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 or gold
- Standard EIA 535BAAC case sizes (A through E)
- 100 % surge current tested (B, C, D, E case sizes)
- AEC-Q200 qualified
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications

AUTOMOTIVE GRADE

Pb-free Available

RoHS* COMPLIANT

PERFORMANCE/ELECTRICAL CHARACTERISTICS

Operating Temperature: - 55 °C to + 150 °C
Note: Refer to doc. 40088
Capacitance Range: 0.33 µF to 220 µF

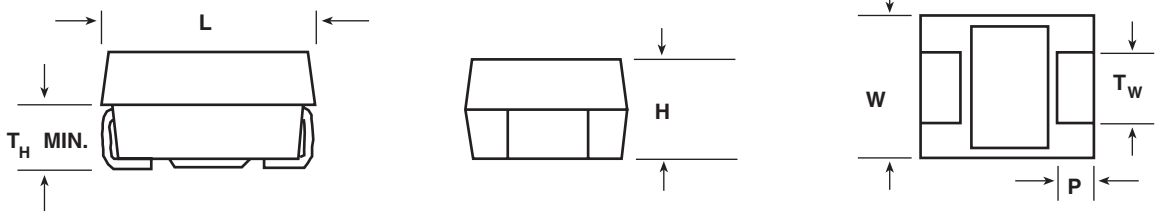
Capacitance Tolerance: ± 10 %, ± 20 %
Voltage Rating: 6.3 VDC to 50 VDC

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 = ± 10 % M = ± 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 mΩ 5000 = 5.0 Ω 10R0 = 10.0 Ω

Notes
(1) Contact factory for availability
• 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_W	T_H 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]

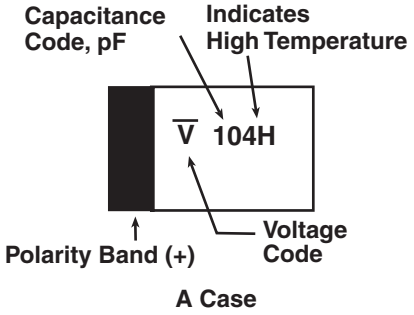
* Pb containing terminations are not RoHS compliant, exemptions may apply

RATINGS AND CASE CODES

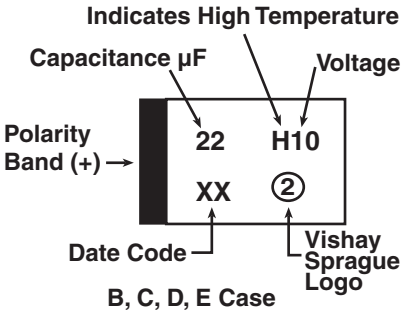
µF	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.33						A (11.0)	
0.47					A (8.5)		
1			A (6.5)	A (5.9)	A (5.2, 3.0) B (5.0)	A (6.6) B (4.4)	C (3.3)
1.5						B (4.2) C (3.3)	
2.2		A (4.6)	A (4.3)	A (5.9) B (3.5)	A (5.2) B (3.0)	B (2.5) C (2.2)	
3.3			A (3.4) B (3.0)	B (2.7) C (2.7)	B (3.0) C (2.0)	B (3.5, 2.5) 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, 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 (2.7)	A (3.4) B (1.8) C (1.7,1.8)	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)	B (1.5,1.8) C (1.4, 1.8)	B (2.0) C (1.0)	B (2.0) C (1.0) D (0.9)	B (2.0, 1.4) C (1.2) D (0.7)	D (0.7)	
22	B (1.5)	B (1.5) C (1.1)	B (1.9) C (1.0) D (0.8)	C (1.0) D (0.7)	D (0.6)	D (0.6, 0.3) E (0.5)	
33	B (1.7)	D (0.8)	C (0.9) 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) D (0.6)	D (0.7) E (0.6)	E (0.6)		
68	B (1.8)	C (0.8, 1.0) D (1.0, 0.6, 0.4)	D (0.6)	E (0.6)			
100		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



"A" CASE VOLTAGE CODE	
VOLTS	CODE
4.0	G
6.3	J
10	A
16	C
20	D
25	E
35	V
50	T



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.

