

Solid Tantalum Surface Mount Capacitors

TANTAMOUNT® Molded Case, High Temperature



FEATURES

- Operating temperature up to 150 °C with 50 % voltage derating
- High reliability
- RoHS compliant terminations available: Matte tin (all cases) or gold (D/E cases)
- Standard EIA 535BAAC case size (A through E)
- AEC-Q200 qualified
- 100 % surge current tested (B, C, D, E case sizes)
- Compliant to RoHS Directive 2002/95/EC
- Moisture sensitivity level 1


RoHS*
COMPLIANT

Note

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

PERFORMANCE CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: - 55 °C to + 150 °C

Capacitance Range: 0.33 μ F to 220 μ F

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

Voltage Rating: 6.3 V_{DC} to 50 V_{DC}

ORDERING INFORMATION

TH3	D	106	K	035	C	0700
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION AND PACKAGING	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.	K = $\pm$ 10 % M = $\pm$ 20 %	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)	A: Gold/7" (178 mm) reels ⁽¹⁾ B: Gold/13" (330 mm) reels ⁽¹⁾ C: Matte tin/7" (178 mm) reels D: Matte tin/13" (330 mm) reels E: Tin/lead/7" (178 mm) reels F: Tin/lead/13" (330 mm) reels	Maximum 100 kHz ESR 0500 = 500 m Ω 5000 = 5.0 Ω 10R0 = 10.0 Ω

Notes

- 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.

⁽¹⁾ Contact factory for availability

DIMENSIONS in inches [millimeters]

CASE CODE	EIA SIZE	L	W	H	P	Tw	TH (MIN.)
A	3216-18	0.126 $\pm$ 0.008 [3.2 $\pm$ 0.20]	0.063 $\pm$ 0.008 [1.6 $\pm$ 0.20]	0.063 $\pm$ 0.008 [1.6 $\pm$ 0.20]	0.031 $\pm$ 0.012 [0.80 $\pm$ 0.30]	0.047 $\pm$ 0.004 [1.2 $\pm$ 0.10]	0.028 [0.70]
B	3528-21	0.138 $\pm$ 0.008 [3.5 $\pm$ 0.20]	0.110 $\pm$ 0.008 [2.8 $\pm$ 0.20]	0.075 $\pm$ 0.008 [1.9 $\pm$ 0.20]	0.031 $\pm$ 0.012 [0.80 $\pm$ 0.30]	0.087 $\pm$ 0.004 [2.2 $\pm$ 0.10]	0.028 [0.70]
C	6032-28	0.236 $\pm$ 0.012 [6.0 $\pm$ 0.30]	0.126 $\pm$ 0.012 [3.2 $\pm$ 0.30]	0.098 $\pm$ 0.012 [2.5 $\pm$ 0.30]	0.051 $\pm$ 0.012 [1.3 $\pm$ 0.30]	0.087 $\pm$ 0.004 [2.2 $\pm$ 0.10]	0.039 [1.0]
D	7343-31	0.287 $\pm$ 0.012 [7.3 $\pm$ 0.30]	0.169 $\pm$ 0.012 [4.3 $\pm$ 0.30]	0.110 $\pm$ 0.012 [2.8 $\pm$ 0.30]	0.051 $\pm$ 0.012 [1.3 $\pm$ 0.30]	0.094 $\pm$ 0.004 [2.4 $\pm$ 0.10]	0.039 [1.0]
E	7343-43	0.287 $\pm$ 0.012 [7.3 $\pm$ 0.30]	0.169 $\pm$ 0.012 [4.3 $\pm$ 0.30]	0.157 $\pm$ 0.012 [4.0 $\pm$ 0.30]	0.051 $\pm$ 0.012 [1.3 $\pm$ 0.30]	0.094 $\pm$ 0.004 [2.4 $\pm$ 0.10]	0.039 [1.0]

