

## Solid Tantalum Chip Capacitors

### TANTAMOUNT® Hi-Rel COTS, Conformal Coated Case


**FEATURES**

- High reliability; Weibull grading available
- Surge Current Testing per MIL-PRF-55365 options available
- Standard and Low ESR options
- Terminations: SnPb, Standard. 100 % Tin available


**RoHS\***  
COMPLIANT

**PERFORMANCE/ELECTRICAL CHARACTERISTICS**
**Operating Temperature:** - 55 °C to + 85 °C

(To + 125 °C with voltage derating)

**Capacitance Range:** 0.1 µF to 680 µF

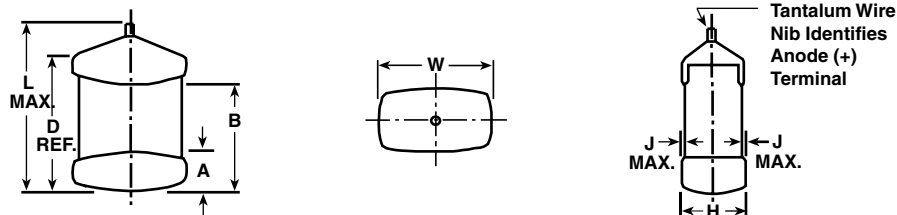
**Capacitance Tolerance:** ± 20 %, ± 10 % standard

**Voltage Rating:** 4 WVDC to 50 WVDC

**ORDERING INFORMATION**

T95	D	107	K	010	E	A	A	S
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION AND PACKAGING	RELIABILITY LEVEL	SURGE CURRENT	ESR
	See Ratings and Case Codes Table.	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	<b>K = ± 10 %</b> <b>M = ± 20 %</b>	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).	<b>E: Sn/Pb Solder/7"</b> (178 mm) reels <b>L: Sn/Pb Solder/7"</b> (178 mm) ½ reel <b>C: 100 % Tin/7"</b> (178 mm) reels <b>H: 100 % Tin/7"</b> (178 mm) ½ reel	<b>A = 1.0 % Weibull</b> <b>B = 0.1 % Weibull (2)</b> <b>S = Hi-Rel Standard Burn-in</b> <b>Z = Non-Established Reliability</b>	<b>A = 10 cycles at + 25 °C</b> <b>B = 10 cycles at - 55 °C/+ 85 °C</b> <b>S = 3 cycles at + 25 °C</b>	<b>S = Std</b> <b>L = Low</b>

**Note:** (2) Weibull 0.1 % may not be available on all ratings. See detailed notes in ratings table or contact marketing for availability

**DIMENSIONS** in inches [millimeters]


CASE CODE	L (MAX.)	W	H	A	B	D (REF.)	J (MAX.)
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]
D	0.293 [7.5]	0.170 ± 0.012 [4.3 ± 0.3]	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]
R	0.283 [7.2]	0.235 + 0.012/- 0.024 [6.0 + 0.3/- 0.6]	0.136 ± 0.012 [3.5 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.30]	0.180 ± 0.024 [4.6 ± 0.6]	0.243 [6.2]	0.004 [0.1]
S	0.143 [3.63]	0.072 ± 0.008 [1.83 ± 0.2]	0.048 ± 0.008 [1.22 ± 0.2]	0.023 ± 0.010 [0.58 ± 0.25]	0.085 ± 0.015 [2.16 ± 0.37]	0.115 [2.9]	0.004 [0.1]
V	0.143 [3.63]	0.104 ± 0.010 [2.65 ± 0.25]	0.051 ± 0.010 [1.3 ± 0.25]	0.023 ± 0.010 [0.58 ± 0.25]	0.085 ± 0.015 [2.16 ± 0.37]	0.115 [2.9]	0.004 [0.1]
X	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.051 ± 0.010 [1.3 ± 0.25]	0.040 ± 0.020 [1.0 ± 0.5]	0.200 ± 0.027 [5.08 ± 0.69]	0.243 [6.2]	0.004 [0.1]
Y	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.069 ± 0.010 [1.75 ± 0.25]	0.040 ± 0.020 [1.0 ± 0.5]	0.200 ± 0.027 [5.08 ± 0.69]	0.243 [6.2]	0.004 [0.1]
Z	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.104 ± 0.010 [2.65 ± 0.25]	0.040 ± 0.020 [1.0 ± 0.5]	0.200 ± 0.027 [5.08 ± 0.69]	0.243 [6.2]	0.004 [0.1]