RATINGS AND PART NUMBER REFERENCE

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (µA)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{rms} (A)
6.3 VDC AT + 85 °C, 4 VDC AT + 125 °C, 3.15 VDC AT + 150 °C						
10	A	TH3A106(1)6R3(2)2700	0.6	6	2.700	0.17
15	B	TH3B156(1)6R3(2)1800	0.9	6	1.800	0.22
22	B	TH3B226(1)6R3(2)1500	1.3	6	1.500	0.24
33	B	TH3B336(1)6R3(2)1700	2.0	6	1.700	0.22
47	B	TH3B476(1)6R3(2)1800	2.8	8	1.800	0.22
47	C	TH3C476(1)6R3(2)0800	2.8	6	0.800	0.37
68	B	TH3B686(1)6R3(2)1800	4.1	6	1.800	0.22
10 VDC AT + 85 °C, 7 VDC AT + 125 °C, 5 VDC AT + 150 °C						
2.2	A	TH3A225(1)010(2)4600	0.5	6	4.600	0.13
4.7	A	TH3A475(1)010(2)2900	0.5	6	2.900	0.16
4.7	B	TH3B475(1)010(2)2700	0.5	6	2.700	0.18
10	A	TH3A106(1)010(2)3400	1.0	6	3.400	0.15
10	B	TH3B106(1)010(2)1800	1.0	6	1.800	0.22
10	C	TH3C106(1)010(2)1800	1.0	6	1.800	0.25
10	C	TH3C106(1)010(2)1700	1.0	6	1.700	0.25
15	B	TH3B156(1)010(2)1800	1.0	6	1.800	0.22
15	B	TH3B156(1)010(2)1500	1.0	6	1.500	0.24
15	C	TH3C156(1)010(2)1800	1.0	6	1.800	0.25
15	C	TH3C156(1)010(2)1400	1.0	6	1.400	0.28
22	B	TH3B226(1)010(2)1500	2.2	6	1.500	0.24
22	C	TH3C226(1)010(2)1100	2.2	6	1.100	0.32
33	D	TH3D336(1)010(2)0800	3.3	6	0.800	0.43
47	B	TH3B476(1)010(2)1800	4.7	6	1.800	0.22
47	C	TH3C476(1)010(2)0800	4.7	6	0.800	0.37
47	C	TH3C476(1)010(2)0500	4.7	6	0.500	0.47
47	D	TH3D476(1)010(2)0600	4.7	6	0.600	0.50
68	C	TH3C686(1)010(2)1000	6.8	8	1.000	0.33
68	C	TH3C686(1)010(2)0800	6.8	8	0.800	0.37
68	D	TH3D686(1)010(2)1000	6.8	6	1.000	0.39
68	D	TH3D686(1)010(2)0600	6.8	6	0.600	0.50
68	D	TH3D686(1)010(2)0400	6.8	6	0.400	0.61
100	D	TH3D107(1)010(2)0600	10.0	8	0.600	0.50
150	D	TH3D157(1)010(2)0600	15.0	8	0.600	0.50
220	E	TH3E227(1)010(2)0500	22.0	8	0.500	0.61
16 VDC AT + 85 °C, 10 VDC AT + 125 °C, 8 VDC AT + 150 °C						
1	A	TH3A105(1)016(2)6500	0.5	4	6.500	0.11
2.2	A	TH3A225(1)016(2)4300	0.5	6	4.300	0.13
3.3	A	TH3A335(1)016(2)3400	0.5	6	3.400	0.15
3.3	B	TH3B335(1)016(2)3000	0.5	6	3.000	0.17
4.7	A	TH3A475(1)016(2)2900	0.8	6	2.900	0.16
4.7	B	TH3B475(1)016(2)2100	0.8	6	2.100	0.20
6.8	A	TH3A685(1)016(2)2600	1.1	6	2.600	0.17
6.8	A	TH3A685(1)016(2)2000	1.1	6	2.000	0.19
6.8	B	TH3B685(1)016(2)1800	1.1	6	1.800	0.22
6.8	C	TH3C685(1)016(2)1700	1.1	6	1.700	0.25
10	B	TH3B106(1)016(2)2000	1.6	6	2.000	0.21
10	C	TH3C106(1)016(2)1400	1.6	6	1.400	0.28

Notes
- (1) Capacitance Tolerance: K, M
- (2) Termination and Packaging: A, B, C, D, E, F

