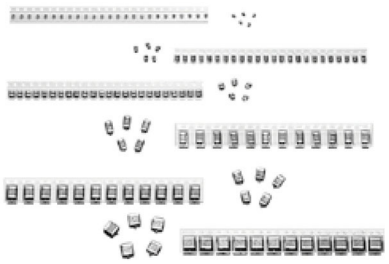
Solid Tantalum Chip Capacitors, TANTAMOUNT®, Conformal Coated, Maximum CV, Low ESR



FEATURES

- Large capacitance rating range
- Mounting: Surface mount
- Lowest ESR for a surface mount tantalum chip capacitor
- Terminations: 100 % tin (2) standard; tin/lead available
- 8 mm, 12 mm tape and reel packaging available per EIA 481 and reeling per IEC 60286-3. 7" [178 mm] standard. 13" [330 mm] available.
- Case code compatibility with EIA 535BAAC and CECC 30801
- Material categorization: For definitions please see www.vishay.com/doc?99912

Pb-free Available

RoHS* COMPLIANT

Note

* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

PERFORMANCE CHARACTERISTICS

www.vishay.com/doc?40088

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

Capacitance Range: 1.0 µF to 1500 µF

Capacitance Tolerance: ± 10 %, ± 20 % standard

Voltage Rating: 4 V_{DC} to 50 V_{DC}

Equivalent Series Resistance: ESR readings measured at 100 kHz, + 25 °C from 3500 mΩ to 30 mΩ

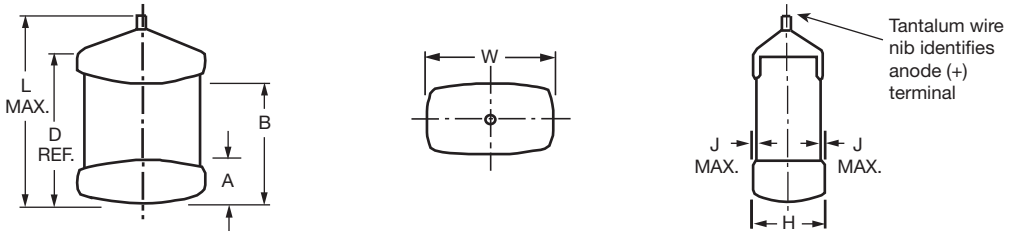
ORDERING INFORMATION

594D	477	X0	004	R	2	T
TYPE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	CASE CODE	TERMINATION	REEL SIZE AND PACKAGING
	This is expressed in pF. The first two digits are the significant figures. The third is the number of zeros to follow.	**X0 = ± 20 %** X9 = ± 10 %	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 Code table	**2 = 100 % tin** 4 = Gold plated 8 = Solder plated (60/40) Special order	**Tape and reel** **T = 7" [178 mm] reel** W = 13" [330 mm] reel

Note

- Preferred tolerances and reel sizes are in bold.
  We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size.

DIMENSIONS in inches [millimeters]



CASE CODE	$L_{MAX.}$	W	H	A	B	$D_{REF.}$	$J_{MAX.}$
B	0.157 [4.0]	0.110 + 0.012/- 0.016 [2.8 + 0.3/- 0.4]	0.075 + 0.012/- 0.024 [1.9 + 0.3/- 0.6]	0.031 ± 0.012 [0.8 ± 0.3]	0.098 ± 0.016 [2.5 ± 0.4]	0.138 [3.5]	0.004 [0.1]
C	0.280 [7.1]	0.126 ± 0.012 [3.2 ± 0.3]	0.098 ± 0.012 [2.5 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.3]	0.181 ± 0.024 [4.6 ± 0.6]	0.236 [6.0]	0.004 [0.1]
D	0.295 [7.5]	0.169 + 0.012/- 0.024 [4.3 + 0.3/- 0.6]	0.110 ± 0.012 [2.8 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.3]	0.181 ± 0.024 [4.6 ± 0.6]	0.252 [6.4]	0.004 [0.1]
R	0.283 [7.2]	0.236 + 0.012/- 0.024 [6.0 + 0.3/- 0.6]	0.138 + 0.012/- 0.016 [3.5 + 0.3/- 0.4]	0.051 ± 0.012 [1.3 ± 0.3]	0.181 ± 0.024 [4.6 ± 0.6]	0.244 [6.2]	0.004 [0.1]

Note

- The anode termination (D less B) will be a minimum of 0.012" [0.3 mm]

