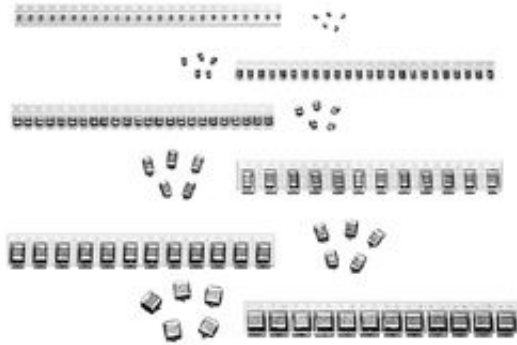


Solid Tantalum Chip Capacitors, TANTAMOUNT[®], Conformal Coated, Maximum CV



FEATURES

- Large capacitance rating range
- Terminations: 100 % Tin (2) standard
- 8 mm, 12 mm tape and reel packaging available per EIA 481-1 and reeling per IEC 286-3. 7" [178 mm] standard. 13" [330 mm] available.
- Case code compatibility with EIA 535BAAC and CECC30801 molded chips
- 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: 0.1 μF to 1500 μF

Capacitance Tolerance: ± 10 %, ± 20 % standard

Voltage Rating: 4 WV_{DC} to 50 WV_{DC}

ORDERING INFORMATION

595D	106	X0	010	A	2	T
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	CASE CODE	TERMINATION	PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	X0 = ± 20 % X9 = ± 10 %	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V).	See ratings and case codes table	2 = 100 % tin 4 = Gold plated 8 = Solder plated 60/40 Special order	T = Tape and reel 7" [178 mm] reel W = 13" [330 mm] reel see tape and reel specifications

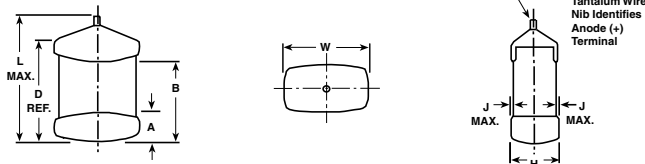
Notes

- 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.

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

**Solid Tantalum Chip Capacitors,
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Vishay Sprague

DIMENSIONS in inches [millimeters]


CASE CODE	L (MAX.)	W	H	A	B	D (REF.)	J (MAX.)
T	0.087 [2.2]	0.045 ± 0.012 [1.1 ± 0.3]	0.045 ± 0.012 [1.1 ± 0.3]	0.016 ± 0.008 [0.4 ± 0.2]	0.042 ± 0.010 [1.07 ± 0.25]	0.063 [1.6]	0.004 [0.1]
S	0.126 ± 0.008 [3.2 ± 0.2]	0.067 ± 0.008 [1.7 ± 0.2]	0.051 ± 0.008 [1.3 ± 0.2]	0.031 ± 0.012 [0.80 ± 0.30]	0.078 ± 0.012 [2.0 ± 0.3]	0.086 [2.2]	0.004 [0.1]
A	0.146 [3.7]	0.072 ± 0.012 [1.8 ± 0.3]	0.056 ± 0.012 [1.4 ± 0.3]	0.031 ± 0.012 [0.80 ± 0.30]	0.085 ± 0.016 [2.2 ± 0.4]	0.115 [2.9]	0.004 [0.1]
B	0.158 [4.0]	0.110 + 0.012 - 0.016 [2.8 + 0.3 - 0.4]	0.075 + 0.012 - 0.024 [1.9 + 0.3 - 0.6]	0.031 ± 0.012 [0.80 ± 0.30]	0.097 ± 0.016 [2.5 ± 0.4]	0.138 [3.5]	0.004 [0.1]
C	0.281 [7.1]	0.126 ± 0.012 [3.2 ± 0.3]	0.098 ± 0.012 [2.5 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.30]	0.180 ± 0.024 [4.6 ± 0.6]	0.236 [6.0]	0.004 [0.1]
G	0.205 ± 0.016 [5.2 ± 0.4]	0.144 ± 0.016 [3.65 ± 0.4]	0.087 [2.2] Max.	0.051 ± 0.012 [1.3 ± 0.3]	0.133 ± 0.016 [3.4 ± 0.4]	0.173 [4.4]	0.004 [0.1]
D	0.293 [7.5]	0.170 ± 0.012/- 0.024 [4.3 ± 0.3/- 0.6]	0.110 ± 0.012 [2.8 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.30]	0.180 ± 0.024 [4.6 ± 0.6]	0.253 [6.4]	0.004 [0.1]
M	0.129 ± 0.012 [3.3 ± 0.3]	0.106 ± 0.012 [2.7 ± 0.3]	0.067 ± 0.012 [1.7 ± 0.3]	0.031 ± 0.012 [0.80 ± 0.3]	0.078 ± 0.012 [2.0 ± 0.3]	0.095 [2.5]	0.004 [0.1]
R	0.283 [7.2]	0.235 ± 0.012/- 0.024 [6.0 ± 0.3/- 0.6]	0.136 ± 0.012/- 0.016 [3.5 ± 0.3/- 0.4]	0.051 ± 0.012 [1.3 ± 0.30]	0.180 ± 0.024 [4.6 ± 0.6]	0.243 [6.2]	0.004 [0.1]