RATINGS AND PART NUMBER REFERENCE

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (µA)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{rms} (A)
16 VDC AT + 85 °C, 10 VDC AT + 125 °C, 8 VDC AT + 150 °C						
15	B	TH3B156(1)016(2)2000	2.4	6	2.000	0.21
22	B	TH3B226(1)016(2)1900	3.5	6	1.900	0.21
22	C	TH3C226(1)016(2)1000	3.5	6	1.000	0.33
22	D	TH3D226(1)016(2)0800	3.5	6	0.800	0.43
33	C	TH3C336(1)016(2)0900	5.3	6	0.900	0.35
33	D	TH3D336(1)016(2)0600	5.3	6	0.600	0.50
47	C	TH3C476(1)016(2)0800	7.5	6	0.800	0.37
47	D	TH3D476(1)016(2)0600	7.5	6	0.600	0.50
68	D	TH3D686(1)016(2)0600	10.9	6	0.600	0.50
100	D	TH3D107(1)016(2)0600	16.0	8	0.600	0.50
100	E	TH3E107(1)016(2)0600	16.0	8	0.600	0.56
100	E	TH3E107(1)016(2)0150	16.0	8	0.150	1.11
20 VDC AT + 85 °C, 13 VDC AT + 125 °C, 10 VDC AT + 150 °C						
1	A	TH3A105(1)020(2)5900	0.5	4	5.900	0.11
2.2	A	TH3A225(1)020(2)5900	0.5	6	5.900	0.11
2.2	B	TH3B225(1)020(2)3500	0.5	6	3.500	0.16
3.3	B	TH3B335(1)020(2)2700	0.7	6	2.700	0.18
3.3	C	TH3C335(1)020(2)2700	0.7	6	2.700	0.20
4.7	A	TH3A475(1)020(2)5000	0.9	6	5.000	0.12
4.7	B	TH3B475(1)020(2)2900	0.9	6	2.900	0.17
4.7	B	TH3B475(1)020(2)1900	0.9	6	1.900	0.21
4.7	C	TH3C475(1)020(2)1700	0.9	6	1.700	0.25
10	C	TH3C106(1)020(2)1100	2.0	6	1.100	0.32
15	C	TH3C156(1)016(2)1000	2.4	6	1.000	0.33
15	B	TH3B156(1)020(2)2000	3.0	6	2.000	0.21
15	C	TH3C156(1)020(2)1000	3.0	6	1.000	0.33
15	D	TH3D156(1)020(2)0900	3.0	6	0.900	0.41
22	C	TH3C226(1)020(2)1000	4.4	6	1.000	0.33
22	D	TH3D226(1)020(2)0700	4.4	6	0.700	0.46
33	D	TH3D336(1)020(2)0600	6.6	6	0.600	0.50
47	D	TH3D476(1)020(2)0700	9.4	6	0.700	0.46
47	E	TH3E476(1)020(2)0600	9.4	6	0.600	0.56
68	E	TH3E686(1)020(2)0600	13.6	6	0.600	0.56
25 VDC AT + 85 °C, 17 VDC AT + 125 °C, 12.5 VDC AT + 150 °C						
0.47	A	TH3A474(1)025(2)8500	0.5	4	8.500	0.09
1	A	TH3A105(1)025(2)5200	0.5	4	5.200	0.12
1	A	TH3A105(1)025(2)3000	0.5	4	3.000	0.16
1	B	TH3B105(1)025(2)5000	0.5	4	5.000	0.13
2.2	A	TH3A225(1)025(2)5200	0.6	6	5.200	0.12
2.2	B	TH3B225(1)025(2)3000	0.6	6	3.000	0.17
3.3	B	TH3B335(1)025(2)3000	0.8	6	3.000	0.17
3.3	C	TH3C335(1)025(2)2000	0.8	6	2.000	0.23
4.7	A	TH3A475(1)025(2)5000	1.2	6	5.000	0.12
4.7	B	TH3B475(1)025(2)2800	1.2	6	2.800	0.17
4.7	C	TH3C475(1)025(2)1600	1.2	6	1.600	0.26
6.8	B	TH3B685(1)025(2)2400	1.7	6	2.400	0.19

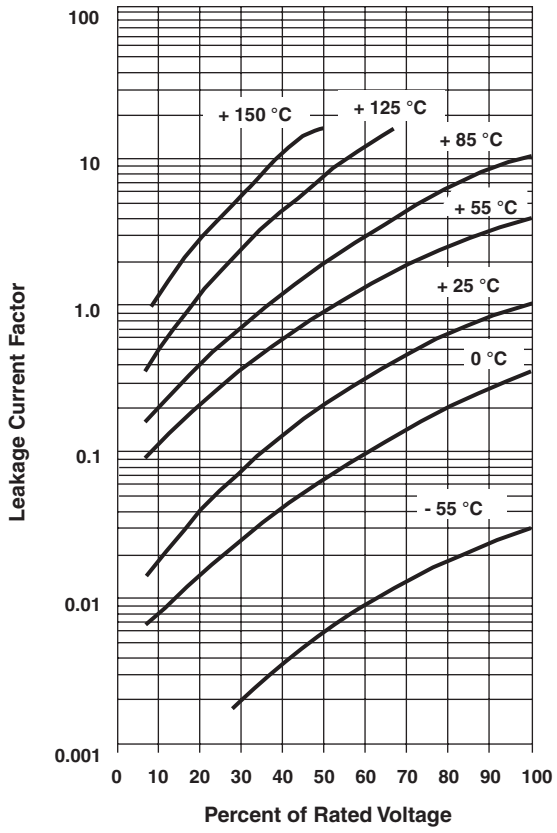
Notes
- (1) Capacitance Tolerance: K, M
- (2) Termination and Packaging: A, B, C, D, E, F

