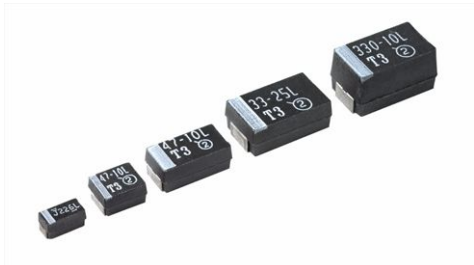


## Solid Tantalum Surface Mount Capacitors

### TANTAMOUNT® Molded Case, Standard Industrial Grade


**FEATURES**

- Terminations: 100 % matte tin, standard, tin/lead available
- Compliant terminations
- Molded case available in six case codes
- Compatible with "High Volume" automatic pick and place equipment
- Optical character recognition qualified
- Meets IEC specification QC300801/US0001 and EIA535BAAC mechanical and performance requirements
- Compliant to RoHS directive 2002/95/EC


**RoHS\***  
 COMPLIANT

**PERFORMANCE/ELECTRICAL CHARACTERISTICS**
**Operating Temperature:** - 55 °C to + 85 °C  
 (to + 125 °C with voltage derating)

**Note:** Refer to Doc. 40088

**Capacitance Range:** 0.10 µF to 1000 µF

**Capacitance Tolerance:** ± 5 %, ± 10 %, ± 20 %

**100 % Surge Current Tested (D and E Case Codes)**
**Voltage Rating:** 4 V<sub>DC</sub> to 63 V<sub>DC</sub>
**ORDERING INFORMATION**

293D	107	X9	010	D	2WE3
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	CASE CODE	TERMINATION AND 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 % X5 = ± 5 %	This is expressed in V. 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	2TE3: Matte tin, 7" (178 mm) reel 2WE3: Matte tin, 13" (330 mm) reel 8T: Tin/lead, 7" (178 mm) reel 8W: Tin/lead, 13" (330 mm) reel

**Note**

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	EIA SIZE	L	W	H	P	T <sub>w</sub>	T <sub>H</sub> MIN.
A	3216-18	0.126 ± 0.008 [3.2 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.047 ± 0.004 [1.2 ± 0.10]	0.028 [0.70]
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.170 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.095 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
E	7343-43	0.287 ± 0.012 [7.3 ± 0.30]	0.170 ± 0.012 [4.3 ± 0.30]	0.158 ± 0.012 [4.0 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.095 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
V	7343-20	0.287 ± 0.012 [7.3 ± 0.30]	0.170 ± 0.012 [4.3 ± 0.30]	0.079 max. [2.0 max.]	0.051 ± 0.012 [1.3 ± 0.30]	0.095 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

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

Vishay Sprague Solid Tantalum Surface Mount Capacitors  
TANTAMOUNT® Molded Case, Standard Industrial Grade

RATINGS AND CASE CODES									
µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V	63 V
0.1							A	A	
0.15							A	A/B	
0.22							A	A/B	
0.33						A	A	A/B	
0.47			A		A	A	A/B	A/B/C	
0.68				A	A	A	A/B	B/C	
1			A	A/B	A/B	A/B	A/B	B/C	
1.5		A	A	A	A/B	A/B	B/C	B/C/D	
2.2	A	A	A/B	A/B	A/B	A/B/C	B/C	B/C/D	
3.3	A	A/B	A/B	A/B	A/B/C	A/B/C	B/C/D	C/D	
4.7	A / B	A/B	A/B/C	A/B/C	A/B/C	A/B/C/D	B/C/D	C/D/E	D
6.8	A / B	A/B	A/B/C	A/B/C	A/B/C	B/C/D	C/D	D/E	
10	A/B	A/B/C	A/B/C	A/B/C/D	B/C/D	B/C/D	C/D	D/E	E
15	A/B/C	A/B/C	A/B/C	B/C	B/C/D	B/C/D	D/E	E	
22	A/BC	A/B/C	A/B/C	B/C/D	B/C/D	C/D/E/V	D/E		
33	A/B/C	A/B/C	B/C/D	B/C/D	C/D	D/E			
47	A/B/C	A/B/C/D	B/C/D	C/D/E	D/E	D/E			
68	B/C/D	B/C/D	B/C/D/E/V	D/E	D/E				
100	A/B/C/D	B/C/D/E	B/C/D/E/V	D/E	D/E				
120	D	D	E						
150	B/C/D	C/D/E	C/D/E	D/E					
220	B/C/D/E	C/D/E	D/E/V	E					
330	D/E	D/E	D/E						
470	D/E	D/E	E						
680	E	E							
1000	E	E							