RATINGS AND CASE CODES							
μF	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.33						A (11.0)	
0.47					A (14.0)		
0.68							
1.0			A (6.5)	A (5.9)	A (3.0, 5.2)/ B (0.5)	A (6.6)/B (4.4)	C (3.3)
1.5			A (4.3)			B (4.2)/C (3.3)	
2.2		A (4.6)	A (3.4)/B (3.0)	A (5.9)/B (3.5)	A (5.2)/B (3.0)	B (2.5)/C (2.2)	
3.3				B (2.7)/C (3.7)	B (3.0)/C (2.0)	B (2.5, 3.5)/ C (1.7)	D (1.7)
4.7		A (2.9)/B (2.7)	A (2.9)/B (2.1)	A (5.0)/ B (2.9, 1.9)/ C (1.7)	A (5.0)/B (2.8)/ C (1.6)	B (3.1)/C (1.3)/ D (1.0)	C (1.5)/D (0.9)
6.8		A (2.6)	A (2.6, 2.0)/ B (1.8)/C (1.7)		B (2.4)/C (1.4)	C (1.8)/D (0.9)	D (0.9)
10	A (3.4, 2.7)	A (3.4)/B (1.8)/ C (1.8, 1.7)	B (2.0)/C (1.4)	C (1.1)	C (1.1)/D (0.9)	C (1.6)/ D (0.3, 0.7)	D (0.8)/E (0.5)
15	B (1.8)	A (2.9, 2.0)/ B (2.0, 1.8, 1.5)/ C (1.8, 1.4)	B (2.0)/C (1.0)	B (2.0)/C (1.0)/ D (0.9)	B (1.4, 2.0)/ C (1.2)/D (0.7)	D (0.7)	
22	B (2.0, 1.5)	B (1.5)/ C (1.5, 1.1)	B (1.9)/C (1.0)/ D (0.8)	C (1.0)/D (0.7)	D (0.6)	D (0.3, 0.6)/ E (0.5)	
33	B (1.9, 1.7)	B (1.9, 1.4)/ D (0.8)	C (0.9, 0.6)/ D (0.6)	D (0.6)	D (0.5)		
47	B (1.8)/C (0.8)	B (1.8)/ C (0.8, 0.5)/ D (0.6)	C (0.8, 0.6)/ D (0.6)	D (0.7)/E (0.6)	E (0.6)		
68	B (1.8)	C (1.0, 0.8)/ D (1.0, 0.6, 0.4)	D (0.6)	E (0.6)			
100	E (0.3)	C (0.9, 0.5)/ D (0.6)	D (0.6)/ E (0.6, 0.15)				
150		D (0.6)					
220		E (0.5)					

Note

- ESR limits in Ω are shown in parenthesis

MARKING		
Capacitance Code, pF Indicates High Temperature Polarity Band (+) Voltage Code A Case	"A" CASE VOLTAGE CODE	
	VOLTS	CODE
	4.0	G
	6.3	J
	10	A
	16	C
	20	D
	25	E
	35	V
50	T	
	Indicates High Temperature Capacitance, μF Voltage Polarity Band (+) Date Code Vishay Sprague Logo B, C, D, E Case	
Marking 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. The Vishay Sprague® trademark is included if space permits. Capacitors rated at 6.3 V are marked 6 V. A manufacturing date code is marked on all capacitors. Call the factory for further explanation.		



STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (μ A)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
6.3 V _{DC} AT + 85 °C; 4 V _{DC} AT + 125 °C; 3.15 V _{DC} AT + 150 °C						
10	A	TH3A106(1)6R3(2)3400	0.6	6	3.40	0.15
10	A	TH3A106(1)6R3(2)2700	0.6	6	2.70	0.17
15	B	TH3B156(1)6R3(2)1800	0.9	6	1.80	0.22
22	B	TH3B226(1)6R3(2)2000	1.3	6	2.00	0.21
22	B	TH3B226(1)6R3(2)1500	1.3	6	1.50	0.24
33	B	TH3B336(1)6R3(2)1900	2.0	6	1.90	0.21
33	B	TH3B336(1)6R3(2)1700	2.0	6	1.70	0.22
47	B	TH3B476(1)6R3(2)1800	2.8	8	1.80	0.22
47	C	TH3C476(1)6R3(2)0800	2.8	6	0.80	0.37
68	B	TH3B686(1)6R3(2)1800	4.1	6	1.80	0.22
100	E	TH3E107(1)6R3(2)0300	6.0	6	0.30	0.74
10 V _{DC} AT + 85 °C; 7 V _{DC} AT + 125 °C; 5 V _{DC} AT + 150 °C						
2.2	A	TH3A225(1)010(2)4600	0.5	6	4.60	0.13
4.7	A	TH3A475(1)010(2)2900	0.5	6	2.90	0.16
4.7	B	TH3B475(1)010(2)2700	0.5	6	2.70	0.18
6.8	A	TH3A685(1)010(2)2600	6.8	6	2.60	0.17
10	A	TH3A106(1)010(2)3400	1.0	6	3.40	0.15
10	B	TH3B106(1)010(2)1800	1.0	6	1.80	0.22
10	C	TH3C106(1)010(2)1800	1.0	6	1.80	0.25
10	C	TH3C106(1)010(2)1700	1.0	6	1.70	0.25
15	A	TH3A156(1)010(2)2900	1.0	6	2.90	0.16
15	A	TH3A156(1)010(2)2000	1.0	6	2.00	0.19
15	B	TH3B156(1)010(2)2000	1.0	6	2.00	0.21
15	B	TH3B156(1)010(2)1800	1.0	6	1.80	0.22
15	B	TH3B156(1)010(2)1500	1.0	6	1.50	0.24
15	C	TH3C156(1)010(2)1800	1.0	6	1.80	0.25
15	C	TH3C156(1)010(2)1400	1.0	6	1.40	0.28
22	B	TH3B226(1)010(2)1500	2.2	6	1.50	0.24
22	C	TH3C226(1)010(2)1500	2.2	6	1.50	0.27
22	C	TH3C226(1)010(2)1100	2.2	6	1.10	0.32
33	B	TH3B336(1)010(2)1900	3.3	6	1.90	0.21
33	B	TH3B336(1)010(2)1400	3.3	6	1.40	0.25
33	D	TH3D336(1)010(2)0800	3.3	6	0.80	0.43
47	B	TH3B476(1)010(2)1800	4.7	6	1.80	0.22
47	C	TH3C476(1)010(2)0800	4.7	6	0.80	0.37
47	C	TH3C476(1)010(2)0500	4.7	6	0.50	0.47
47	D	TH3D476(1)010(2)0600	4.7	6	0.60	0.50
68	C	TH3C686(1)010(2)1000	6.8	8	1.00	0.33
68	C	TH3C686(1)010(2)0800	6.8	8	0.80	0.37
68	D	TH3D686(1)010(2)1000	6.8	6	1.00	0.39
68	D	TH3D686(1)010(2)0600	6.8	6	0.60	0.50
68	D	TH3D686(1)010(2)0400	6.8	6	0.40	0.61
100	C	TH3C107(1)010(2)0900	10.0	6	0.90	0.35
100	C	TH3C107(1)010(2)0500	10.0	6	0.50	0.47
100	D	TH3D107(1)010(2)0600	10.0	8	0.60	0.50
150	D	TH3D157(1)010(2)0600	15.0	8	0.60	0.50
220	E	TH3E227(1)010(2)0500	22.0	8	0.50	0.61

Note

- Part number definitions:
 - (1) Capacitance tolerance: K, M
 - (2) Termination and packaging: C, D, E, F
 - (3) Termination and packaging: A, B, C, D, E, F



STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (μ A)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
16 V _{DC} AT + 85 °C; 10 V _{DC} AT + 125 °C; 8 V _{DC} AT + 150 °C						
1.0	A	TH3A105(1)016(2)6500	0.5	4	6.50	0.11
2.2	A	TH3A225(1)016(2)4300	0.5	6	4.30	0.13
3.3	A	TH3A335(1)016(2)3400	0.5	6	3.40	0.15
3.3	B	TH3B335(1)016(2)3000	0.5	6	3.00	0.17
4.7	A	TH3A475(1)016(2)2900	0.8	6	2.90	0.16
4.7	B	TH3B475(1)016(2)2100	0.8	6	2.10	0.2
6.8	A	TH3A685(1)016(2)2600	1.1	6	2.60	0.17
6.8	A	TH3A685(1)016(2)2000	1.1	6	2.00	0.19
6.8	B	TH3B685(1)016(2)1800	1.1	6	1.80	0.22
6.8	C	TH3C685(1)016(2)1700	1.1	6	1.70	0.25
10	B	TH3B106(1)016(2)2000	1.6	6	2.00	0.21
10	C	TH3C106(1)016(2)1400	1.6	6	1.40	0.28
15	B	TH3B156(1)016(2)2000	2.4	6	2.00	0.21
15	C	TH3C156(1)016(2)1000	2.4	6	1.00	0.33
22	B	TH3B226(1)016(2)1900	3.5	6	1.90	0.21
22	C	TH3C226(1)016(2)1000	3.5	6	1.00	0.33
22	D	TH3D226(1)016(3)0800	3.5	6	0.80	0.43
33	C	TH3C336(1)016(2)0900	5.3	6	0.90	0.35
33	C	TH3C336(1)016(2)0600	5.3	6	0.60	0.43
33	D	TH3D336(1)016(3)0600	5.3	6	0.60	0.50
47	C	TH3C476(1)016(2)0800	7.5	6	0.80	0.37
47	C	TH3C476(1)016(2)0600	7.5	6	0.60	0.43
47	D	TH3D476(1)016(3)0600	7.5	6	0.60	0.43
68	D	TH3D686(1)016(3)0600	10.9	6	0.60	0.50
100	D	TH3D107(1)016(3)0600	16.0	8	0.60	0.50
100	E	TH3E107(1)016(3)0600	16.0	8	0.60	0.56
100	E	TH3E107(1)016(3)0150	16.0	8	0.15	1.11
20 V _{DC} AT + 85 °C; 13 V _{DC} AT + 125 °C; 10 V _{DC} AT + 150 °C						
1.0	A	TH3A105(1)020(2)5900	0.5	4	5.90	0.11
2.2	A	TH3A225(1)020(2)5900	0.5	6	5.90	0.11
2.2	B	TH3B225(1)020(2)3500	0.5	6	3.50	0.16
3.3	B	TH3B335(1)020(2)2700	0.7	6	2.70	0.18
3.3	C	TH3C335(1)020(2)2700	0.7	6	2.70	0.20
4.7	A	TH3A475(1)020(2)5000	0.9	6	5.00	0.12
4.7	B	TH3B475(1)020(2)1900	0.9	6	2.90	0.17
4.7	B	TH3B475(1)020(2)2900	0.9	6	1.90	0.21
4.7	C	TH3C475(1)020(2)1700	0.9	6	1.70	0.25
10	C	TH3C106(1)020(2)1100	2.0	6	1.10	0.32
15	B	TH3B156(1)020(2)2000	3.0	6	2.00	0.21
15	C	TH3C156(1)020(2)1000	3.0	6	1.00	0.33
15	D	TH3D156(1)020(2)0900	3.0	6	0.90	0.41
22	C	TH3C226(1)020(2)1000	4.4	6	1.00	0.33
22	D	TH3D226(1)020(2)0700	4.4	6	0.70	0.46
33	D	TH3D336(1)020(2)0600	6.6	6	0.60	0.5
47	D	TH3D476(1)020(2)0700	9.4	6	0.70	0.46
47	E	TH3E476(1)020(2)0600	9.4	8	0.60	0.56
68	E	TH3E686(1)020(2)0600	13.6	8	0.60	0.56