Note

• The anode termination (D less B) will be a minimum of 0.012" (0.3 mm). T case = 0.005" (0.13 mm) minimum.

RATINGS AND CASE CODES

µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.1								T
0.15								T
0.22								A/T
0.33							T	A
0.47						T	A	A
0.68					T	A	A	A/B
1.0					T	A	A	A/B
1.5				T		A	A/B	B/C
2.2			T	T/A	A	A/B	B	B/C
3.3		A/T	A	T	A	B	B/C	C
4.7	T	A	A/T	A	A/B	B/C	B/C	C
6.8	T	T	A	A	A/B	B	C	C/D
10	T		A	A/B	B	B/C	D	D/R
15	A	A	A/B	A/B	B	C	C/D	R
22		A/B	A/B	B/M	B/C	C/D	D/R	R
33	A/B	S/A/B	A/B	B/C		C/D	R	
47	A	A/B	B/C	B/C	C/D	D/R	R	
68	A	A/B	B/C	C/D	C/D	D/R		
100	A/B	B/C/M	B/C/D	C/D	D/R	R		
120	C	C	C/D	R	R			
150	B/C	D	C/D	D/R	R			
180	D	D	D/R	R	R			
220	C/D	C/D/G	C/D/R	R				
270	C/D		R					
330	C	C/D/R	D/R	R				
390	D	R	R					
470	C/R	D/R	R					
560		R						
680	D	R	R					
1000	R	R						
1500	R							

STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (μ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
4 WV_{DC} AT+ 85 °C, 2.7 WV_{DC} AT + 125 °C						
4.7	T	595D475X_004T2T	0.5	6	7.80	0.06
6.8	T	595D685X_004T2T	0.5	6	7.80	0.06
10	T	595D106X_004T2T	0.5	6	7.80	0.06
15	A	595D156X_004A2T	0.6	6	1.40	0.23
33	A	595D336X_004A2T	1.3	6	1.40	0.23
33	B	595D336X_004B2T	1.3	6	0.47	0.43
47	A	595D476X_004A2T	1.9	6	1.40	0.23
68	A	595D686X_004A2T	2.7	6	1.30	0.24
100	A	595D107X_004A2T	4.0	12	0.60	0.35
100	B	595D107X_004B2T	4.0	8	0.45	0.43
120	C	595D127X_004C2T	4.8	8	0.19	0.76
150	B	595D157X_004B2T	6.0	8	0.45	0.43
150	C	595D157X_004C2T	6.0	8	0.18	0.78
180	D	595D187X_004D2T	7.2	8	0.14	1.04
220	C	595D227X_004C2T	8.8	8	0.18	0.78
220	D	595D227X_004D2T	8.8	8	0.14	1.04
270	C	595D277X_004C2T	10.8	8	0.17	0.80
270	D	595D277X_004D2T	10.8	8	0.13	1.07
330	C	595D337X_004C2T	13.2	8	0.17	0.80
390	D	595D397X_004D2T	15.6	8	0.13	1.07
470	C	595D477X_004C2T	18.8	10	0.16	0.83
470	R	595D477X_004R2T	18.8	10	0.13	1.39
680	D	595D687X_004D2T	27.2	12	0.13	1.07
1000	R	595D108X_004R2T	40.0	16	0.07	1.89
1500	R	595D158X_004R2T	60.0	20	0.07	1.89
6.3 WV_{DC} AT + 85 °C, 4 WV_{DC} AT + 125 °C						
3.3	A	595D335X_6R3A2T	0.2	6	3.80	0.14
3.3	T	595D335X_6R3T2T	0.5	6	8.50	0.06
4.7	A	595D475X_6R3A2T	0.3	6	3.80	0.14
6.8	T	595D685X_6R3T2T	0.5	6	8.50	0.06
15	A	595D156X_6R3A2T	0.9	6	1.70	0.21
22	A	595D226X_6R3A2T	1.4	6	1.70	0.21
22	B	595D226X_6R3B2T	1.4	6	0.57	0.39
33	A	595D336X_6R3A2T	2.1	6	1.70	0.21
33	B	595D336X_6R3B2T	2.1	5	0.57	0.39
33	S	595D336X_6R3S2T	2.1	8	1.30	0.21
47	A	595D476X_6R3A2T	2.8	6	1.50	0.22
47	B	595D476X_6R3B2T	2.8	5	0.57	0.39
68	A	595D686X_6R3A2T	4.3	12	0.50	0.39
68	B	595D686X_6R3B2T	4.3	6	0.55	0.39
100	B	595D107X_6R3B2T	6.3	8	0.55	0.39
100	C	595D107X_6R3C2T	6.3	8	0.20	0.74
100	M	595D107X_6R3M2T	6.3	14	0.40	0.49
120	C	595D127X_6R3C2T	7.6	8	0.19	0.76
150	D	595D157X_6R3D2T	9.5	8	0.50	0.55
180	D	595D187X_6R3D2T	11.3	8	0.14	1.04
220	C	595D227X_6R3C2T	13.9	8	0.18	0.78
220	D	595D227X_6R3D2T	13.9	8	0.14	1.04
220	G	595D227X_6R3G2T	13.9	8	0.18	0.80
330	C	595D337X_6R3C2T	20.8	8	0.17	0.80
330	C	595D337X_6W3C2T	20.8	8	0.17	0.80
330	D	595D337X_6R3D2T	20.8	8	0.14	1.04
330	R	595D337X_6R3R2T	20.8	8	0.13	1.39