MARKING																						
<p>Capacitance Code, µF</p> <p>Indicates Lead (Pb)-free</p> <p>Vishay Sprague Logo</p> <p>V</p> <p>104L</p> <p>Polarity Band (+)</p> <p>Voltage Code</p> <p><b>"A" Case Size</b></p>	<table border="1"> <thead> <tr> <th colspan="2">"A" CASE VOLTAGE CODE</th> </tr> <tr> <th>VOLTS</th> <th>CODE</th> </tr> </thead> <tbody> <tr><td>4.0</td><td>G</td></tr> <tr><td>6.3</td><td>J</td></tr> <tr><td>10</td><td>A</td></tr> <tr><td>16</td><td>C</td></tr> <tr><td>20</td><td>D</td></tr> <tr><td>25</td><td>E</td></tr> <tr><td>35</td><td>V</td></tr> <tr><td>50</td><td>T</td></tr> </tbody> </table>	"A" CASE VOLTAGE CODE		VOLTS	CODE	4.0	G	6.3	J	10	A	16	C	20	D	25	E	35	V	50	T	<p>Capacitance µF</p> <p>Voltage</p> <p>Indicates Lead (Pb)-free</p> <p>Polarity Band (+)</p> <p>22</p> <p>10L</p> <p>xx</p> <p>Date Code</p> <p>Vishay Sprague Logo</p> <p><b>"B, C, D, E, V" Case Sizes</b></p>
"A" CASE VOLTAGE CODE																						
VOLTS	CODE																					
4.0	G																					
6.3	J																					
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25	E																					
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50	T																					
<p><b>Marking</b></p> <p>Capacitor marking includes an anode (+) polarity band, capacitance in microfarads and the voltage rating. "A" Case capacitors use a letter code for the voltage and EIA capacitance code.</p> <p>The Vishay Sprague® trademark is included if space permits. Capacitors rated at 6.3 V are marked 6 V.</p> <p>A manufacturing date code is marked on all capacitors.</p> <p>Capacitors might bear a slightly different marking than the one shown above. For example, rating 22 µF 10 V could be marked either as 22-10L or 22R10.</p> <p>Call the factory for further explanation.</p>																						



Solid Tantalum Surface Mount Capacitors  
TANTAMOUNT® Molded Case, Standard Industrial Grade

Vishay Sprague

RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{rms}$ (A)
<b>4 V<sub>DC</sub> AT + 85 °C, 2.7 V<sub>DC</sub> AT + 125 °C</b>						
2.2	A	293D225(1)004A(2)	0.5	6	7.6	0.10
3.3	A	293D335(1)004A(2)	0.5	6	7.6	0.10
4.7	A	293D475(1)004A(2)	0.5	6	6.3	0.11
4.7	B	293D475(1)004B(2)	0.5	6	7.0	0.11
6.8	A	293D685(1)004A(2)	0.5	6	5.5	0.12
6.8	B	293D685(1)004B(2)	0.5	6	3.4	0.16
10	A	293D106(1)004A(2)	0.5	6	5.1	0.12
10	B	293D106(1)004B(2)	0.5	6	3.5	0.16
15	A	293D156(1)004A(2)	0.6	6	3.4	0.15
15	B	293D156(1)004B(2)	0.6	6	2.9	0.17
15	C	293D156(1)004C(2)	0.6	6	2.8	0.20
22	A	293D226(1)004A(2)	0.9	6	2.9	0.16
22	B	293D226(1)004B(2)	0.9	6	2.5	0.18
22	C	293D226(1)004C(2)	0.9	6	1.8	0.25
33	A	293D336(1)004A(2)	1.3	6	2.9	0.16
33	B	293D336(1)004B(2)	1.3	6	2.0	0.21
33	C	293D336(1)004C(2)	1.3	6	1.8	0.25
47	A	293D476(1)004A(2)	1.9	14	2.5	0.17
47	B	293D476(1)004B(2)	1.9	6	1.9	0.21
47	C	293D476(1)004C(2)	1.9	6	1.8	0.25
68	B	293D686(1)004B(2)	2.7	6	1.9	0.21
68	C	293D686(1)004C(2)	2.7	6	1.4	0.28
68	D	293D686(1)004D(2)	2.7	6	0.8	0.43
100	A	293D107X0004A(2)	10.0	30	2.5	0.22
100	B	293D107(1)004B(2)	4.0	8	1.8	0.22
100	C	293D107(1)004C(2)	4.0	6	0.8	0.37
100	D	293D107(1)004D(2)	4.0	6	0.7	0.46
120	D	293D127(1)004D(2)	4.8	6	0.6	0.51
150	B	293D157(1)004B(2)	6.0	14	1.6	0.23
150	C	293D157(1)004C(2)	6.0	12	0.7	0.40
150	D	293D157(1)004D(2)	6.0	8	0.6	0.50
220	B	293D227X0004B(2)	8.8	18	1.5	0.24
220	C	293D227(1)004C(2)	8.8	8	0.7	0.40
220	D	293D227(1)004D(2)	8.8	8	0.6	0.50
220	E	293D227(1)004E(2)	8.8	8	0.5	0.57
330	D	293D337(1)004D(2)	13.2	8	0.6	0.50
330	E	293D337(1)004E(2)	13.2	8	0.5	0.57
470	D	293D477(1)004D(2)	18.8	10	0.6	0.50
470	E	293D477(1)004E(2)	18.8	10	0.5	0.57
680	E	293D687(1)004E(2)	27.2	12	0.5	0.57
1000	E	293D108X0004E(2)	40.0	20	0.5	0.57
<b>6.3 V<sub>DC</sub> AT + 85 °C, 4 V<sub>DC</sub> AT 125 °C</b>						
1.5	A	293D155(1)6R3A(2)	0.5	6	2.9	0.16
2.2	A	293D225(1)6R3A(2)	0.5	6	7.6	0.10
3.3	A	293D335(1)6R3A(2)	0.5	6	6.3	0.11
3.3	B	293D335(1)6R3B(2)	0.5	6	5.5	0.12
4.7	A	293D475(1)6R3A(2)	0.5	6	5.5	0.12
4.7	B	293D475(1)6R3B(2)	0.5	6	4.4	0.14
6.8	A	293D685(1)6R3A(2)	0.5	6	5.0	0.12
6.8	B	293D685(1)6R3B(2)	0.5	6	3.4	0.16
10	A	293D106(1)6R3A(2)	0.6	6	3.4	0.15
10	B	293D106(1)6R3B(2)	0.6	6	2.9	0.17
10	C	293D106(1)6R3C(2)	0.6	6	3.0	0.19



RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu\text{F}$ )	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu\text{A}$ )	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{\text{rms}}$ (A)
<b>6.3 V<sub>DC</sub> AT + 85 °C, 4 V<sub>DC</sub> AT 125 °C</b>						
15	A	293D156(1)6R3A(2)	0.9	6	2.9	0.16
15	B	293D156(1)6R3B(2)	0.9	6	2.5	0.18
15	C	293D156(1)6R3C(2)	0.9	6	1.8	0.25
22	A	293D226(1)6R3A(2)	1.3	6	2.9	0.16
22	B	293D226(1)6R3B(2)	1.3	6	2.0	0.21
22	C	293D226(1)6R3C(2)	1.3	6	1.8	0.25
33	A	293D336(1)6R3A(2)	2.0	14	2.5	0.17
33	B	293D336(1)6R3B(2)	2.0	6	1.9	0.21
33	C	293D336(1)6R3C(2)	2.0	6	1.5	0.27
47	A	293D476(1)6R3A(2)	2.8	12	1.6	0.22
47	B	293D476(1)6R3B(2)	2.8	6	1.9	0.21
47	C	293D476(1)6R3C(2)	2.8	6	1.4	0.28
47	D	293D476(1)6R3D(2)	2.8	6	0.8	0.43
68	B	293D686(1)6R3B(2)	4.1	6	1.8	0.22
68	C	293D686(1)6R3C(2)	4.1	6	0.8	0.37
68	D	293D686(1)6R3D(2)	4.1	6	0.7	0.46
100	B	293D107(1)6R3B(2)	6.0	15	1.7	0.22
100	C	293D107(1)6R3C(2)	6.0	6	0.8	0.37
100	D	293D107(1)6R3D(2)	6.0	6	0.7	0.46
100	E	293D107(1)6R3E(2)	6.0	8	0.7	0.49
120	D	293D127(1)6R3D(2)	6.3	8	0.7	0.46
150	C	293D157(1)6R3C(2)	9.0	8	0.7	0.40
150	D	293D157(1)6R3D(2)	9.0	8	0.6	0.50
150	E	293D157(1)6R3E(2)	9.0	8	0.5	0.57
220	C	293D227(1)6R3C(2)	13.9	14	0.7	0.39
220	D	293D227(1)6R3D(2)	13.2	8	0.6	0.50
220	E	293D227(1)6R3E(2)	13.2	8	0.5	0.57
330	D	293D337(1)6R3D(2)	19.8	8	0.6	0.50
330	E	293D337(1)6R3E(2)	19.8	8	0.5	0.57
470	D	293D477(1)6R3D(2)	28.2	14	0.5	0.55
470	E	293E477(1)6R3E(2)	28.2	10	1.5	0.57
680	E	293D687(1)6R3E(2)	42.8	20	0.5	0.57
1000	E	293D108X06R3E(2)	63.0	20	0.4	0.64
<b>10 V<sub>DC</sub> AT + 85 °C, 7 V<sub>DC</sub> AT 125 °C</b>						
0.47	A	293D474(1)010A(2)	0.5	4	14.0	0.07
1.0	A	293D105(1)010A(2)	0.5	4	9.6	0.09
1.5	A	293D155(1)010A(2)	0.5	6	8.0	0.10
2.2	A	293D225(1)010A(2)	0.5	6	6.3	0.11
2.2	B	293D225(1)010B(2)	0.5	6	4.6	0.14
3.3	A	293D335(1)010A(2)	0.5	6	5.5	0.12
3.3	B	293D335(1)010B(2)	0.5	6	5.5	0.12
4.7	A	293D475(1)010A(2)	0.5	6	5.0	0.12
4.7	B	293D475(1)010B(2)	0.5	6	3.4	0.16
4.7	C	293D475(1)010C(2)	0.5	6	2.3	0.22
6.8	A	293D685(1)010A(2)	0.7	6	4.2	0.13
6.8	B	293D685(1)010B(2)	0.7	6	2.9	0.17
6.8	C	293D685(1)010C(2)	0.7	6	1.9	0.24
10	A	293D106(1)010A(2)	1.0	6	3.4	0.15
10	B	293D106(1)010B(2)	1.0	6	2.5	0.18
10	C	293D106(1)010C(2)	1.0	6	1.8	0.25
15	A	293D156(1)010A(2)	1.5	6	2.9	0.16
15	B	293D156(1)010B(2)	1.5	6	2.0	0.21
15	C	293D156(1)010C(2)	1.5	6	1.8	0.25



