	0.4 (0.016)	0.13 (0.005)	0.8 (0.031)	1.1 (0.043)	1.3 (0.051)
B	3528-21	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.9 ± 0.2 (.075 ± .008)	1.1 ± 0.2 (.043 ± .008)	2.2 ± 0.1 (.087 ± .004)	0.8 ± 0.3 (.031 ± .012)	0.4 ± 0.15 (.016 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.5 (0.02)	1 (0.039)	0.13 (0.005)	1.1 (0.043)	1.8 (0.071)	2.2 (0.087)
C	6032-28	6.0 ± 0.3 (.236 ± .012)	3.2 ± 0.3 (.126 ± .012)	2.5 ± 0.3 (.098 ± .012)	1.4 ± 0.2 (.055 ± .008)	2.2 ± 0.1 (.087 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.9 (0.035)	1 (0.039)	0.13 (0.005)	2.5 (0.098)	2.8 (0.11)	2.9 (0.114)
D	7343-31	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	2.8 ± 0.3 (.110 ± .012)	1.5 ± 0.2 (.059 ± .008)	2.4 ± 0.1 (.094 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.9 (0.035)	1 (0.039)	0.13 (0.005)	3.8 (0.15)	3.5 (0.138)	3.5 (0.138)
X	7343-43	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	4.0 ± 0.3 (.157 ± .012)	2.3 ± 0.2 (.091 ± .008)	2.4 ± 0.1 (.094 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	1.7 (0.067)	1 (0.039)	0.13 (0.005)	3.8 (0.15)	3.5** (0.138)	3.5** (0.138)

Notes: 1 Metric dimensions govern
 2 (Ref) - Dimensions provided for reference only
 ** Round Glue Pad 2.9 ± 0.1mm (.114 ± .004) in diameter at Supplier's option

Low Profile Capacitor Dimensions ————— Millimeters (Inches)

	EIA/ CDE IECQ	L	W	H Max.	K Min.	F	S	B (Ref)	X (Ref)	P (Ref)	R (Ref)	T (Ref)	A (Min)	G (Ref)	E (Ref)
S	3216-12	3.2 ± 0.2 (.126 ± .008)	1.6 ± 0.2 (.063 ± .008)	1.2 (0.047)	0.3 (0.012)	1.2 ± 0.1 (.047 ± .004)	0.8 ± 0.3 (.031 ± .012)	Note 3	0.05 (0.002)	Note 3	Note 3	0.13 (0.005)	0.8 (0.031)	1.1 (0.043)	1.3 (0.051)
T	3528-12	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.2 (0.047)	0.3 (0.012)	2.2 ± 0.1 (.087 ± .004)	0.8 ± 0.3 (.031 ± .012)	Note 3	0.05 (0.002)	Note 3	Note 3	0.13 (0.005)	1.1 (0.043)	1.8 (0.071)	2.2 (0.087)

Notes: 1 Metric dimensions govern
 2 (Ref) - Dimensions provided for reference only
 3 No dimensions provided for B, P or R because low profile cases do not have a bevel or notch

Part Numbering System

T491	A	106	K	025	A	S	-F
Series	Case	Capacitance	Tolerance	Voltage	Failure Rate Level		RoHS Compliant
T491	S, D	105 = 1.0 µF	K = ±10%	004 = 4 Vdc	A = Not Applicable		(100% Matte Tin finish on terminals)
	T, X	226 = 22 µF	M = ±20%	035 = 35 Vdc			
	A, B, C	227 = 220 µF					