Note

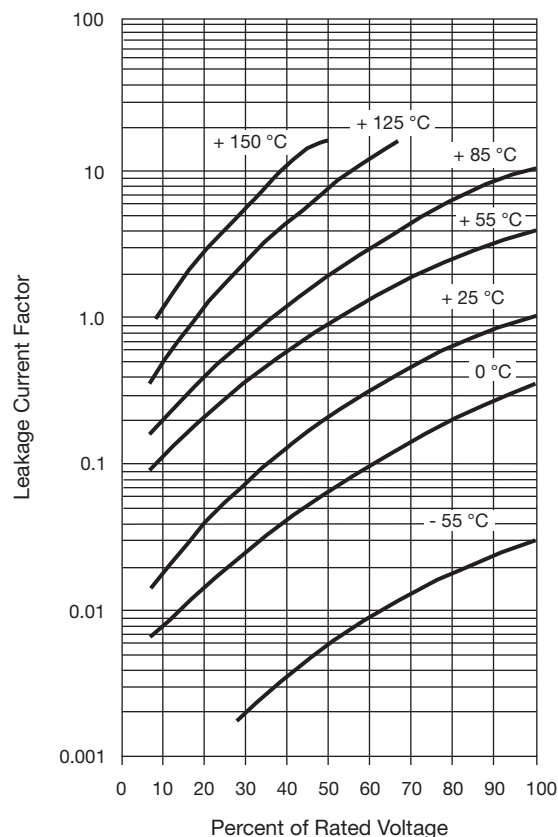
- Part number definitions:
 - Capacitance tolerance: K, M
 - Termination and packaging: C, D, E, F
 - Termination and packaging: A, B, C, D, E, F



STANDARD RATINGS						
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (μ A)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
25 V _{DC} AT + 85 °C; 17 V _{DC} AT + 125 °C; 12.5 V _{DC} AT + 150 °C						
0.47	A	TH3A474(1)025(2)14R0	0.5	4	14.00	0.073
1.0	A	TH3A105(1)025(2)5200	0.5	4	5.20	0.12
1.0	A	TH3A105(1)025(2)3000	0.5	4	3.00	0.16
1.0	B	TH3B105(1)025(2)5000	0.5	4	5.00	0.13
2.2	A	TH3A225(1)025(2)5200	0.6	6	5.20	0.12
2.2	B	TH3B225(1)025(2)3000	0.6	6	3.00	0.17
3.3	B	TH3B335(1)025(2)3000	0.8	6	3.00	0.17
3.3	C	TH3C335(1)025(2)2000	0.8	6	2.00	0.23
4.7	A	TH3A475(1)025(2)5000	1.2	6	5.00	0.12
4.7	B	TH3B475(1)025(2)2800	1.2	6	2.80	0.17
4.7	C	TH3C475(1)025(2)1600	1.2	6	1.60	0.26
6.8	B	TH3B685(1)025(2)2400	1.7	6	2.40	0.19
6.8	C	TH3C685(1)025(2)1400	1.7	6	1.40	0.28
10	C	TH3C106(1)025(2)1100	2.5	6	1.10	0.32
10	D	TH3D106(1)025(2)0900	2.5	6	0.90	0.41
15	B	TH3B156(1)025(2)2000	3.8	6	2.00	0.21
15	B	TH3B156(1)025(2)1400	3.8	6	1.40	0.25
15	C	TH3C156(1)025(2)1200	3.8	6	1.20	0.30
15	D	TH3D156(1)025(2)0700	3.8	6	0.70	0.46
22	D	TH3D226(1)025(2)0600	5.5	6	0.60	0.50
33	D	TH3D336(1)025(2)0500	8.3	6	0.50	0.55
47	E	TH3E476(1)025(2)0600	11.8	6	0.60	0.56
35 V _{DC} AT + 85 °C; 23 V _{DC} AT + 125 °C; 17.5 V _{DC} AT + 150 °C						
0.33	A	TH3A334(1)035(2)11R0	0.5	4	11.00	0.08
1.0	A	TH3A105(1)035(2)6600	0.5	4	6.60	0.11
1.0	B	TH3B105(1)035(2)4400	0.5	4	4.40	0.14
1.5	B	TH3B155(1)035(2)4200	0.5	6	4.20	0.14
1.5	C	TH3C155(1)035(2)3300	0.5	6	3.30	0.18
2.2	B	TH3B225(1)035(2)2500	0.8	6	2.50	0.18
2.2	C	TH3C225(1)035(2)2200	0.8	6	2.20	0.22
3.3	B	TH3B335(1)035(2)3500	1.2	6	3.50	0.16
3.3	B	TH3B335(1)035(2)2500	1.2	6	2.50	0.18
3.3	C	TH3C335(1)035(2)1700	1.2	6	1.70	0.25
4.7	B	TH3B475(1)035(2)3100	1.7	6	3.10	0.17
4.7	C	TH3C475(1)035(2)1300	1.6	6	1.30	0.29
4.7	D	TH3D475(1)035(2)1000	1.6	6	1.00	0.39
6.8	C	TH3C685(1)035(2)1800	2.4	6	1.80	0.25
6.8	D	TH3D685(1)035(2)0900	2.4	6	0.90	0.41
10	C	TH3C106(1)035(2)1600	3.5	6	1.60	0.26
10	D	TH3D106(1)035(2)0700	3.5	6	0.70	0.46
10	D	TH3D106(1)035(2)0300	3.5	6	0.30	0.71
15	D	TH3D156(1)035(2)0700	5.3	6	0.70	0.46
22	D	TH3D226(1)035(2)0600	7.7	6	0.60	0.50
22	D	TH3D226(1)035(2)0300	7.7	6	0.30	0.71
22	E	TH3E226(1)035(2)0500	7.7	6	0.50	0.61
50 V _{DC} AT + 85 °C; 33 V _{DC} AT + 125 °C; 25 V _{DC} AT + 150 °C						
1.0	C	TH3C105(1)050(2)3300	0.5	4	3.30	0.18
3.3	D	TH3D335(1)050(2)1700	1.7	6	1.70	0.30
4.7	C	TH3C475(1)050(2)1500	2.4	6	1.50	0.27
4.7	D	TH3D475(1)050(2)0900	2.4	6	0.90	0.41
6.8	D	TH3D685(1)050(2)0900	3.4	6	0.90	0.41
10	D	TH3D106(1)050(2)0800	5.0	6	0.80	0.43
10	E	TH3E106(1)050(2)0500	5.0	6	0.50	0.61

