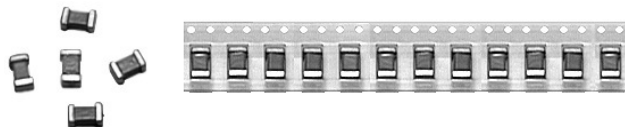


Solid Tantalum Chip Capacitors, MIDGET[®], Conformal Coated



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
- Compliant to RoHS directive 2002/95/EC


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 μ F - 150 μ F

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

Voltage Rating: 4 WVDC to 50 WVDC

ORDERING INFORMATION

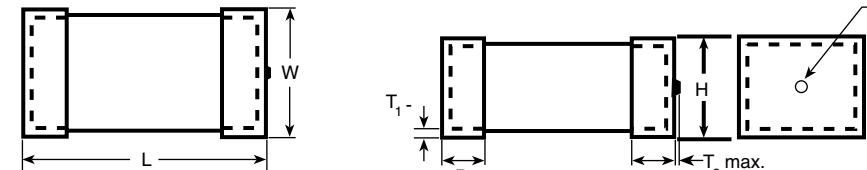
194D TYPE	225 CAPACITANCE	X0 CAPACITANCE TOLERANCE	004 DC VOLTAGE RATING AT + 85 °C	A CASE CODE	2 TERMINATION	T PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow	X0 = $\pm 20\%$ X9 = $\pm 10\%$ X5 = $\pm 5\%$ Special Order	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating	See Ratings and Case Codes Table	2 = Gold Plated. Standard. (RoHS compliant) (50 μ inch minimum) 8 = 60/40 Solder Plated 7 = Hot Solder Dipped	T = T/R (full reel) 7" [178] Reel standard. H = T/R (half reel) 7" [178] B = Bulk See Tape and Reel Specifications

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.

DIMENSIONS in inches [millimeters]

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

**194D/CTC1 RATINGS AND CASE CODES**

μF	4 V	6 V/6.3 V ⁽²⁾	10 V	15 V/16 V ⁽²⁾	20 V	25 V	35 V/40 V ⁽²⁾	50 V
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 ⁽¹⁾	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						

Notes⁽¹⁾ only available in 194D⁽²⁾ CECC voltages are 6.3 V, 16 V and 40 V. 20 V range only available in 194D

Extended range values not available in CECC styles

STANDARD/EXTENDED RATINGS

CAPACITANCE (μF)	CASE CODE	PART NUMBER ⁽¹⁾	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

Note⁽¹⁾ Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0"

STANDARD/EXTENDED RATINGS

CAPACITANCE (μ F)	CASE CODE	PART NUMBER ⁽¹⁾	MAX. DCL AT + 25 °C (μ A)	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
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
330	H	194D337X_006H2	20	10
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

Note

⁽¹⁾ Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0"

**STANDARD/EXTENDED RATINGS**

CAPACITANCE (μ F)	CASE CODE	PART NUMBER ⁽¹⁾	MAX. DCL AT + 25 °C (μ A)	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

Note

⁽¹⁾ Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0"

STANDARD/EXTENDED RATINGS

CAPACITANCE (μ F)	CASE CODE	PART NUMBER ⁽¹⁾	MAX. DCL AT + 25 °C (μ A)	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

Note

⁽¹⁾ Preliminary values, contact factory for availability. For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0"



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