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Ratings

Cap (µF)	Case Code		Catalog Part Number	Max. DC	Max. DF %
	CDE	EIA IECQ		Leakage µA @ 25 °C	@ 25 °C 120 Hz
4 WVdc @ +85 °C (2.7 WVdc @ 125 °C)					
15	T	3528L	T491T156K004AS-F	0.6	6
33	B	3528	T491B336K004AS-F	1.3	6
68	C	6032	T491C686K004AS-F	2.7	6
100	C	6032	T491C107K004AS-F	4	8
100	D	7343	T491D107K004AS-F	4	8
150	D	7343	T491D157K004AS-F	6	8
6 WVdc @ +85 °C (4 WVdc @ 125 °C)					
4.7	A	3216	T491A475K006AS-F	0.5	6
4.7	S	3216L	T491S475K006AS-F	0.5	6
6.8	A	3216	T491A685K006AS-F	0.5	6
6.8	B	3528	T491B685K006AS-F	0.5	6
10	A	3216	T491A106K006AS-F	0.6	6
10	B	3528	T491B106K006AS-F	0.6	6
10	T	3528L	T491T106K006AS-F	0.6	6
22	B	3528	T491B226K006AS-F	1.4	6
22	C	6032	T491C226K006AS-F	1.4	6
33	C	6032	T491C336K006AS-F	2	6
47	C	6032	T491C476K006AS-F	2.9	6
47	D	7343	T491D476K006AS-F	2.9	6
68	C	6032	T491C686K006AS-F	4.1	6
100	D	7343	T491D107K006AS-F	6	8
150	D	7343	T491D157K006AS-F	9	8
220	X	7343H	T491X227K006AS-F	13.2	8
220	D	7343	T491D227K006AS-F	13.2	8
330	X	7343H	T491X337K006AS-F	19.8	8
10 WVdc @ +85 °C (7 WVdc @ 125 °C)					
2.2	A	3216	T491A225K010AS-F	0.5	6
3.3	A	3216	T491A335K010AS-F	0.5	6
3.3	S	3216L	T491S335K010AS-F	0.5	6
4.7	A	3216	T491A475K010AS-F	0.5	6
4.7	B	3528	T491B475K010AS-F	0.5	6
6.8	A	3216	T491A685K010AS-F	0.7	6
6.8	B	3528	T491B685K010AS-F	0.7	6
6.8	T	3528L	T491T685K010AS-F	0.7	6
10	B	3528	T491B106K010AS-F	1	6
10	C	6032	T491C106K010AS-F	1	6
15	B	3528	T491B156K010AS-F	1.5	6
22	C	6032	T491C226K010AS-F	2.2	6
33	C	6032	T491C336K010AS-F	3.3	6
47	C	6032	T491C476K010AS-F	4.7	6
47	D	7343	T491D476K010AS-F	4.7	6
68	D	7343	T491D686K010AS-F	6.8	6
100	D	7343	T491D107K010AS-F	10	8
150	X	7343H	T491X157K010AS-F	15	8
220	X	7343H	T491X227K010AS-F	22	8

Cap (µF)	Case Code		Catalog Part Number	Max. DC	Max. DF %
	CDE	EIA IECQ		Leakage µA @ 25 °C	@ 25 °C 120 Hz
16 WVdc @ +85 °C (10 WVdc @ 125 °C)					
1.0	A	3216	T491A105K016AS-F	0.5	4
2.2	A	3216	T491A225K016AS-F	0.5	6
2.2	S	3216L	T491S225K016AS-F	0.5	6
3.3	A	3216	T491A335K016AS-F	0.5	6
3.3	B	3528	T491B335K016AS-F	0.5	6
4.7	A	3216	T491A475K016AS-F	0.8	6
4.7	B	3528	T491B475K016AS-F	0.8	6
4.7	T	3528L	T491T475K016AS-F	0.8	6
6.8	B	3528	T491B685K016AS-F	1.1	6
6.8	C	6032	T491C685K016AS-F	1.1	6
10	B	3528	T491B106K016AS-F	1.6	6
10	C	6032	T491C106K016AS-F	1.6	6
15	C	6032	T491C156K016AS-F	2.4	6
22	C	6032	T491C226K016AS-F	3.6	6
22	D	7343	T491D226K016AS-F	3.6	6
33	C	6032	T491C336K016AS-F	5.3	6
33	D	7343	T491D336K016AS-F	5.3	6
47	D	7343	T491D476K016AS-F	7.5	6
68	D	7343	T491D686K016AS-F	10.9	6
100	X	7343H	T491X107K016AS-F	16	8
150	X	7343H	T491X157K016AS-F	24	8
20 WVdc @ +85 °C (13 WVdc @ 125 °C)					
1.0	A	3216	T491A105K020AS-F	0.5	4
1.5	A	3216	T491A155K020AS-F	0.5	6
1.5	S	3216L	T491S155K020AS-F	0.5	6
2.2	A	3216	T491A225K020AS-F	0.5	6
2.2	B	3528	T491B225K020AS-F	0.5	6
3.3	A	3216	T491A335K020AS-F	0.7	6
3.3	B	3528	T491B335K020AS-F	0.7	6
3.3	T	3528L	T491T335K020AS-F	0.7	6
4.7	B	3528	T491B475K020AS-F	1	6
4.7	C	6032	T491C475K020AS-F	1	6
6.8	B	3528	T491B685K020AS-F	1.4	6
6.8	C	6032	T491C685K020AS-F	1.4	6
10	C	6032	T491C106K020AS-F	2	6
15	C	6032	T491C156K020AS-F	3	6
15	D	7343	T491D156K020AS-F	3	6
22	C	6032	T491C226K020AS-F	4.4	6
22	D	7343	T491D226K020AS-F	4.4	6
33	D	7343	T491D336K020AS-F	6.6	6
47	D	7343	T491D476K020AS-F	9.4	6
68	X	7343H	T491X686K020AS-F	13.6	6
100	X	7343H	T491X107K020AS-F	20	8