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RATINGS AND CASE CODES

µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
1.0								B
2.2							B	
3.3						B		
4.7					B		B	C
6.8					B		C	C/D
10					B	B		
15			B	B		C	C/D	R
22		B	B	B	B/C	C	D/R	
33	B		B	B/C		D	R	
47			B	B/C	C/D	D/R	R	
68		B	B/C	C/D	D	D/R		
100	B	B	B/C	C/D	D	R		
120		C	C	R	R			
150	B/C		C/D	D	D			
180			D	R				
220		C/D	C/D/R	R				
270	D							
330	C	C/D	D/R	R				
390		R						
470	C/R	D/R	R					
680	D	R	R					
1000		R						
1500	R							

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (µA)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
4 V_{DC} AT+ 85 °C, 2.7 V_{DC} AT + 125 °C						
33	B	594D336(1)004B(2)(3)	1.30	6	0.380	0.47
100	B	594D107(1)004B(2)(3)	4.00	8	0.300	0.53
150	B	594D157(1)004B(2)(3)	6.00	8	0.250	0.58
150	C	594D157(1)004C(2)(3)	6.00	8	0.080	1.17
270	D	594D277(1)004D(2)(3)	10.80	8	0.060	1.58
330	C	594D337(1)004C(2)(3)	13.20	8	0.080	1.17
470	C	594D477(1)004C(2)(3)	18.80	10	0.075	1.21
470	R	594D477(1)004R(2)(3)	18.80	10	0.045	2.36
680	D	594D687(1)004D(2)(3)	27.20	12	0.060	1.58
1500	R	594D158(1)004R(2)(3)	60.00	20	0.030	2.89
6.3 V_{DC} AT + 85 °C, 4 V_{DC} AT + 125 °C						
22	B	594D226(1)6R3B(2)(3)	1.40	6	0.380	0.47
68	B	594D686(1)6R3B(2)(3)	4.30	6	0.319	0.52
100	B	594D107(1)6R3B(2)(3)	6.30	8	0.250	0.58

Note

- Part number definitions:
  (1) Tolerance: For 10 % tolerance, specify “X9”; for 20 % tolerance, change to “X0”
  (2) Termination: For 100 % tin specify “2”, for gold plated specify “4”, for solder plated 60/40 specify “8”
  (3) Packaging code: For 7" reels specify “T”, for 13" reels specify “W”.

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STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (µA)	MAX. DF AT + 25 °C 120 Hz (%)	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						
120	C	594D127(1)6R3C(2)(3)	7.60	8	0.085	1.14
220	C	594D227(1)6R3C(2)(3)	13.90	8	0.080	1.17
220	D	594D227(1)6R3D(2)(3)	13.90	8	0.065	1.52
330	C	594D337(1)6R3C(2)(3)	20.80	8	0.080	1.17
330	D	594D337(1)6R3D(2)(3)	20.80	8	0.060	1.58
390	R	594D397(1)6R3R(2)(3)	24.60	8	0.045	2.36
470	D	594D477(1)6R3D(2)(3)	29.60	8	0.060	1.58
470	R	594D477(1)6R3R(2)(3)	29.60	10	0.050	2.24
680	R	594D687(1)6R3R(2)(3)	42.80	10	0.045	2.36
1000	R	594D108(1)6R3R(2)(3)	63.00	16	0.030	2.89
10 V_{DC} AT + 85 °C, 7 V_{DC} AT + 125 °C						
15	B	594D156(1)010B(2)(3)	1.50	6	0.500	0.41
22	B	594D226(1)010B(2)(3)	2.20	6	0.500	0.41
33	B	594D336(1)010B(2)(3)	3.30	6	0.500	0.41
47	B	594D476(1)010B(2)(3)	4.70	6	0.400	0.46
68	B	594D686(1)010B(2)(3)	6.80	6	0.350	0.49
68	C	594D686(1)010C(2)(3)	6.80	6	0.100	1.05
100	B	594D107(1)010B(2)(3)	10.00	12	0.250	0.58
100	C	594D107(1)010C(2)(3)	10.00	8.0	0.095	1.08
120	C	594D127(1)010C(2)(3)	12.00	7.0	0.095	1.08
150	C	594D157(1)010C(2)(3)	15.00	8.0	0.090	1.11
150	D	594D157(1)010D(2)(3)	15.00	8	0.075	1.41
180	D	594D187(1)010D(2)(3)	18.00	7	0.090	1.29
220	C	594D227(1)010C(2)(3)	22.00	8	0.100	1.05
220	D	594D227(1)010D(2)(3)	22.00	8	0.065	1.52
220	R	594D227(1)010R(2)(3)	22.00	8	0.065	1.96
330	D	594D337(1)010D(2)(3)	33.00	8	0.065	1.52
330	R	594D337(1)010R(2)(3)	33.00	8	0.045	2.36
470	R	594D477(1)010R(2)(3)	47.00	8	0.045	2.36
680	R	594D687(1)010R(2)(3)	68.00	14	0.045	2.36
16 V_{DC} AT + 85 °C, 10 V_{DC} AT + 125 °C						
15	B	594D156(1)016B(2)(3)	2.40	6	0.550	0.39
22	B	594D226(1)016B(2)(3)	3.50	6	0.500	0.41
33	B	594D336(1)016B(2)(3)	5.30	6	0.500	0.41
33	C	594D336(1)016C(2)(3)	5.30	6	0.150	0.86
47	B	594D476(1)016B(2)(3)	7.50	6	0.720	0.34
47	C	594D476(1)016C(2)(3)	7.50	6	0.110	1.00
68	C	594D686(1)016C(2)(3)	10.90	6	0.123	0.95
68	D	594D686(1)016D(2)(3)	10.90	6	0.095	1.26
100	C	594D107(1)016C(2)(3)	16.00	8	0.080	1.17
100	D	594D107(1)016D(2)(3)	16.00	8	0.075	1.41
120	R	594D127(1)016R(2)(3)	19.20	8	0.080	1.77
150	D	594D157(1)016D(2)(3)	24.00	8	0.085	1.33
180	R	594D187(1)016R(2)(3)	28.80	8	0.055	2.13
220	R	594D227(1)016R(2)(3)	35.20	8	0.055	2.13
330	R	594D337(1)016R(2)(3)	52.80	14	0.055	2.13

