

Solid Tantalum Chip Capacitors MIDGET® Conformal Coated



FEATURES

- 8 mm, 12 mm, 16 mm tape and reel packaging available per EIA-481-1 and reeling per IEC 286-3, 7" [178 mm] standard



RoHS*
COMPLIANT

PERFORMANCE CHARACTERISTICS

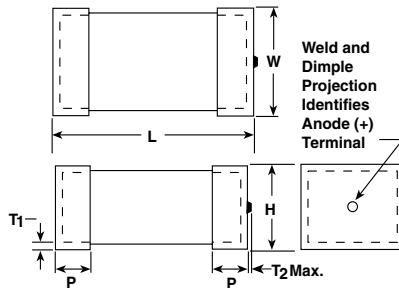
Operating Temperature: - 55 °C to + 85 °C
(To + 125 °C with voltage derating)

NOTE: Refer to Doc. 40088

Capacitance Range: 0.10 μF - 150 μF
Capacitance Tolerance: ± 10 %, ± 20 % standard
Voltage Rating: 4 WVDC to 50 WVDC

ORDERING INFORMATION						
194D	225	X0	004	A	2	T
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	CASE CODE	TERMINATION	PACKAGING
<p>This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.</p>	<p>X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % Special Order</p>		<p>This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating.</p>	<p>See Ratings and Case Codes Table</p>	<p>2 = Gold Plate, Standard. (50 μ Inch minimum) 8 = 60/40 Solder Plated 7 = Hot Solder Dipped</p>	<p>T = T/R (full reel) 7" [178] Reel standard. H = T/R (half reel) 7" [178] B = Bulk See Tape and Reel Specifications.</p>
<p>Note: Preferred Tolerance and reel sizes are in bold. We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size. Voltage substitutions will be marked with the higher voltage rating.</p>						

DIMENSIONS in inches [millimeters]



CASE CODE	W	L	H	P	T ₁	T ₂ (Max.)
A	0.050 ± 0.015 [1.27 ± 0.38]	0.100 ± 0.015 [2.54 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
B	0.050 ± 0.015 [1.27 ± 0.38]	0.150 ± 0.015 [3.81 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
C	0.050 ± 0.015 [1.27 ± 0.38]	0.200 ± 0.015 [5.08 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
D	0.100 ± 0.015 [2.54 ± 0.38]	0.150 ± 0.015 [3.81 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
E	0.100 ± 0.015 [2.54 ± 0.38]	0.200 ± 0.015 [5.08 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
F	0.135 ± 0.015 [3.43 ± 0.38]	0.220 ± 0.015 [5.59 ± 0.38]	0.070 ± 0.015 [1.78 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
G	0.110 ± 0.015 [2.79 ± 0.38]	0.265 ± 0.015 [6.73 ± 0.38]	0.110 ± 0.015 [2.79 ± 0.38]	0.050 ± 0.005 [1.27 ± 0.13]	0.005 [0.13]	0.015 [0.38]
H	0.150 ± 0.015 [3.81 ± 0.38]	0.285 ± 0.015 [7.24 ± 0.38]	0.110 ± 0.015 [2.79 ± 0.38]	0.050 ± 0.005 [1.27 ± 0.13]	0.005 [0.13]	0.015 [0.38]

Note: When solder coated terminations are required, add 0.015" [0.381] to termination dimension tolerances.

* Pb containing terminations that are not RoHS compliant, exemptions may apply.



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Vishay Sprague

194D/CTC1 RATINGS AND CASE CODES								
μF	4 V	6 V/6.3 V**	10 V	15 V/16 V**	20 V	25 V	35 V/40 V**	50 V
	Std.	Std.	Std.	Std.	Std.	Std.	Std.	Std.
0.10							A	A*
0.15							A	A
0.22							A	B*
0.33						A	B	B
0.47					A	A/B	B	C
0.68				A	A/B	B	C	D
1.0			A	A/B	A/B	C	D	E
1.5		A	A/B	A/B	B/C	D	E	F*
2.2	A	A/B	A/B	B/C	C/D	E	F	F
3.3	A/B	A/B	B/C	C/D	D/E	F	F	G
4.7	B	B/C	C/D	D/E	E/F	F	F/G	H
6.8	B/C	C/D	D/E	E/F	F	F/G*	G/H	H
10	C/D	D/E	E/F	E/F	F/G	F/G	H	
15	D/E	E/F	E/F	F/G	G	H	H	
22	E/F	F	F/G	F/G	H	H		
33	F	F/G	F/G	G/H	H			
47	F/G	F/G	G/H	H				
68	F/G	G/H	H	H				
100	H	H	H					
120	H	H	H					
150	H	H						