Solid Tantalum Chip Capacitors,
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Vishay Sprague

STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (μ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
6.3 WV_{DC} AT + 85 °C, 4 WV_{DC} AT + 125 °C						
390	R	595D397X_6R3R2T	24.6	8	0.13	1.39
470	D	595D477X_6R3D2T	29.6	8	0.13	1.07
470	D	595D477X_6W3D2T	29.6	10	0.12	1.12
470	R	595D477X_6R3R2T	29.6	10	0.12	1.44
560	R	595D567X_6R3R2T	35.3	10	0.11	1.51
680	R	595D687X_6R3R2T	42.8	10	0.09	1.67
680	R	595D687X_6W3R2T	42.8	10	0.09	1.67
1000	R	595D108X_6R3R2T	63.0	16	0.07	1.89
1000	R	595D108X_6W3R2T	63.0	16	0.07	1.89
10 WV_{DC} AT + 85 °C, 7 WV_{DC} AT + 125 °C						
2.2	T	595D225X_010T2T	0.5	6	8.60	0.06
3.3	A	595D335X_010A2T	0.5	6	3.80	0.14
4.7	A	595D475X_010A2T	0.5	6	3.60	0.14
4.7	T	595D475X_010T2T	0.5	6	8.60	0.06
6.8	A	595D685X_010A2T	0.7	6	3.60	0.14
10	A	595D106X_010A2T	1.0	6	1.90	0.20
15	A	595D156X_010A2T	1.5	6	1.80	0.20
15	B	595D156X_010B2T	1.5	6	0.67	0.36
22	A	595D226X_010A2T	2.2	6	1.80	0.20
22	B	595D226X_010B2T	2.2	6	1.90	0.21
33	A	595D336X_010A2T	3.3	8	3.00	0.16
33	B	595D336X_010B2T	3.3	6	1.90	0.21
47	B	595D476X_010B2T	4.7	6	0.65	0.36
47	C	595D476X_010C2T	4.7	6	0.30	0.61
68	B	595D686X_010B2T	6.8	6	0.65	0.36
68	C	595D686X_010C2T	6.8	6	0.24	0.68
100	B	595D107X_010B2T	10.0	12	0.40	0.46
100	C	595D107X_010C2T	10.0	8	0.20	0.74
100	D	595D107X_010D2T	8.0	7	0.15	1.00
120	C	595D127X_010C2T	12.0	7	0.22	0.71
120	D	595D127X_010D2T	12.0	8	0.14	1.04
150	C	595D157X_010C2T	15.0	8	0.22	0.71
150	D	595D157X_010D2T	15.0	8	0.14	1.04
180	D	595D187X_010D2T	18.0	7	0.38	0.63
180	R	595D187X_010R2T	18.0	8	0.13	1.39
220	C	595D227X_010C2T	22.0	8	0.20	0.74
220	D	595D227X_010D2T	22.0	8	0.14	1.04
220	R	595D227X_010R2T	22.0	8	0.13	1.39
270	R	595D277X_010R2T	27.0	8	0.13	1.39
330	D	595D337X_010D2T	33.0	8	0.14	1.04
330	R	595D337X_010R2T	33.0	8	0.13	1.39
390	R	595D397X_010R2T	39.0	8	0.12	1.44
470	R	595D477X_010R2T	47.0	8	0.12	1.44
680	R	595D687X_010R2T	68.0	14	0.09	1.67
16 WV_{DC} AT + 85 °C, 10 WV_{DC} AT + 125 °C						
1.5	T	595D155X_016T2T	0.5	6	8.70	0.06
2.2	T	595D225X_016T2T	0.5	6	8.70	0.06
2.2	A	595D225X_016A2T	0.4	5	3.90	0.14
3.3	T	595D335X_016T2T	0.5	6	8.60	0.06
4.7	A	595D475X_016A2T	0.8	6	2.90	0.16
6.8	A	595D685X_016A2T	1.1	6	2.80	0.16
10	A	595D106X_016A2T	1.6	6	2.50	0.17
10	B	595D106X_016B2T	1.6	6	0.76	0.33

STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (μ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
16 WV_{DC} AT + 85 °C, 10 WV_{DC} AT + 125 °C						
15	A	595D156X_016A2T	2.4	6	2.40	0.18
15	B	595D156X_016B2T	2.4	6	0.75	0.34
22	B	595D226X_016B2T	3.5	6	0.75	0.34
22	M	595D226X_016M2T	3.5	6	0.50	0.44
33	B	595D336X_016B2T	5.3	6	0.72	0.34
33	C	595D336X_016C2T	5.3	6	0.29	0.62
47	B	595D476X_016B2T	7.5	6	0.72	0.34
47	C	595D476X_016C2T	7.5	6	0.28	0.63
68	C	595D686X_016C2T	10.9	6	0.26	0.65
68	D	595D686X_016D2T	10.9	6	0.14	1.04
100	C	595D107X_016C2T	16.0	8	0.27	0.64
100	D	595D107X_016D2T	16.0	8	0.14	1.04
120	R	595D127X_016R2T	19.2	8	0.14	1.34
150	D	595D157X_016D2T	24.0	8	0.14	1.04
150	R	595D157X_016R2T	24.0	8	0.13	1.39
180	R	595D187X_016R2T	28.8	8	0.13	1.39
220	R	595D227X_016R2T	35.2	8	0.12	1.44
330	R	595D337X_016R2T	52.8	14	0.11	1.51
20 WV_{DC} AT + 85 °C, 13 WV_{DC} AT + 125 °C						
0.68	T	595D684X_020T2T	0.5	4	10.80	0.05
1	T	595D105X_020T2T	0.5	4	9.00	0.06
2.2	A	595D225X_020A2T	0.5	6	3.80	0.14
3.3	A	595D335X_020A2T	0.7	6	3.80	0.14
4.7	A	595D475X_020A2T	0.9	6	3.10	0.16
4.7	B	595D475X_020B2T	0.9	6	0.95	0.30
6.8	A	595D685X_020A2T	1.4	6	3.00	0.16
6.8	B	595D685X_020B2T	1.4	6	0.95	0.30
10	B	595D106X_020B2T	2.0	6	1.00	0.29
15	B	595D156X_020B2T	3.0	6	1.00	0.29
22	B	595D226X_020B2T	4.4	6	0.90	0.31
22	C	595D226X_020C2T	4.4	6	0.38	0.54
47	C	595D476X_020C2T	9.4	6	0.35	0.56
47	D	595D476X_020D2T	9.4	6	0.19	0.89
68	C	595D686X_020C2T	13.6	6	0.19	0.76
68	D	595D686X_020D2T	13.6	6	0.19	0.89
100	D	595D107X_020D2T	20.0	8	0.18	0.91
100	R	595D107X_020R2T	20.0	8	0.14	1.34
120	R	595D127X_020R2T	24.0	8	0.14	1.34
150	R	595D157X_020R2T	30.0	8	0.14	1.34
180	R	595D187X_020R2T	36.0	8	0.14	1.34
25 WV_{DC} AT + 85 °C, 17 WV_{DC} AT + 125 °C						
0.47	T	595D474X_025T2T	0.5	4	13.50	0.05
1	A	595D105X_025A2T	0.4	4	4.20	0.13
1.5	A	595D155X_025A2T	0.5	6	3.80	0.14
2.2	A	595D225X_025A2T	0.6	6	3.80	0.14
2.2	B	595D225X_025B2T	0.6	6	2.30	0.19
3.3	B	595D335X_025B2T	0.8	6	1.90	0.21
4.7	B	595D475_025B2T	1.2	6	1.80	0.22
4.7	C	595D475X_025C2T	1.3	5	0.68	0.40
6.8	B	595D685X_025B2T	1.7	6	1.50	0.24
10	B	595D106X_025B2T	2.5	6	1.50	0.24
10	C	595D106X_025C2T	2.5	6	0.57	0.44
15	C	595D156X_025C2T	3.8	6	0.56	0.44