**Note:** The anode termination (D less B) will be a minimum of 0.010" (0.25 mm)

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



RATINGS AND CASE CODES								
μF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.10							S	
0.15							S	
0.22							S	
0.33							S	
0.47							S	
0.68						S	S	
1.0						S	S	
1.5					S	S	V	
2.2				S	S	V	X	
3.3			S	S	V	X	Y	
4.7		S	S	V	X	X	Z	C
6.8	S	S	V	A/X	X	Y	Z	D
10	S	V	X	X	Y	C/Y	Z	R
15	V	X	X	B/Y	Z	Z	D/R	R
22	X	X	Y	Z	Z		R	R
33	X		Z	Z		D/R	R	
47	Y	Y	Z		R			
68	Y			R		R		
100	Z	Z	R	C/D	R	R		
120			R		R			
150			D/R	D	R			
180		R		R				
220		R	D/R	R				
270	D							
330	R		R	R				
390		R						
470		D						
680		R	R					



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Vishay Sprague

<b>STANDARD/EXTENDED RATINGS</b>						
<b>CAPACITANCE (<math>\mu</math>F)</b>	<b>CASE CODE</b>	<b>PART NUMBER</b>	<b>MAX. DC LEAKAGE AT + 25 °C (<math>\mu</math>A)</b>	<b>MAX. DF AT + 25 °C 120 Hz (%)</b>	<b>STD.(S) MAX. ESR AT + 25 °C 100 kHz (<math>\Omega</math>)</b>	<b>LOW (L) MAX. ESR AT + 25 °C 100 kHz (<math>\Omega</math>)</b>
<b>4 WVDC AT + 85 °C, SURGE = 5.2 V . . . 2.7 WVDC AT + 125 °C, SURGE = 3.4 V</b>						
6.8	S	T95S685(1)004(2)(3)(4)L	0.5	6	N/A	2.000
10	S	T95S106(1)004(2)(3)(4)L	0.5	6	N/A	2.000
15	V	T95V156(1)004(2)(3)(4)L	0.6	6	N/A	1.500
22	X	T95X226(1)004(2)(3)(4)L	0.9	6	N/A	1.000
33	X	T95X336(1)004(2)(3)(4)L	1.3	6	N/A	1.000
47	Y	T95Y476(1)004(2)(3)(4)L	1.9	6	N/A	0.600
68	Y	T95Y686(1)004(2)(3)(4)L	2.7	6	N/A	0.600
100	Z	T95Z107(1)004(2)(3)(4)L	4.0	6	N/A	0.400
270	D	T95D277(1)004(2)(3)(4)(5)	10.8	8	0.130	0.060
330	R	T95R337(1)004(2)(3)(4)(5)	13.2	8	0.130	0.080
<b>6.3 WVDC AT + 85 °C, SURGE = 8 V . . . 4 WVDC AT 125 °C, SURGE = 5 V</b>						
4.7	S	T95S475(1)6R3(2)(3)(4)L	0.5	6	N/A	2.000
6.8	S	T95S685(1)6R3(2)(3)(4)L	0.5	6	N/A	2.000
10	V	T95V106(1)6R3(2)(3)(4)L	0.6	6	N/A	1.500
15	X	T95X156(1)6R3(2)(3)(4)L	0.9	6	N/A	1.000
22	X	T95X226(1)6R3(2)(3)(4)L	1.4	6	N/A	1.000
47	Y	T95Y476(1)6R3(2)(3)(4)L	2.8	6	N/A	0.600
100	Z	T95Z107(1)6R3(2)(3)(4)L	6.0	6	N/A	0.400
180	R	T95R187(1)6R3(2)(3)(4)(5)	10.8	8	0.130	0.080
220	R	T95R227(1)6R3(2)(3)(4)(5)	13.2	8	0.130	0.080
390	R	T95R397(1)6R3(2)(3)(4)(5)	23.4	8	0.130	0.045
470	D	T95D477(1)6R3(2)(3)(4)(5)	28.2	10	0.130	0.060
680	R	T95R687(1)6R3(2)(3)(4)(5)	40.8	12	0.090	0.045
<b>10 WVDC AT + 85 °C, SURGE = 13 V . . . 7 WVDC AT 125 °C, SURGE = 8 V</b>						
3.3	S	T95S335(1)010(2)(3)(4)L	0.5	6	N/A	2.500
4.7	S	T95S475(1)010(2)(3)(4)L	0.5	6	N/A	2.000
6.8	V	T95V685(1)010(2)(3)(4)L	0.7	6	N/A	2.000
10	X	T95X106(1)010(2)(3)(4)L	1.0	6	N/A	1.500
15	X	T95X156(1)010(2)(3)(4)L	1.5	6	N/A	1.000
22	Y	T95Y226(1)010(2)(3)(4)L	2.2	6	N/A	0.600
33	Z	T95Z336(1)010(2)(3)(4)L	3.3	6	N/A	0.400
47	Z	T95Z476(1)010(2)(3)(4)L	4.7	6	N/A	0.400
100	R	T95R107(1)010(2)(3)(4)(5)	10.0	8	0.140	0.075
120	R	T95R127(1)010(2)(3)(4)(5)	12.0	8	0.140	0.070
150	D	T95D157(1)010(2)(3)(4)(5)	15.0	8	0.140	0.075
150	R	T95R157(1)010(2)(3)(4)(5)	15.0	8	0.130	0.065
220	D	T95D227(1)010(2)(3)(4)(5)	22.0	8	0.140	0.065
220	R	T95R227(1)010(2)(3)(4)(5)	22.0	8	0.130	0.055
330	R	T95R337(1)010(2)(3)(4)(5)	33.0	8	0.130	0.055
680	R	T95R687(1)010(2)(3)(4)(5)	68.0	14	0.090	N/A