* only available in 194D

** CECC voltages are 6.3 volts, 16 volts and 40 volts. 20 volts range only available in 194D.

Extended range values not available in CECC styles

STANDARD/EXTENDED RATINGS					
CAPACITANCE (μF)	CASE CODE	PART NUMBER*	Max. DCL at + 25 °C (μA)	Max. DF at + 25 °C 120 Hz (%)	
4 WVDC AT + 85 °C, SURGE = 5 V . . . 2.7 WVDC AT + 125 °C, SURGE = 3.4 V					
2.2	A	194D225X_004A2	0.5	6	
3.3	A	194D335X_004A2	0.5	6	
3.3	B	194D335X_004B2	0.5	6	
4.7	B	194D475X_004B2	0.5	6	
6.8	B	194D685X_004B2	0.5	6	
6.8	C	194D685X_004C2	0.5	6	
10	C	194D106X_004C2	0.5	6	
10	D	194D106X_004D2	0.5	6	
15	D	194D156X_004D2	0.6	6	
15	E	194D156X_004E2	0.6	6	
22	E	194D226X_004E2	0.9	6	
22	F	194D226X_004F2	0.9	6	
33	F	194D336X_004F2	1.3	6	
47	F	194D476X_004F2	1.9	6	
47	G	194D476X_004G2	1.9	6	
68	F	194D686X_004F2	2.7	6	
68	G	194D686X_004G2	2.7	6	
100	H	194D107X_004H2	4.0	8	
120	H	194D127X_004H2	4.8	8	
150	H	194D157X_004H2	6.0	8	

* Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".



STANDARD/EXTENDED RATINGS				
CAPACITANCE (μF)	CASE CODE	PART NUMBER*	Max. DCL at + 25 °C (μA)	Max. DF at + 25 °C 120 Hz (%)
6 WVDC AT + 85 °C, SURGE = 8 V . . . 4 WVDC AT + 125 °C, SURGE = 5 V				
1.5	A	194D155X_006A2	0.5	6
2.2	A	194D225X_006A2	0.5	6
2.2	B	194D225X_006B2	0.5	6
3.3	A	194D335X_006A2	0.5	6
3.3	B	194D335X_006B2	0.5	6
4.7	B	194D475X_006B2	0.5	6
4.7	C	194D475X_006C2	0.5	6
6.8	C	194D685X_006C2	0.5	6
6.8	D	194D685X_006D2	0.5	6
10	D	194D106X_006D2	0.6	6
10	E	194D106X_006E2	0.6	6
6 WVDC AT + 85 °C, SURGE = 8 V . . . 4 WVDC AT + 125 °C, SURGE = 5 V				
15	E	194D156X_006E2	1.0	6
15	F	194D156X_006F2	1.0	6
22	F	194D226X_006F2	1.4	6
33	F	194D336X_006F2	2.1	6
33	G	194D336X_006G2	2.1	6
47	F	194D476X_006F2	3.0	6
47	G	194D476X_006G2	3.0	6
68	G	194D686X_006G2	4.3	6
68	H	194D686X_006H2	4.3	6
100	H	194D107X_006H2	6.0	8
120	H	194D127X_006H2	7.2	8
150	H	194D157X_006H2	9.0	8
10 WVDC AT + 85 °C, SURGE = 13 V . . . 7 WVDC AT + 125 °C, SURGE = 9 V				
1.0	A	194D105X_010A2	0.5	4
1.5	A	194D155X_010A2	0.5	6
1.5	B	194D155X_010B2	0.5	6
2.2	A	194D225X_010A2	0.5	6
2.2	B	194D225X_010B2	0.5	6
3.3	B	194D335X_010B2	0.5	6
3.3	C	194D335X_010C2	0.5	6
4.7	C	194D475X_010C2	0.5	6
4.7	D	194D475X_010D2	0.5	6
6.8	D	194D685X_010D2	0.7	6
6.8	E	194D685X_010E2	0.7	6
10	E	194D106X_010E2	1.0	6
10	F	194D106X_010F2	1.0	6
15	E	194D156X_010E2	1.5	6
15	F	194D156X_010F2	1.5	6
22	F	194D226X_010F2	2.2	6
22	G	194D226X_010G2	2.2	6
33	F	194D336X_010F2	3.3	6
33	G	194D336X_010G2	3.3	6
47	G	194D476X_010G2	4.7	6
47	H	194D476X_010H2	4.7	6
68	H	194D686X_010H2	6.8	6
100	H	194D107X_010H2	10	8
120	H	194D127X_010H2	12	8