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RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{rms}$ (A)
<b>10 V<sub>DC</sub> AT + 85 °C, 7 V<sub>DC</sub> AT 125 °C</b>						
22	A	293D226(1)010A(2)	2.2	8	2.5	0.17
22	B	293D226(1)010B(2)	2.2	6	1.9	0.21
22	C	293D226(1)010C(2)	2.2	6	1.5	0.27
33	B	293D336(1)010B(2)	3.3	6	1.9	0.21
33	C	293D336(1)010C(2)	3.3	6	1.4	0.28
33	D	293D336(1)010D(2)	3.3	6	0.8	0.43
47	B	293D476(1)010B(2)	4.7	6	1.8	0.22
47	C	293D476(1)010C(2)	4.7	6	1.1	0.32
47	D	293D476(1)010D(2)	4.7	6	0.7	0.46
68	B	293D686(1)010B(2)	6.8	14	1.8	0.22
68	C	293D686(1)010C(2)	6.8	6	1.0	0.33
68	D	293D686(1)010D(2)	6.8	6	0.7	0.46
68	E	293D686(1)010E(2)	6.8	6	0.8	0.45
68	V	293D686(1)010V(3)	6.8	6	0.7	0.42
100	B	293D107X0010B(2)	10.0	25	2.5	0.18
100	C	293D107(1)010C(2)	10.0	8	0.9	0.35
100	D	293D107(1)010D(2)	10.0	8	0.6	0.50
100	E	293D107(1)010E(2)	10.0	8	0.7	0.49
100	V	293D107(1)010V(3)	10.0	8	0.7	0.42
120	E	293D127(1)010E(2)	12.0	6	1.0	0.41
150	C	293D157X0010C(2)	15.0	20	0.9	0.35
150	D	293D157(1)010D(2)	15.0	8	0.6	0.50
150	E	293D157(1)010E(2)	15.0	8	0.5	0.57
220	D	293D227(1)010D(2)	22.0	8	0.6	0.50
220	E	293D227(1)010E(2)	22.0	8	0.5	0.57
220	V	293D227(1)010V(3)	30.0	12	0.5	0.50
330	D	293D337(1)010D(2)	33.0	15	0.5	0.57
330	E	293D337(1)010E(2)	33.0	10	0.5	0.57
470	E	293D477(1)010E(2)	47.0	15	0.5	0.57
<b>16 V<sub>DC</sub> AT + 85 °C, 10 V<sub>DC</sub> AT + 125 °C</b>						
0.68	A	293D684(1)016A(2)	0.5	4	10.4	0.08
1	A	293D105(1)016A(2)	0.5	4	9.3	0.09
1.5	A	293D155(1)016A(2)	0.5	6	6.7	0.11
1.5	B	293D155(1)016B(2)	0.5	6	6.4	0.12
2.2	A	293D225(1)016A(2)	0.5	6	5.9	0.11
2.2	B	293D225(1)016B(2)	0.5	6	4.6	0.14
3.3	A	293D335(1)016A(2)	0.5	6	5.0	0.12
3.3	B	293D335(1)016B(2)	0.5	6	3.5	0.16
4.7	A	293D475(1)016A(2)	0.8	6	5.0	0.12
4.7	B	293D475(1)016B(2)	0.8	6	2.9	0.17
4.7	C	293D475(1)016C(2)	0.8	6	2.9	0.19
6.8	A	293D685(1)016A(2)	1.1	6	4.2	0.13
6.8	B	293D685(1)016B(2)	1.1	6	2.5	0.18
6.8	C	293D685(1)016C(2)	1.1	6	1.9	0.24
10	A	293D106(1)016A(2)	1.6	6	3.0	0.16
10	B	293D106(1)016B(2)	1.6	6	2.0	0.21
10	C	293D106(1)016C(2)	1.6	6	1.8	0.25
10	D	293D106(1)016D(2)	2.5	6	1.2	0.35
15	B	293D156(1)016B(2)	2.4	6	2.0	0.21
15	C	293D156(1)016C(2)	2.4	6	1.5	0.27
22	B	293D226(1)016B(2)	3.5	6	1.9	0.21
22	C	293D226(1)016C(2)	3.5	6	1.4	0.28
22	D	293D226(1)016D(2)	3.5	6	0.8	0.43

RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{rms}$ (A)
<b>16 V<sub>DC</sub> AT + 85 °C, 10 V<sub>DC</sub> AT + 125 °C</b>						
33	B	293D336(1)016B(2)	5.3	6	1.8	0.22
33	C	293D336(1)016C(2)	5.3	6	1.1	0.32
33	D	293D336(1)016D(2)	5.3	6	0.7	0.46
47	C	293D476(1)016C(2)	7.5	6	1.0	0.33
47	D	293D476(1)016D(2)	7.5	6	0.7	0.46
47	E	293D476(1)016E(2)	7.5	6	0.8	0.45
68	D	293D686(1)016D(2)	10.9	6	0.6	0.50
68	E	293D686(1)016E(2)	10.9	6	0.8	0.45
100	D	293D107(1)016D(2)	16.0	8	0.6	0.50
100	E	293D107(1)016E(2)	16.0	8	0.6	0.52
150	D	293D157(1)016D(2)	24.0	8	0.6	0.50
150	E	293D157(1)016E(2)	24.0	8	0.5	0.57
220	E	293D227(1)016E(2)	35.2	14	0.5	0.57
<b>20 V<sub>DC</sub> AT + 85 °C, 13 V<sub>DC</sub> AT + 125 °C</b>						
0.47	A	293D474(1)020A(2)	0.5	4	14.0	0.07
0.68	A	293D684(1)020A(2)	0.5	4	10.0	0.09
1	A	293D105(1)020A(2)	0.5	4	8.4	0.09
1	B	293D105(1)020B(2)	0.5	4	9.0	0.10
1.5	A	293D155(1)020A(2)	0.5	6	6.3	0.11
1.5	B	293D155(1)020B(2)	0.5	4.8	5.6	0.12
2.2	A	293D225(1)020A(2)	0.5	6	5.9	0.11
2.2	B	293D225(1)020B(2)	0.5	6	3.5	0.16
3.3	A	293D335(1)020A(2)	0.7	6	5.9	0.11
3.3	B	293D335(1)020B(2)	0.7	6	3.0	0.17
3.3	C	293D335(1)020C(2)	0.8	6	2.3	0.22
4.7	A	293D475(1)020A(2)	0.9	6	5.0	0.12
4.7	B	293D475(1)020B(2)	0.9	6	2.9	0.17
4.7	C	293D475(1)020C(2)	0.9	6	2.3	0.22
6.8	A	293D685(1)020A(2)	1.4	6	4.5	0.13
6.8	B	293D685(1)020B(2)	1.4	6	2.5	0.18
6.8	C	293D685(1)020C(2)	1.4	6	1.9	0.24
10	B	293D106(1)020B(2)	2.0	6	2.1	0.20
10	C	293D106(1)020C(2)	2.0	6	1.7	0.25
10	D	293D106(1)020D(2)	2.0	6	1.0	0.38
15	B	293D156(1)020B(2)	3.0	6	2.3	0.19
15	C	293D156(1)020C(2)	3.0	6	1.5	0.27
15	D	293D156(1)020D(2)	3.0	6	0.9	0.41
22	B	293D226(1)020B(2)	4.4	6	2.1	0.20
22	C	293D226(1)020C(2)	4.4	6	1.1	0.32
22	D	293D226(1)020D(2)	4.4	6	0.7	0.46
33	C	293D336(1)020C(2)	6.6	6	1.0	0.33
33	D	293D336(1)020D(2)	6.6	6	0.7	0.46
47	D	293D476(1)020D(2)	9.4	6	0.7	0.46
47	E	293D476(1)020E(2)	9.4	6	0.6	0.52
68	D	293D686(1)020D(2)	13.6	6	0.7	0.46
68	E	293D686(1)020E(2)	13.6	6	0.6	0.52
100	D	293D107(1)020D(2)	20.0	8	0.6	0.50
100	E	293D107(1)020E(2)	20.0	8	0.5	0.57