**Notes:**

- (1) Capacitance Tolerance: K, M
- (2) Termination and Packaging: C, E, H, L
- (3) Reliability Level: A, S, Z
- (4) Surge Current: A, B, S
- (5) ESR: L, S
- (6) Reliability Level: A, B, S, Z

**STANDARD/EXTENDED RATINGS**

CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	STD.(S) MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	LOW (L) MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )
<b>16 WVDC AT + 85 °C, SURGE = 20 V . . . 10 WVDC AT + 125 °C, SURGE = 12 V</b>						
2.2	S	T95S225(1)016(2)(3)(4)L	0.5	6	N/A	3.500
3.3	S	T95S335(1)016(2)(3)(4)L	0.5	6	N/A	2.500
4.7	V	T95V475(1)016(2)(3)(4)L	0.8	6	N/A	2.000
6.8	X	T95X685(1)016(2)(3)(4)L	1.1	6	N/A	1.500
6.8	A	T95A685(1)016(2)(6)(4)(5)	1.1	6	2.800	1.330
10	X	T95X106(1)016(2)(3)(4)L	1.6	6	N/A	1.500
15	B	T95B156(1)016(2)(3)(4)(5)	2.4	6	0.750	0.550
15	Y	T95Y156(1)016(2)(3)(4)L	2.4	6	N/A	0.600
22	Z	T95Z226(1)016(2)(3)(4)L	3.5	6	N/A	0.400
33	Z	T95Z336(1)016(2)(3)(4)L	5.3	6	N/A	0.400
68	R	T95R686(1)016(2)(3)(4)(5)	10.9	6	0.600	0.095
100	C	T95C107(1)016(2)(3)(4)(5)	16.0	8	0.600	0.090
100	D	T95D107(1)016(2)(6)(4)(5)	16.0	8	0.140	0.080
150	D	T95D157(1)016(2)(3)(4)(5)	24.0	8	0.140	0.085
180	R	T95R187(1)016(2)(3)(4)(5)	28.8	8	0.130	0.055
220	R	T95R227(1)016(2)(3)(4)(5)	35.2	8	0.120	0.055
330	R	T95R337(1)016(2)(6)(4)(5)	52.8	14	0.110	0.055
<b>20 WVDC AT + 85 °C, SURGE = 26 V . . . 13 WVDC AT + 125 °C, SURGE = 16 V</b>						
1.5	S	T95S155(1)020(2)(3)(4)L	0.5	6	N/A	3.500
2.2	S	T95S225(1)020(2)(3)(4)L	0.5	6	N/A	3.500
3.3	V	T95V335(1)020(2)(3)(4)L	0.7	6	N/A	3.000
4.7	X	T95X475(1)020(2)(3)(4)L	0.9	6	N/A	1.500
6.8	X	T95X685(1)020(2)(3)(4)L	1.4	6	N/A	1.500
10	Y	T95Y106(1)020(2)(3)(4)L	2.0	6	N/A	1.000
15	Z	T95Z156(1)020(2)(3)(4)L	3.0	6	N/A	0.600
22	Z	T95Z226(1)020(2)(3)(4)L	4.4	6	N/A	0.400
47	D	T95D476(1)020(2)(6)(4)(5)	9.4	6	0.190	0.095
47	R	T95R476(1)020(2)(3)(4)L	9.4	6	0.200	0.110
100	R	T95R107(1)020(2)(6)(4)S	20.0	8	0.140	N/A
120	R	T95R127(1)020(2)(3)(4)(5)	24.0	8	0.140	0.080
150	R	T95R157(1)020(2)(3)(4)(5)	30.0	8	0.140	0.075
<b>25 WVDC AT + 85 °C, SURGE = 32 V . . . 17 WVDC AT + 125 °C, SURGE = 20 V</b>						
0.68	S	T95S684(1)025(2)(3)(4)L	0.5	4	N/A	5.000
1	S	T95S105(1)025(2)(3)(4)L	0.5	4	N/A	3.500
1.5	S	T95S155(1)025(2)(3)(4)L	0.5	6	N/A	3.500
2.2	V	T95V225(1)025(2)(3)(4)L	0.6	6	N/A	2.000
3.3	X	T95X335(1)025(2)(3)(4)L	0.8	6	N/A	1.500
4.7	X	T95X475(1)025(2)(3)(4)L	1.2	6	N/A	1.500
6.8	Y	T95Y685(1)025(2)(3)(4)L	1.7	6	N/A	1.000
10	C	T95C106(1)025(2)(3)(4)(5)	2.5	6	0.570	0.280
10	Y	T95Y106(1)025(2)(3)(4)L	2.5	6	N/A	1.000
15	Z	T95Z156(1)025(2)(3)(4)L	3.8	6	N/A	0.600
33	D	T95D336(1)025(2)(3)(4)(5)	8.3	6	0.260	0.130
33	R	T95R336(1)025(2)(3)(4)(5)	8.3	6	0.250	0.130
68	D	T95D686(1)025(2)(6)(4)(5)	17.0	6	0.260	0.150
68	R	T95R686(1)025(2)(3)(4)(5)	17.0	6	0.200	0.095
100	R	T95R107(1)025(2)(3)(4)S	25	8	0.200	0.090

