

## Solid Tantalum Surface Mount TANTAMOUNT<sup>®</sup>, Molded Case, Hi-Rel COTS, Low ESR, Built-In-Fuse


**FEATURES**

- Terminations: 100 % matte tin, standard, tin/lead available
- Molded case available in three case sizes
- Compatible with "High Volume" automatic pick and place equipment
- High ripple current carrying capability
- Meets EIA 535BAAC case sizes
- Weibull grading and surge current test options per MIL-PRF-55365
- Standard and low ESR options
- Compliant to RoHS Directive 2002/95/EC


**RoHS\***  
COMPLIANT

**PERFORMANCE/ELECTRICAL CHARACTERISTICS**

**Operating Temperature:** - 55 °C to + 125 °C  
(Above 85 °C voltage derating is required)

**Capacitance Range:** 0.47 μF to 470 μF

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

**Voltage Rating:** 4 V<sub>DC</sub> to 50 V<sub>DC</sub>

ORDERING INFORMATION								
T86	D	107	K	010	E	A	A	S
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION/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	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)	C = Matte tin/ 7" (178 mm) reel H = Matte tin/ 7" (178 mm), 1/2 reel E = Tin/lead/ 7" (178 mm) reel L = Tin/lead/ 7" (178 mm), 1/2 reel	A = 1.0 % B = 0.1 % S = Hi-Rel standard Z = Non-ER	A = 10 cycles at + 25 °C B = 10 cycles at - 55 °C/+ 85 °C S = 3 cycles at + 25 °C	S = Std. L = Low

DIMENSIONS in inches (millimeters)							
CASE CODE	EIA SIZE	L	W	H	P	Tw	Th (MIN.)
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	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.47								C
0.68								C
1.0								C
1.5							C	C
2.2						C	C	C/D
3.3						C	C	C/D
4.7					C	C	C/D	D
6.8				C	C	C	D	D/E
10			C	C	C	C/D	D/E	
15		C	C	C	C/D	D	D/E	
22		C	C	C/D	D	D/E	E	
33		C	C/D	C/D	D/E	E		
47		C/D	C/D	D/E	E			
68	C	C/D	D/E	D	E			
100	C	D/E	D	E				
150	D	D	D/E	E				
220	D	D/E	E					
330	D/E	E						
470	E							

### CONSTRUCTION AND MARKING

**C, D, E, Cases**

**Marking:**  
Capacitor marking includes an anode (+) polarity band, capacitance in microfarads and the voltage rating. 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. Capital letter “E” stands for lead (Pb)-free terminations small cap letter “e” stands for SnPb