Solid Tantalum Surface Mount Capacitors  
TANTAMOUNT® Molded Case, Standard Industrial Grade

Vishay Sprague

RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{rms}$ (A)
<b>25 V<sub>DC</sub> AT + 85 °C, 17 V<sub>DC</sub> AT + 125 °C</b>						
0.33	A	293D334(1)025A(2)	0.5	4	13.0	0.08
0.47	A	293D474(1)025A(2)	0.5	4	12.0	0.08
0.68	A	293D684(1)025A(2)	0.5	4	8.4	0.09
1	A	293D105(1)025A(2)	0.5	4	7.6	0.10
1	B	293D105(1)025B(2)	0.5	4	5.0	0.13
1.5	A	293D155(1)025A(2)	0.5	6	6.7	0.11
1.5	B	293D155(1)025B(2)	0.5	6	4.6	0.14
2.2	A	293D225(1)025A(2)	0.6	6	6.3	0.11
2.2	B	293D225(1)025B(2)	0.6	6	3.8	0.15
2.2	C	293D225(1)025C(2)	0.6	6	3.2	0.19
3.3	A	293D335(1)025A(2)	0.8	6	4.0	0.14
3.3	B	293D335(1)025B(2)	0.8	6	3.1	0.17
3.3	C	293D335(1)025C(2)	0.8	6	2.3	0.22
4.7	A	293D475(1)025A(2)	1.2	6	5.5	0.12
4.7	B	293D475(1)025B(2)	1.2	6	2.8	0.17
4.7	C	293D475(1)025C(2)	1.2	6	2.0	0.24
4.7	D	293D475(1)025D(2)	1.2	6	1.3	0.34
6.8	B	293D685(1)025B(2)	1.7	6	2.4	0.19
6.8	C	293D685(1)025C(2)	1.7	6	1.7	0.25
6.8	D	293D685(1)025D(2)	1.7	6	1.1	0.37
10	B	293D106(1)025B(2)	2.5	6	2.3	0.19
10	C	293D106(1)025C(2)	2.5	6	1.5	0.27
10	D	293D106(1)025D(2)	2.5	6	1.0	0.39
15	B	293D156(1)025B(2)	3.8	6	2.2	0.20
15	C	293D156(1)025C(2)	3.8	6	1.2	0.30
15	D	293D156(1)025D(2)	3.8	6	0.8	0.43
22	C	293D226(1)025C(2)	5.5	6	1.2	0.30
22	D	293D226(1)025D(2)	5.5	6	0.7	0.46
22	E	293D226(1)025E(2)	5.5	6	0.8	0.45
22	V	293D226(1)025V(3)	5.5	6	0.7	0.42
33	D	293D336(1)025D(2)	8.3	6	0.7	0.46
33	E	293D336(1)025E(2)	8.3	6	0.6	0.52
47	D	293D476(1)025D(2)	11.8	8	0.7	0.46
47	E	293D476(1)025E(2)	11.8	6	0.6	0.52
<b>35 V<sub>DC</sub> AT + 85 °C, 23 V<sub>DC</sub> AT + 125 °C</b>						
0.1	A	293D104(1)035A(2)	0.5	4	20.0	0.06
0.15	A	293D154(1)035A(2)	0.5	4	18.0	0.07
0.22	A	293D224(1)035A(2)	0.5	4	15.0	0.07
0.33	A	293D334(1)035A(2)	0.5	4	13.0	0.08
0.47	A	293D474(1)035A(2)	0.5	4	10.0	0.09
0.47	B	293D474(1)035B(2)	0.5	4	8.0	0.10
0.68	A	293D684(1)035A(2)	0.5	4	7.6	0.10
0.68	B	293D684(1)035B(2)	0.5	4	6.5	0.11
1	A	293D105(1)035A(2)	0.5	4	7.5	0.10
1	B	293D105(1)035B(2)	0.5	4	5.0	0.13
1.5	B	293D155(1)035B(2)	0.5	6	4.2	0.14
1.5	C	293D155(1)035C(2)	0.5	6	3.8	0.17
2.2	B	293D225(1)035B(2)	0.8	6	3.8	0.15
2.2	C	293D225(1)035C(2)	0.8	6	2.9	0.20
3.3	B	293D335(1)035B(2)	1.2	6	3.5	0.16
3.3	C	293D335(1)035C(2)	1.2	6	2.1	0.23
3.3	D	293D335(1)035D(2)	1.2	6	1.7	0.30
4.7	B	293D475(1)035B(2)	1.7	6	3.1	0.17
4.7	C	293D475(1)035C(2)	1.6	6	1.9	0.24
4.7	D	293D475(1)035D(2)	1.6	6	1.3	0.34