RATINGS AND PART NUMBER REFERENCE

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE AT + 25 °C (µA)	MAX. DF AT + 25 °C (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{rms} (A)
25 VDC AT + 85 °C, 17 VDC AT + 125 °C, 12.5 VDC AT + 150 °C						
6.8	C	TH3C685(1)025(2)1400	1.7	6	1.400	0.28
10	C	TH3C106(1)025(2)1100	2.5	6	1.100	0.32
10	D	TH3D106(1)025(2)0900	2.5	6	0.900	0.41
15	B	TH3B156(1)025(2)2000	3.8	6	2.000	0.21
15	B	TH3B156(1)025(2)1400	3.8	6	1.400	0.25
15	C	TH3C156(1)025(2)1200	3.8	6	1.200	0.30
15	D	TH3D156(1)025(2)0700	3.8	6	0.700	0.46
22	D	TH3D226(1)025(2)0600	5.5	6	0.600	0.50
33	D	TH3D336(1)025(2)0500	8.3	6	0.500	0.55
47	E	TH3E476(1)025(2)0600	11.8	6	0.600	0.56
35 VDC AT + 85 °C, 23 VDC AT + 125 °C, 17.5 VDC AT + 150 °C						
0.33	A	TH3A334(1)035(2)11R0	0.5	4	11.000	0.08
1	A	TH3A105(1)035(2)6600	0.5	4	6.600	0.11
1	B	TH3B105(1)035(2)4400	0.5	4	4.400	0.14
1.5	B	TH3B155(1)035(2)4200	0.5	6	4.200	0.14
1.5	C	TH3C155(1)035(2)3300	0.5	6	3.300	0.18
2.2	B	TH3B225(1)035(2)2500	0.8	6	2.500	0.18
2.2	C	TH3C225(1)035(2)2200	0.8	6	2.200	0.22
3.3	B	TH3B335(1)035(2)3500	1.2	6	3.500	0.16
3.3	B	TH3B335(1)035(2)2500	1.2	6	2.500	0.18
3.3	C	TH3C335(1)035(2)1700	1.2	6	1.700	0.25
4.7	B	TH3B475(1)035(2)3100	1.7	6	3.100	0.17
4.7	C	TH3C475(1)035(2)1300	1.6	6	1.300	0.29
4.7	D	TH3D475(1)035(2)1000	1.6	6	1.000	0.39
6.8	C	TH3C685(1)035(2)1800	2.4	6	1.800	0.25
6.8	D	TH3D685(1)035(2)0900	2.4	6	0.900	0.41
10	C	TH3C106(1)035(2)1600	3.5	6	1.600	0.26
10	D	TH3D106(1)035(2)0700	3.5	6	0.700	0.46
10	D	TH3D106(1)035(2)0300	3.5	6	0.300	0.71
15	D	TH3D156(1)035(2)0700	5.3	6	0.700	0.46
22	D	TH3D226(1)035(2)0600	7.7	6	0.600	0.50
22	D	TH3D226(1)035(2)0300	7.7	6	0.300	0.71
22	E	TH3E226(1)035(2)0500	7.7	6	0.500	0.61
50 VDC AT + 85 °C, 33 VDC AT + 125 °C, 25 VDC AT + 150 °C						
1	C	TH3C105(1)050(2)3300	0.5	4	3.300	0.18
3.3	D	TH3D335(1)050(2)1700	1.7	6	1.700	0.30
4.7	C	TH3C475(1)050(2)1500	2.4	6	1.500	0.27
4.7	D	TH3D475(1)050(2)0900	2.4	6	0.900	0.41
6.8	D	TH3D685(1)050(2)0900	3.4	6	0.900	0.41
10	D	TH3D106(1)050(2)0800	5.0	6	0.800	0.43
10	E	TH3E106(1)050(2)0500	5.0	6	0.500	0.61

Notes
- (1) Capacitance Tolerance: K, M
- (2) Termination and Packaging: A, B, C, D, E, F

TYPICAL LEAKAGE CURRENT FACTOR



Notes

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.

Disclaimer

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

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