Note

- Part number definitions:
  (1) Tolerance: For 10 % tolerance, specify “X9”; for 20 % tolerance, change to “X0”
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  (3) Packaging code: For 7" reels specify “T”, for 13" reels specify “W”.

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STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT + 25 °C (µA)	MAX. DF AT + 25 °C 120 Hz (%)	MAX. ESR AT + 25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
20 V_{DC} AT + 85 °C, 13 V_{DC} AT + 125 °C						
4.7	B	594D475(1)020B(2)(3)	0.90	6	0.900	0.31
6.8	B	594D685(1)020B(2)(3)	1.40	6	0.900	0.31
10	B	594D106(1)020B(2)(3)	2.00	6	0.850	0.32
22	B	594D226(1)020B(2)(3)	4.40	6	0.600	0.38
22	C	594D226(1)020C(2)(3)	4.40	6	0.150	0.86
47	C	594D476(1)020C(2)(3)	9.40	6	0.140	0.89
47	D	594D476(1)020D(2)(3)	9.40	6	0.095	1.26
68	D	594D686(1)020D(2)(3)	13.60	6	0.132	1.07
100	D	594D107(1)020D(2)(3)	20.00	8	0.085	1.33
120	R	594D127(1)020R(2)(3)	24.00	8	0.080	1.77
150	D	594D157(1)020D(2)(3)	30.00	12	0.100	1.22
25 V_{DC} AT + 85 °C, 17 V_{DC} AT + 125 °C						
3.3	B	594D335(1)025B(2)(3)	0.80	6	1.500	0.24
10	B	594D106(1)025B(2)(3)	2.50	6	0.900	0.31
15	C	594D156(1)025C(2)(3)	3.80	6	0.220	0.71
22	C	594D226(1)025C(2)(3)	5.50	6	0.200	0.74
33	D	594D336(1)025D(2)(3)	8.30	6	0.130	1.07
47	D	594D476(1)025D(2)(3)	11.80	6	0.130	1.07
47	R	594D476(1)025R(2)(3)	11.80	6	0.099	1.59
68	D	594D686(1)025D(2)(3)	17.00	8	0.200	0.87
68	R	594D686(1)025R(2)(3)	17.00	6	0.095	1.62
100	R	594D107(1)025R(2)(3)	25.00	8	0.090	1.67
35 V_{DC} AT + 85 °C, 23 V_{DC} AT + 125 °C						
2.2	B	594D225(1)035B(2)(3)	0.80	6	1.700	0.22
4.7	B	594D475(1)035B(2)(3)	1.60	6	1.400	0.25
6.8	C	594D685(1)035C(2)(3)	2.40	6	0.430	0.51
15	C	594D156(1)035C(2)(3)	5.30	6	0.400	0.52
15	D	594D156(1)035D(2)(3)	5.30	6	0.270	0.75
22	D	594D226(1)035D(2)(3)	7.70	6	0.270	0.75
22	R	594D226(1)035R(2)(3)	7.70	6	0.220	1.07
33	R	594D336(1)035R(2)(3)	11.60	6	0.200	1.12
47	R	594D476(1)035R(2)(3)	16.60	6	0.200	1.12
50 V_{DC} AT + 85 °C, 33 V_{DC} AT + 125 °C						
1.0	B	594D105(1)050B(2)(3)	0.50	4	3.500	0.16
4.7	C	594D475(1)050C(2)(3)	2.40	6	0.800	0.37
6.8	C	594D685(1)050C(2)(3)	3.40	6	0.800	0.37
6.8	D	594D685(1)050D(2)(3)	3.40	6	0.450	0.58
15	R	594D156(1)050R(2)(3)	7.50	6	0.350	0.85