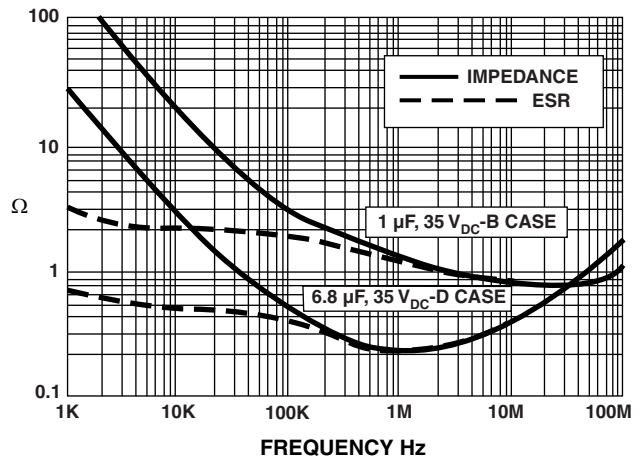
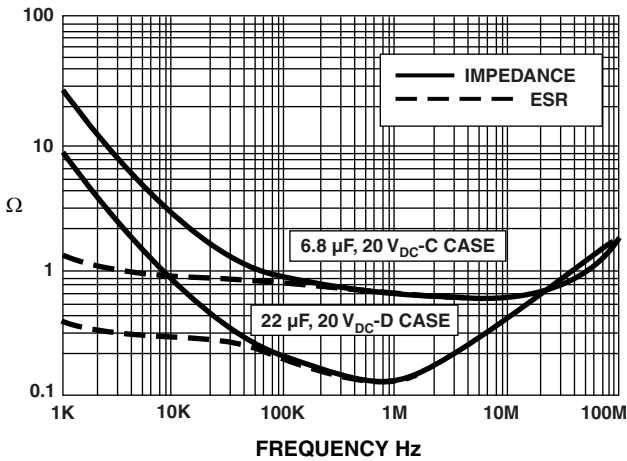
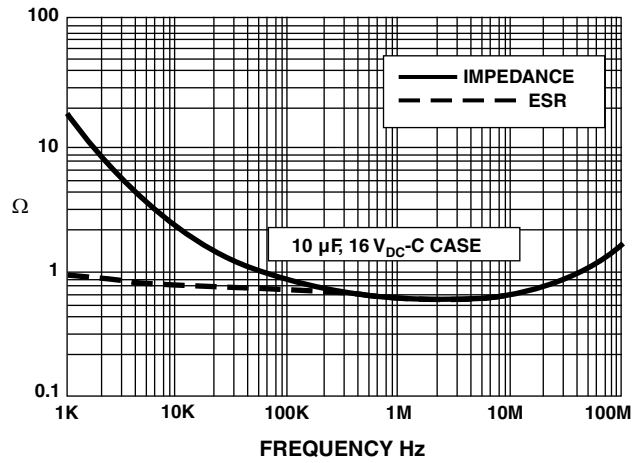
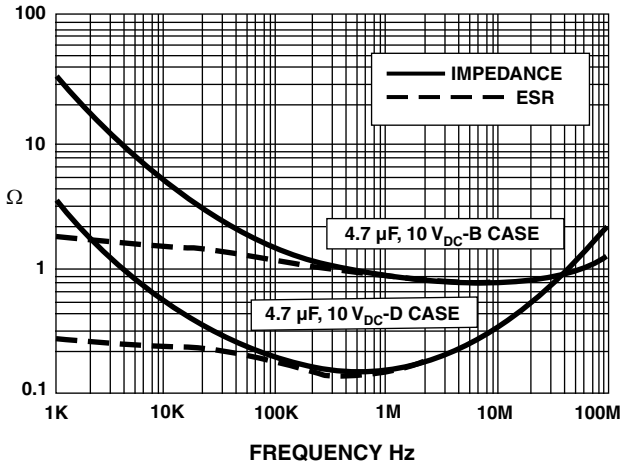
RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE ( $\mu$ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C ( $\mu$ A)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz ( $\Omega$ )	MAX. RIPPLE 100 kHz $I_{rms}$ (A)
<b>35 V<sub>DC</sub> AT + 85 °C, 23 V<sub>DC</sub> AT + 125 °C</b>						
6.8	C	293D685(1)035C(2)	2.4	6	1.8	0.25
6.8	D	293D685(1)035D(2)	2.4	6	1.1	0.37
10	C	293D106(1)035C(2)	3.5	6	1.6	0.26
10	D	293D106(1)035D(2)	3.5	6	0.8	0.43
15	D	293D156(1)035D(2)	5.3	6	0.7	0.46
15	E	293D156(1)035E(2)	5.3	6	0.7	0.49
22	D	293D226(1)035D(2)	7.7	6	0.6	0.52
22	E	293D226(1)035E(2)	7.7	6	0.6	0.52
<b>50 V<sub>DC</sub> AT + 85 °C, 33 V<sub>DC</sub> AT + 125 °C</b>						
0.1	A	293D104(1)050A(2)	0.5	4	19.0	0.06
0.15	A	293D154(1)050A(2)	0.5	4	17.0	0.07
0.15	B	293D154(1)050B(2)	0.5	4	14.0	0.08
0.22	A	293D224(1)050A(2)	0.5	4	15.0	0.07
0.22	B	293D224(1)050B(2)	0.5	4	12.0	0.08
0.33	A	293D334(1)050A(2)	0.5	4	14.0	0.07
0.33	B	293D334(1)050B(2)	0.5	4	10.0	0.09
0.47	A	293D474(1)050A(2)	0.5	4	12.0	0.08
0.47	B	293D474(1)050B(2)	0.5	4	8.4	0.10