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Vishay Sprague

RATINGS AND PART NUMBER REFERENCE						
CAPACITANCE (μF)	CASE CODE	PART NUMBER	MAX. DC LEAKAGE at + 25 °C (μA)	MAX. DF at + 25 °C 120 Hz (%)	STANDARD (S) MAX. ESR at + 25 °C 100 kHz (Ω)	LOW (L) MAX. ESR at + 25 °C 100 kHz (Ω)
<b>4 V<sub>DC</sub> AT + 85 °C, 2.7 V<sub>DC</sub> AT + 125 °C</b>						
68	C	T86C686(1)004(2)(3)(4)(5)	2.7	8	1.40	0.40
100	C	T86C107(1)004(2)(3)(4)(5)	4.0	8	0.80	0.40
150	D	T86D157(1)004(2)(3)(4)(5)	6.0	8	0.60	0.30
220	D	T86D227(1)004(2)(3)(4)(5)	8.8	8	0.60	0.40
330	D	T86D337(1)004(2)(3)(4)(5)	13.2	15	0.60	0.30
330	E	T86E337(1)004(2)(3)(4)(5)	13.2	8	0.50	0.30
470	E	T86E477(1)004(2)(3)(4)(5)	18.8	16	0.50	0.25
<b>6.3 V<sub>DC</sub> AT + 85 °C, 4 V<sub>DC</sub> AT + 125 °C</b>						
15	C	T86C156(1)6R3(2)(3)(4)(5)	0.9	6	1.80	0.60
22	C	T86C226(1)6R3(2)(3)(4)(5)	1.1	6	1.80	0.60
33	C	T86C336(1)6R3(2)(3)(4)(5)	1.6	6	1.40	0.60
47	C	T86C476(1)6R3(2)(3)(4)(5)	2.3	6	1.30	0.60
47	D	T86D476(1)6R3(2)(3)(4)(5)	2.3	6	0.90	0.45
68	C	T86C686(1)6R3(2)(3)(4)S	3.3	6	0.80	N/A
68	D	T86D686(1)6R3(2)(3)(4)(5)	3.3	6	0.70	0.35
100	D	T86D107(1)6R3(2)(3)(4)(5)	6.0	8	0.70	0.35
100	E	T86E107(1)6R3(2)(3)(4)(5)	6.0	8	0.70	0.30
150	D	T86D157(1)6R3(2)(3)(4)(5)	9.0	8	0.60	0.30
220	D	T86D227(1)6R3(2)(3)(4)(5)	13.2	8	0.60	0.30
220	E	T86E227(1)6R3(2)(3)(4)(5)	13.2	8	0.50	0.30
330	E	T86E337(1)6R3(2)(3)(4)(5)	19.8	8	0.50	0.30
<b>10 V<sub>DC</sub> AT + 85 °C, 7 V<sub>DC</sub> AT + 125 °C</b>						
10	C	T86C106(1)010(2)(3)(4)S	1.0	6	1.80	N/A
15	C	T86C156(1)010(2)(3)(4)(5)	1.5	6	1.80	0.60
22	C	T86C226(1)010(2)(3)(4)(5)	2.2	6	1.40	0.50
33	C	T86C336(1)010(2)(3)(4)(5)	3.3	6	1.30	0.40
33	D	T86D336(1)010(2)(3)(4)(5)	3.3	6	0.90	0.40
47	C	T86C476(1)010(2)(3)(4)S	4.7	6	1.00	N/A
47	D	T86D476(1)010(2)(3)(4)(5)	4.7	6	0.70	0.40
68	D	T86D686(1)010(2)(3)(4)(5)	6.8	6	0.70	0.35
68	E	T86E686(1)010(2)(3)(4)(5)	6.8	6	0.70	0.35
100	D	T86D107(1)010(2)(3)(4)(5)	10.0	8	0.60	0.30
150	D	T86D157(1)010(2)(3)(4)(5)	15.0	8	0.60	0.30
150	E	T86E157(1)010(2)(3)(4)(5)	15.0	8	0.50	0.40
220	E	T86E227(1)010(2)(3)(4)(5)	22.0	8	0.50	0.30
<b>16 V<sub>DC</sub> AT + 85 °C, 10 V<sub>DC</sub> AT + 125 °C</b>						
6.8	C	T86C685(1)016(2)(3)(4)(5)	1.1	6	2.00	0.60
10	C	T86C106(1)016(2)(3)(4)(5)	1.6	6	1.80	0.70
15	C	T86C156(1)016(2)(3)(4)S	2.4	6	1.40	N/A
22	C	T86C226(1)016(2)(3)(4)(5)	3.5	6	1.30	0.70
22	D	T86D226(1)016(2)(3)(4)(5)	3.5	6	0.90	0.45
33	C	T86C336(1)016(2)(3)(4)(5)	5.3	6	1.00	0.50
33	D	T86D336(1)016(2)(3)(4)(5)	5.3	6	0.70	0.35
47	D	T86D476(1)016(2)(3)(4)(5)	7.5	6	0.70	0.35
47	E	T86E476(1)016(2)(3)(4)(5)	7.5	6	0.70	0.35
68	D	T86D686(1)016(2)(3)(4)(5)	10.9	6	0.60	0.30
100	E	T86E107(1)016(2)(3)(4)(5)	16.0	8	0.60	0.30
150	E	T86E157(1)016(2)(3)(4)S	24.0	10	0.40	N/A