Note: CDE reserves the right to offer higher rated voltage substitutes within the same case size. The marking will indicate the higher voltage.

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Cap (μF)	Case Code		Catalog Part Number	Max. DC	Max. DF %
	CDE	EIA IECQ		Leakage μA @ 25 °C	@ 25 °C 120 Hz
25 WVdc @ +85 °C (17 WVdc @ 125 °C)					
0.47	A	3216	T491A474K025AS-F	0.5	4
0.68	A	3216	T491A684K025AS-F	0.5	4
1.0	A	3216	T491A105K025AS-F	0.5	4
1.0	B	3528	T491B105K025AS-F	0.5	4
1.5	B	3528	T491B155K025AS-F	0.5	6
2.2	B	3528	T491B225K025AS-F	0.6	6
2.2	C	6032	T491C225K025AS-F	0.6	6
3.3	C	6032	T491C335K025AS-F	0.9	6
4.7	C	6032	T491C475K025AS-F	1.2	6
6.8	C	6032	T491C685K025AS-F	1.7	6
10	C	6032	T491C106K025AS-F	2.5	6
10	D	7343	T491D106K025AS-F	2.5	6
15	D	7343	T491D156K025AS-F	3.8	6
22	D	7343	T491D226K025AS-F	5.5	6
33	X	7343H	T491X336K025AS-F	8.3	6
35 WVdc @ +85 °C (23 WVdc @ 125 °C)					
0.10	A	3216	T491A104K035AS-F	0.5	4
0.15	A	3216	T491A154K035AS-F	0.5	4
0.22	A	3216	T491A224K035AS-F	0.5	4
0.33	A	3216	T491A334K035AS-F	0.5	4
0.47	A	3216	T491A474K035AS-F	0.5	4
0.47	B	3528	T491B474K035AS-F	0.5	4
0.68	B	3528	T491B684K035AS-F	0.5	4
1.0	B	3528	T491B105K035AS-F	0.5	4
1.5	C	6032	T491C155K035AS-F	0.5	6
2.2	C	6032	T491C225K035AS-F	0.8	6
3.3	C	6032	T491C335K035AS-F	1.2	6
4.7	C	6032	T491C475K035AS-F	1.7	6
4.7	D	7343	T491D475K035AS-F	1.7	6
6.8	D	7343	T491D685K035AS-F	2.4	6
10	D	7343	T491D106K035AS-F	3.5	6
15	X	7343H	T491X156K035AS-F	5.3	6
22	X	7343H	T491X226K035AS-F	7.7	6

Cap (μF)	Case Code		Catalog Part Number	Max. DC	Max. DF %
	CDE	EIA IECQ		Leakage μA @ 25 °C	@ 25 °C 120 Hz
50 WVdc @ +85 °C (33 WVdc @ 125 °C)					
0.10	A	3216	T491A104K050AS-F	0.5	4
0.15	A	3216	T491A154K050AS-F	0.5	4
0.15	B	3528	T491B154K050AS-F	0.5	4
0.22	B	3528	T491B224K050AS-F	0.5	4
0.33	B	3528	T491B334K050AS-F	0.5	4
0.47	B	3528	T491B474K050AS-F	0.5	4
0.47	C	6032	T491C474K050AS-F	0.5	4
0.68	C	6032	T491C684K050AS-F	0.5	4
1.0	C	6032	T491C105K050AS-F	0.5	4
1.5	C	6032	T491C155K050AS-F	0.5	6
1.5	D	7343	T491D155K050AS-F	0.8	6
2.2	D	7343	T491D225K050AS-F	1.1	6
3.3	D	7343	T491D335K050AS-F	1.7	6
4.7	D	7343	T491D475K050AS-F	2.4	6
6.8	X	7343H	T491X685K050AS-F	3.5	6

Note: CDE reserves the right to offer higher rated voltage substitutes within the same case size. The marking will indicate the higher voltage.