0.47	C	293D474(1)050C(2)	0.5	4	6.7	0.13
0.68	B	293D684(1)050B(2)	0.5	4	7.6	0.11
0.68	C	293D684(1)050C(2)	0.5	4	5.9	0.14
1	B	293D105(1)050B(2)	0.5	4	6.7	0.11
1	C	293D105(1)050C(2)	0.5	4	4.6	0.16
1.5	B	293D155(1)050B(2)	0.8	6	6.0	0.12
1.5	C	293D155(1)050C(2)	0.8	6	3.4	0.18
1.5	D	293D155(1)050D(2)	0.8	6	2.9	0.23
2.2	B	293D225(1)050B(2)	1.1	6	3.5	0.16
2.2	C	293D225(1)050C(2)	1.1	6	2.9	0.20
2.2	D	293D225(1)050D(2)	1.1	6	2.1	0.27
3.3	C	293D335(1)050C(2)	1.7	6	2.5	0.21
3.3	D	293D335(1)050D(2)	1.7	6	1.7	0.30
4.7	C	293D475(1)050C(2)	2.4	6	1.5	0.27
4.7	D	293D475(1)050D(2)	2.4	6	1.2	0.37
4.7	E	293D475(1)050E(2)	2.4	6	1.4	0.34
6.8	D	293D685(1)050D(2)	3.4	6	0.9	0.41
6.8	E	293D685(1)050E(2)	3.4	6	0.9	0.43
10	D	293D106(1)050D(2)	5.0	6	0.8	0.43
10	E	293D106(1)050E(2)	5.0	6	0.8	0.45
15	E	293D156(1)050E(2)	7.5	6	0.8	0.45
<b>63 V<sub>DC</sub> AT + 85 °C, 40 V<sub>DC</sub> AT + 125 °C</b>						
4.7	D	293D475(1)063D(2)	3.0	6	1.1	0.37
10	E	293D106(1)063E(2)	6.3	6	1.0	0.41

**Notes**

- (1) Tolerance: X0, X9, X5
- (2) Terminations and packaging: 2TE3, 2WE3, 8T, 8W
- (3) Lead (Pb)-free terminations and packaging codes: 2TE3, 2WE3



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





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