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 (%)	STANDARD (S) MAX. ESR at + 25 °C 100 kHz ( $\Omega$ )	LOW (L) MAX. ESR at + 25 °C 100 kHz ( $\Omega$ )
<b>20 V<sub>DC</sub> AT + 85 °C, 13 V<sub>DC</sub> AT + 125 °C</b>						
4.7	C	T86C475(1)020(2)(3)(4)(5)	0.9	6	2.00	1.00
6.8	C	T86C685(1)020(2)(3)(4)(5)	1.4	6	1.90	0.60
10	C	T86C106(1)020(2)(3)(4)(5)	2.0	6	1.60	0.80
15	C	T86C156(1)020(2)(3)(4)S	3.0	6	1.40	N/A
15	D	T86D156(1)020(2)(3)(4)(5)	3.0	6	0.90	0.45
22	D	T86D226(1)020(2)(3)(4)(5)	4.4	6	0.70	0.35
33	D	T86D336(1)020(2)(3)(4)(5)	6.6	6	0.70	0.40
33	E	T86E336(1)020(2)(3)(4)(5)	6.6	6	0.70	0.40
47	E	T86E476(1)020(2)(3)(4)(5)	9.4	6	0.60	0.30
68	E	T86E686(1)020(2)(3)(4)(5)	13.6	6	0.60	0.30
<b>25 V<sub>DC</sub> AT + 85 °C, 17 V<sub>DC</sub> AT + 125 °C</b>						
2.2	C	T86C225(1)025(2)(3)(4)S	0.6	6	2.80	N/A
3.3	C	T86C335(1)025(2)(3)(4)(5)	0.8	6	2.30	2.10
4.7	C	T86C475(1)025(2)(3)(4)(5)	1.2	6	1.90	1.00
6.8	C	T86C685(1)025(2)(3)(4)(5)	1.7	6	1.60	0.60
10	C	T86C106(1)025(2)(3)(4)(5)	2.5	6	1.40	0.60
10	D	T86D106(1)025(2)(3)(4)(5)	2.5	6	1.00	0.50
15	D	T86D156(1)025(2)(3)(4)(5)	3.8	6	0.80	0.40
22	D	T86D226(1)025(2)(3)(4)(5)	5.5	6	0.70	0.35
22	E	T86E226(1)025(2)(3)(4)(5)	5.5	6	0.70	0.35
33	E	T86E336(1)025(2)(3)(4)(5)	8.3	6	0.60	0.30
<b>35 V<sub>DC</sub> AT + 85 °C, 23 V<sub>DC</sub> AT + 125 °C</b>						
1.5	C	T86C155(1)035(2)(3)(4)(5)	0.5	6	3.80	2.60
2.2	C	T86C225(1)035(2)(3)(4)S	0.8	6	2.90	N/A
3.3	C	T86C335(1)035(2)(3)(4)S	1.2	6	2.00	N/A
4.7	C	T86C475(1)035(2)(3)(4)S	1.6	6	1.80	N/A
4.7	D	T86D475(1)035(2)(3)(4)(5)	1.6	6	1.20	0.60
6.8	D	T86D685(1)035(2)(3)(4)(5)	2.4	6	1.00	0.50
10	D	T86D106(1)035(2)(3)(4)(5)	3.5	6	0.80	0.50
10	E	T86E106(1)035(2)(3)(4)(5)	3.5	6	0.80	0.50
15	D	T86D156(1)035(2)(3)(4)(5)	5.3	6	0.70	0.50
15	E	T86E156(1)035(2)(3)(4)(5)	5.3	6	0.70	0.50
22	E	T86E226(1)035(2)(3)(4)S	7.7	6	0.60	N/A
<b>50 V<sub>DC</sub> AT + 85 °C, 33 V<sub>DC</sub> AT + 125 °C</b>						
0.47	C	T86C474(1)050(2)(3)(4)S	0.5	4	6.70	N/A
0.68	C	T86C684(1)050(2)(3)(4)S	0.5	4	5.90	N/A
1.0	C	T86C105(1)050(2)(3)(4)(5)	0.5	4	4.40	2.70
1.5	C	T86C155(1)050(2)(3)(4)(5)	0.8	6	5.00	3.20
2.2	C	T86C225(1)050(2)(3)(4)S	1.1	6	2.80	N/A
2.2	D	T86D225(1)050(2)(3)(4)(5)	1.1	6	2.10	0.90
3.3	C	T86C335(1)050(2)(3)(4)(5)	1.7	6	2.40	1.60
3.3	D	T86D335(1)050(2)(3)(4)S	1.7	6	2.00	N/A
4.7	D	T86D475(1)050(2)(3)(4)S	2.4	6	1.10	N/A
6.8	D	T86D685(1)050(2)(3)(4)S	3.4	6	0.90	N/A
6.8	E	T86E685(1)050(2)(3)(4)S	3.4	6	0.90	N/A