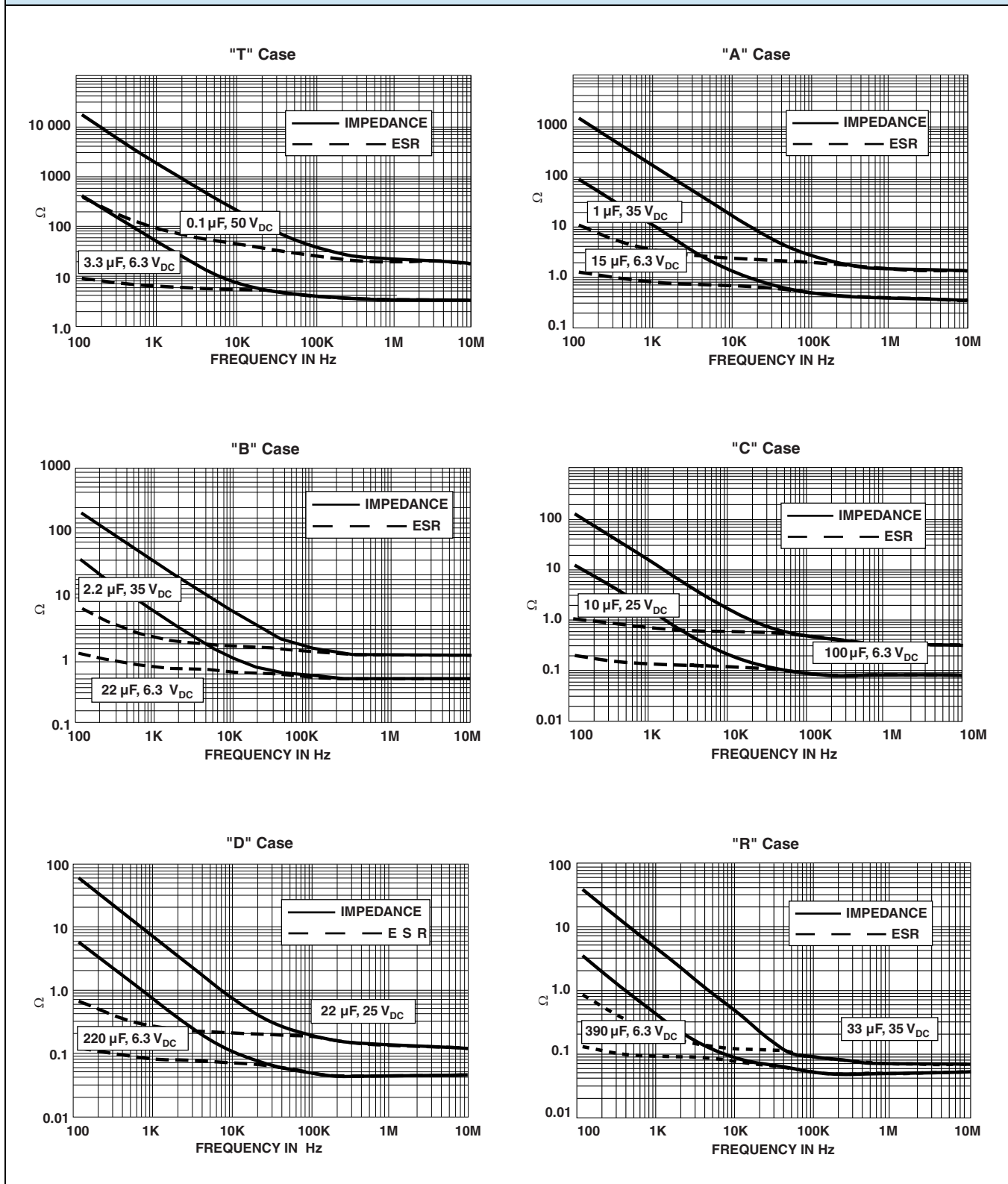


Solid Tantalum Chip Capacitors,
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STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (μ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
25 WV_{DC} AT + 85 °C, 17 WV_{DC} AT + 125 °C						
22	C	595D226X_025C2T	5.5	6	0.50	0.47
22	D	595D226X_025D2T	5.5	6	0.28	0.73
33	C	595D336X_025C2T	8.3	6	0.45	0.49
33	D	595D336X_025D2T	8.3	6	0.27	0.75
47	D	595D476X_025D2T	11.8	6	0.26	0.76
47	R	595D476X_025R2T	11.8	6	0.20	1.12
68	D	595D686X_025D2T	17.0	8	0.26	0.76
68	R	595D686X_025R2T	17.0	6	0.20	1.12
100	R	595D107X_025R2T	25.0	8	0.20	1.12
35 WV_{DC} AT + 85 °C, 23 WV_{DC} AT + 125 °C						
0.33	T	595D334X_035T2T	0.5	4	14.40	0.05
0.47	A	595D474X_035A2T	0.5	4	4.30	0.13
0.68	A	595D684X_035A2T	0.5	4	4.20	0.13
1	A	595D105X_035A2T	0.5	4	4.10	0.14
1.5	A	595D155X_035A2T	0.5	6	3.80	0.14
1.5	B	595D155X_035B2T	0.5	6	2.80	0.17
2.2	B	595D225X_035B2T	0.8	6	2.30	0.19
3.3	B	595D335X_035B2T	1.2	6	2.40	0.19
3.3	C	595D335X_035C2T	1.2	6	0.75	0.38
4.7	B	595D475X_035B2T	1.6	6	2.20	0.20
4.7	C	595D475X_035C2T	1.6	6	0.66	0.41
6.8	C	595D685X_035C2T	2.4	6	0.63	0.42
10	D	595D106X_035D2T	3.5	6	0.43	0.59
15	C	595D156X_035C2T	5.3	6	0.60	0.43