**Notes:**

- (1) Capacitance Tolerance: K, M
- (2) Termination and Packaging: C, E, H, L
- (3) Reliability Level: A, S, Z
- (4) Surge Current: A, B, S
- (5) ESR: L, S
- (6) Reliability Level: A, B, S, Z



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<b>STANDARD/EXTENDED RATINGS</b>						
<b>CAPACITANCE (<math>\mu</math>F)</b>	<b>CASE CODE</b>	<b>PART NUMBER</b>	<b>MAX. DC LEAKAGE AT + 25 °C (<math>\mu</math>A)</b>	<b>MAX. DF AT + 25 °C 120 Hz (%)</b>	<b>STD.(S) MAX. ESR AT + 25 °C 100 kHz (<math>\Omega</math>)</b>	<b>LOW (L) MAX. ESR AT + 25 °C 100 kHz (<math>\Omega</math>)</b>
<b>35 WVDC AT + 85 °C, SURGE = 46 V . . . 23 WVDC AT + 125 °C, SURGE = 28 V</b>						
0.10	S	T95S104(1)035(2)(3)(4)L	0.5	4	N/A	20.000
0.15	S	T95S104(1)035(2)(3)(4)L	0.5	4	N/A	18.000
0.22	S	T95S224(1)035(2)(3)(4)L	0.5	4	N/A	15.000
0.33	S	T95S334(1)035(2)(3)(4)L	0.5	4	N/A	12.000
0.47	S	T95S474(1)035(2)(3)(4)L	0.5	4	N/A	9.000
0.68	S	T95S684(1)035(2)(3)(4)L	0.5	4	N/A	5.000
1	S	T95S105(1)035(2)(3)(4)L	0.5	4	N/A	3.500
1.5	V	T95V155(1)035(2)(3)(4)L	0.5	6	N/A	3.000
2.2	X	T95X225(1)035(2)(3)(4)L	0.8	6	N/A	2.000
3.3	Y	T95Y335(1)035(2)(3)(4)L	1.2	6	N/A	1.500
4.7	Z	T95Z475(1)035(2)(3)(4)L	1.6	6	N/A	0.800
6.8	Z	T95Z685(1)035(2)(3)(4)L	2.4	6	N/A	0.800
10	Z	T95Z106(1)035(2)(3)(4)L	3.5	6	N/A	0.600
15	D	T95D156(1)035(2)(3)(4)(5)	5.3	6	0.410	0.270
15	R	T95R156(1)035(2)(3)(4)(5)	5.3	6	0.380	0.190
22	R	T95R226(1)035(2)(3)(4)(5)	7.7	6	0.280	0.240
33	R	T95R336(1)035(2)(3)(4)(5)	11.6	6	0.280	0.200
<b>50 WVDC AT + 85 °C, SURGE = 65 V . . . 33 WVDC AT + 125 °C, SURGE = 40 V</b>						
4.7	C	T95C475(1)050(2)(3)(4)(5)	2.4	6	1.4	1.0
6.8	D	T95D685(1)050(2)(3)(4)(5)	3.4	6	0.820	0.450
10	R	T95R106(1)050(2)(3)(4)(5)	5.0	6	0.650	0.500
15	R	T95R156(1)050(2)(3)(4)(5)	7.5	6	0.400	0.350
22	R	T95R226(1)050(2)(3)(4)(5)	11.0	6	0.390	0.300

**Notes:**

- (1) Capacitance Tolerance: K, M
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- (3) Reliability Level: A, S, Z
- (4) Surge Current: A, B, S
- (5) ESR: L, S
- (6) Reliability Level: A, B, S, Z



## Disclaimer

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