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STANDARD/EXTENDED RATINGS				
CAPACITANCE (µF)	CASE CODE	PART NUMBER*	Max. DCL at + 25 °C (µA)	Max. DF at + 25 °C 120 Hz (%)
15 WVDC AT + 85 °C, SURGE = 20 V . . . 10 WVDC AT + 125 °C, SURGE = 12 V				
0.68	A	194D684X_015A2	0.5	4
1.0	A	194D105X_015A2	0.5	4
1.0	B	194D105X_015B2	0.5	4
1.5	A	194D155X_015A2	0.5	6
1.5	B	194D155X_015B2	0.5	6
2.2	B	194D225X_015B2	0.5	6
2.2	C	194D225X_015C2	0.5	6
3.3	C	194D335X_015C2	0.5	6
3.3	D	194D335X_015D2	0.5	6
4.7	D	194D475X_015D2	0.7	6
4.7	E	194D475X_015E2	0.7	6
6.8	E	194D685X_015E2	1.1	6
6.8	F	194D685X_015F2	1.1	6
10	E	194D106X_015E2	1.6	6
10	F	194D106X_015F2	1.6	6
15	F	194D156X_015F2	2.4	6
15	G	194D156X_015G2	2.4	6
22	F	194D226X_015F2	3.5	6
22	G	194D226X_015G2	3.5	6
33	G	194D336X_015G2	5.3	6
33	H	194D336X_015H2	5.3	6
47	H	194D476X_015H2	7.0	6
68	H	194D686X_015H2	10	6
20 WVDC AT + 85 °C, SURGE = 26 V . . . 13 WVDC AT + 125 °C, SURGE = 16 V				
0.47	A	194D474X_020A2	0.5	4
0.68	A	194D684X_020A2	0.5	4
0.68	B	194D684X_020B2	0.5	4
1.0	A	194D105X_020A2	0.5	4
1.0	B	194D105X_020B2	0.5	4
1.5	B	194D155X_020B2	0.5	6
1.5	C	194D155X_020C2	0.5	6
2.2	C	194D225X_020C2	0.5	6
2.2	D	194D225X_020D2	0.5	6
3.3	D	194D335X_020D2	0.7	6
3.3	E	194D335X_020E2	0.7	6
4.7	E	194D475X_020E2	0.9	6
4.7	F	194D475X_020F2	0.9	6
6.8	F	194D685X_020F2	1.4	6
10	F	194D106X_020F2	2.0	6
10	G	194D106X_020G2	2.0	6
15	G	194D156X_020G2	3.0	6
22	H	194D226X_020H2	4.4	6
33	H	194D336X_020H2	6.6	6

* Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".



STANDARD/EXTENDED RATINGS				
CAPACITANCE (μF)	CASE CODE	PART NUMBER*	Max. DCL at + 25 °C (μA)	Max. DF at + 25 °C 120 Hz (%)
25 WVDC AT + 85 °C, SURGE = 32 V . . . 17 WVDC AT + 125 °C, SURGE = 20 V				
0.33	A	194D334X_025A2	0.5	4
0.47	A	194D474X_025A2	0.5	4
0.47	B	194D474X_025B2	0.5	4
0.68	B	194D684X_025B2	0.5	4
1.0	C	194D105X_025C2	0.5	4
1.5	D	194D155X_025D2	0.5	6
2.2	E	194D225X_025E2	0.6	6
3.3	F	194D335X_025F2	0.8	6
4.7	F	194D475X_025F2	1.2	6
6.8	F	194D685X_025F2	1.7	6
6.8	G	194D685X_025G2	1.7	6
10	F	194D106X_025F2	2.5	6
10	G	194D106X_025G2	2.5	6
15	H	194D156X_025H2	3.8	6
22	H	194D226X_025H2	5.5	6
35 WVDC AT + 85 °C, SURGE = 46 V . . . 23 WVDC AT + 125 °C, SURGE = 28 V				
0.10	A	194D104X_035A2	0.5	4
0.15	A	194D154X_035A2	0.5	4
0.22	A	194D224X_035A2	0.5	4
0.33	B	194D334X_035B2	0.5	4
0.47	B	194D474X_035B2	0.5	4
0.68	C	194D684X_035C2	0.5	4
1.0	D	194D105X_035D2	0.5	4
1.5	E	194D155X_035E2	0.5	6
2.2	F	194D225X_035F2	0.8	6
3.3	F	194D335X_035F2	1.2	6
4.7	F	194D475X_035F2	1.6	6
4.7	G	194D475X_035G2	1.6	6
6.8	G	194D685X_035G2	2.4	6
6.8	H	194D685X_035H2	2.4	6
10	H	194D106X_035H2	3.5	6
15	H	194D156X_035H2	5.3	6
50 WVDC AT + 85 °C, SURGE = 65 V . . . 33 WVDC AT + 125 °C, SURGE = 38 V				
0.10	A	194D104X_050A2	0.5	4
0.15	A	194D154X_050A2	0.5	4
0.22	B	194D224X_050B2	0.5	4
0.33	B	194D334X_050B2	0.5	4
0.47	C	194D474X_050C2	0.5	4
0.68	D	194D684X_050D2	0.5	4
1.0	E	194D105X_050E2	0.5	4
1.5	F	194D155X_050F2	0.8	6
2.2	F	194D225X_050F2	1.1	6
3.3	G	194D335X_050G2	1.7	6
4.7	H	194D475X_050H2	2.4	6
6.8	H	194D685X_050H2	3.4	6

* Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".



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