Note

- Part number definitions:
 - Capacitance tolerance: K, M
 - Termination and packaging: C, D, E, F
 - Termination and packaging: A, B, C, D, E, F

TYPICAL LEAKAGE CURRENT FACTOR

Note

- At + 25 °C, the leakage current shall not exceed the value listed in the Standard Ratings table.
- At + 85 °C, the leakage current shall not exceed 10 times the value listed in the Standard Ratings table.
- At + 125 °C, the leakage current shall not exceed 12 times the value listed in the Standard Ratings table.
- At + 150 °C, the leakage current shall not exceed 15 times the value listed in the Standard Ratings table.

RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperatures below + 85 °C)

STANDARD CONDITIONS. FOR EXAMPLE: OUTPUT FILTERS

Capacitor Voltage Rating	Operating Voltage
6.3	3.6
10	6.0
16	10
20	12
25	15
35	24
50	28

SEVERE CONDITIONS. FOR EXAMPLE: INPUT FILTERS

Capacitor Voltage Rating	Operating Voltage
6.3	3.3
10	5.0
16	8.0
20	10
25	12
35	15
50	24

**POWER DISSIPATION**

CASE CODE	MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR
A	0.075
B	0.085
C	0.110
D	0.150
E	0.165

STANDARD PACKAGING QUANTITY

CASE CODE	UNITS PER REEL	
	7" REEL	13" REEL
A	2000	9000
B	2000	8000
C	500	3000
D	500	2500
E	400	1500

PRODUCT INFORMATION

Guide for Molded Tantalum Capacitors	www.vishay.com/doc?40074
Pad Dimensions	
Package Dimensions	
Moisture Sensitivity	www.vishay.com/doc?40135

SELECTOR GUIDES

Solid Tantalum Selector Guide	www.vishay.com/doc?49053
Solid Tantalum Chip Capacitors	www.vishay.com/doc?40091

FAQ

Frequently Asked Questions	www.vishay.com/doc?40110
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