15	D	595D156X_035D2T	5.3	6	0.41	0.60
22	D	595D226X_035D2T	7.7	6	0.32	0.68
22	R	595D226X_035R2T	7.7	6	0.28	0.94
33	R	595D336X_035R2T	11.6	6	0.28	0.94
47	R	595D476X_035R2T	16.5	6	0.28	0.94
50 WV_{DC} AT + 85 °C, 33 WV_{DC} AT + 125 °C						
0.1	T	595D104X_050T2T	0.5	4	22.50	0.04
0.15	T	595D154X_050T2T	0.5	4	18.00	0.04
0.22	A	595D224X_050A2T	0.5	4	9.00	0.09
0.22	T	595D224X_050T2T	0.5	4	15.30	0.04
0.33	A	595D334X_050A2T	0.5	4	8.10	0.10
0.47	A	595D474X_050A2T	0.5	4	7.20	0.10
0.68	A	595D684X_050A2T	0.5	4	6.10	0.11
0.68	B	595D684X_050B2T	0.5	4	5.40	0.13
1	A	595D105X_050A2T	0.5	4	6.00	0.11
1	B	595D105X_050B2T	0.5	4	5.00	0.13
1.5	B	595D155X_050B2T	0.8	6	4.10	0.14
1.5	C	595D155X_050C2T	0.8	6	1.80	0.25
2.2	B	595D225X_050B2T	1.1	6	3.20	0.16
2.2	C	595D225X_050C2T	1.1	6	1.70	0.25
3.3	C	595D335X_050C2T	1.7	6	1.60	0.26
4.7	C	595D475X_050C2T	2.4	6	1.40	0.28
6.8	C	595D685X_050C2T	3.4	6	1.30	0.29
6.8	D	595D685X_050D2T	3.4	6	0.82	0.43
10	D	595D106X_050D2T	5.0	6	0.80	0.43
10	R	595D106X_050R2T	5.0	6	0.65	0.62
15	R	595D156X_050R2T	7.5	6	0.40	0.79
22	R	595D226X_050R2T	11.0	6	0.39	0.80

TYPICAL CURVES AT + 25 °C, IMPEDANCE AND ESR VS. FREQUENCY





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