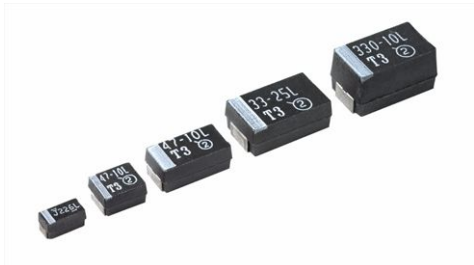


# Solid Tantalum Surface Mount Capacitors

## 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	Tw	Th 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

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>Voltage Code</p> <p>Polarity Band (+)</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																					
10	A																					
16	C																					
20	D																					
25	E																					
35	V																					
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



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>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

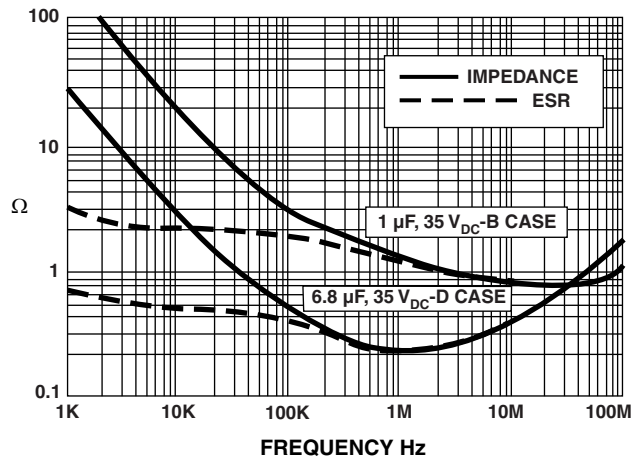
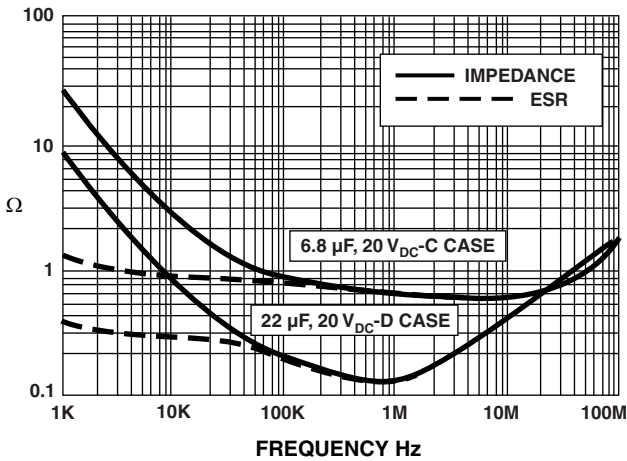
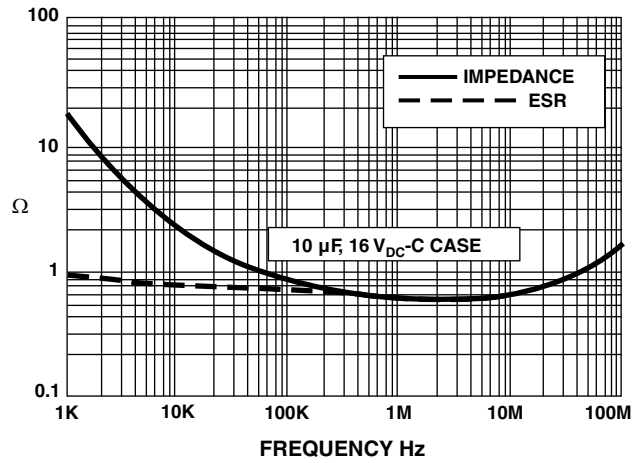
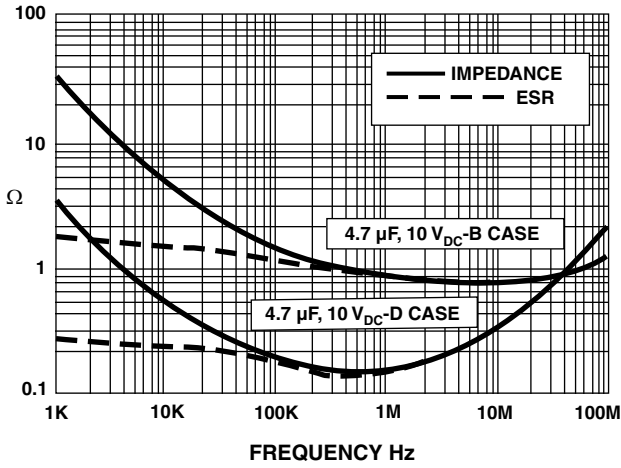
**Notes**

- (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**





## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.