Note

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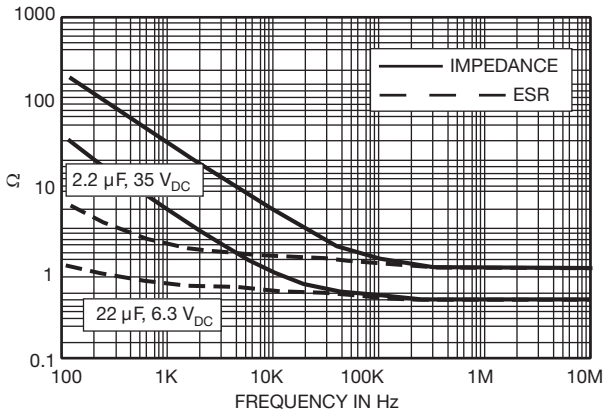
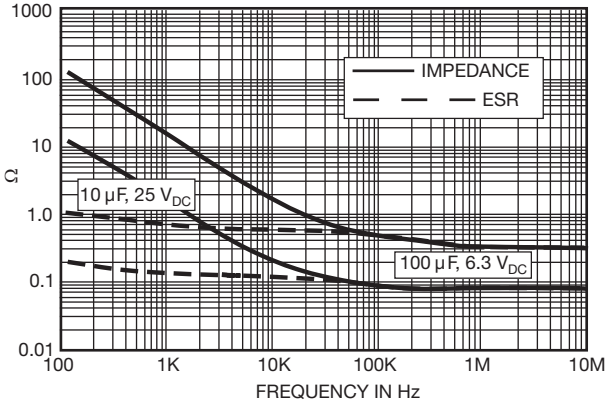
RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperature below + 85 °C)	
STANDARD CONDITIONS. FOR EXAMPLE: OUTPUT FILTERS	
Capacitor Voltage Rating	**Operating Voltage**
4.0	2.5
6.3	3.6
10	6.0
16	10
20	12
25	15
35	24
50	28
SEVERE CONDITIONS. FOR EXAMPLE: INPUT FILTERS	
Capacitor Voltage Rating	**Operating Voltage**
4.0	2.5
6.3	3.3
10	5.0
16	8.0
20	10
25	12
35	15
50	24

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

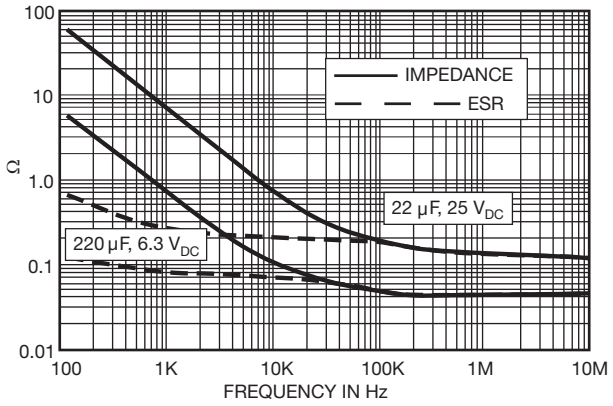
"B" Case



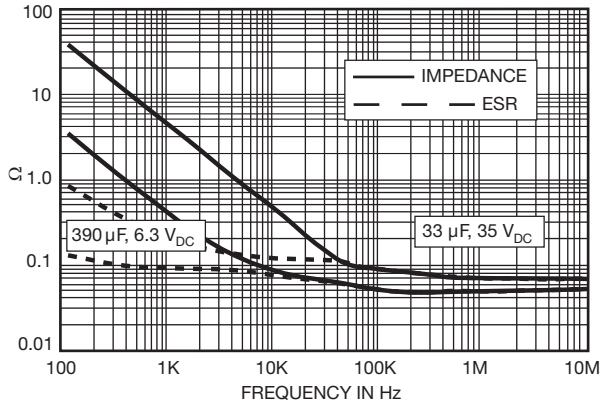
"C" Case



"D" Case



"R" Case



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POWER DISSIPATION	
CASE CODE	MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR
B	0.085
C	0.110
D	0.150
R	0.250

STANDARD PACKAGING QUANTITY		
CASE CODE	UNITS PER REEL	
	7" REEL	13" REEL
B	2000	8000
C	500	3000
D	500	3000
R	600	n/a

PRODUCT INFORMATION	
Conformal Coated Guide	www.vishay.com/doc?40150
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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Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

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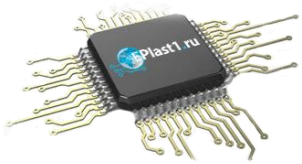
- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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