**Notes**

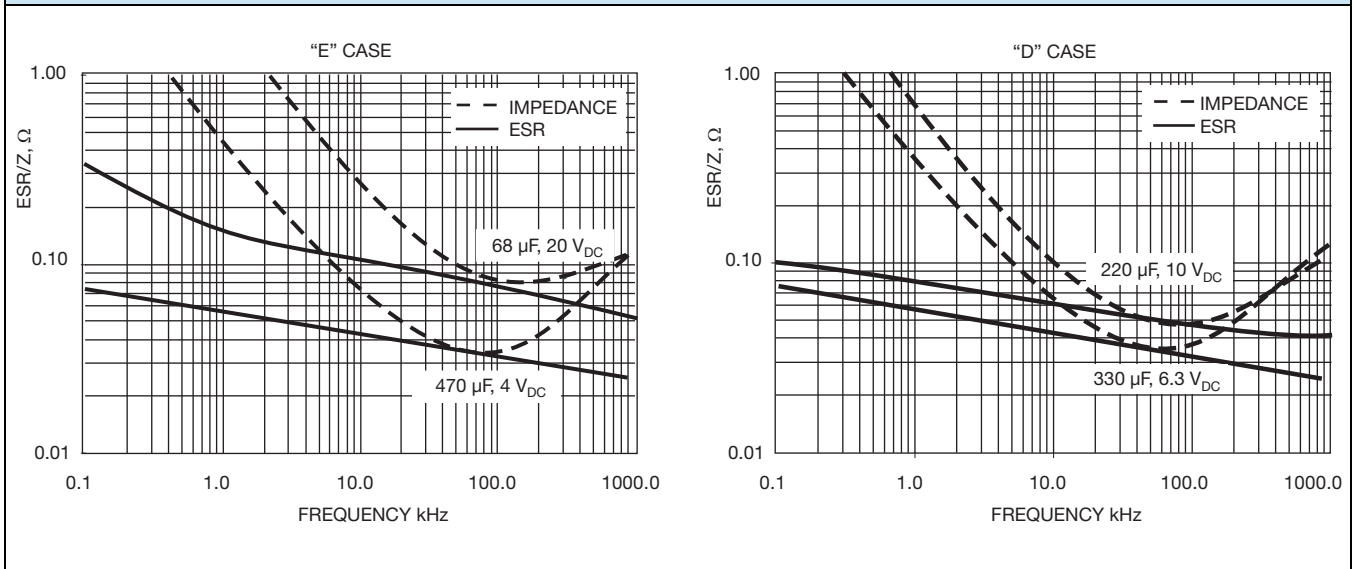
- (1) Capacitance tolerance codes: K, M
- (2) Terminations and packaging codes: C, H, E, L
- (3) Reliability level: A, B, S, Z
- (4) Surge current: A, B, S
- (5) ESR: L, S



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Vishay Sprague

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





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