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

FEATURES

- New case size offerings
- Terminations: 100 % tin (2) standard; tin/lead available
- Extremely low ESR
- Mounting: Surface mount
- Ripple current up to 4.1 A
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

PERFORMANCE CHARACTERISTICS

www.vishay.com/doc?40088

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

Capacitance Range: 10 µF to 1500 µF

Capacitance Tolerance: ± 10 %, ± 20 % standard

Voltage Rating: 4 V_{DC} to 75 V_{DC}

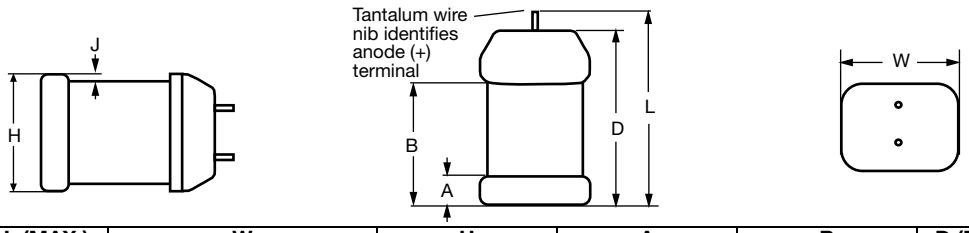
ORDERING INFORMATION

597D	687	X0	6R3	E	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 Codes table	**2 = 100 % tin** 8 = Solder plated (60/40) special order	**T = Tape and reel 7" [178 mm] reel**

Note

- Preferred tolerance 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.
  Low ESR solid tantalum chip capacitors allow delta ESR of 1.25 times the datasheet limits after mounting.

DIMENSIONS in inches [millimeters]



CASE CODE	L (MAX.)	W	H	A	B	D (REF.)	J (MAX.)
V	0.299 [7.6]	0.173 ± 0.016 [4.4 ± 0.4]	0.079 [2.0 max.]	0.051 ± 0.012 [1.3 ± 0.3]	0.181 ± 0.024 [4.6 ± 0.6]	0.252 [6.4]	0.004 [0.1]
D	0.299 [7.6]	0.173 ± 0.016 [4.4 ± 0.4]	0.138 [3.5 max.]	0.051 ± 0.012 [1.3 ± 0.3]	0.181 ± 0.024 [4.6 ± 0.6]	0.252 [6.4]	0.004 [0.1]
E	0.299 [7.6]	0.173 ± 0.016 [4.4 ± 0.4]	0.157 ± 0.016 [4.0 ± 0.4]	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	0.299 [7.6]	0.238 ± 0.016 [6.0 ± 0.4]	0.142 ± 0.016 [3.6 ± 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]
F	0.299 [7.6]	0.238 ± 0.016 [6.0 ± 0.4]	0.185 ± 0.016 [4.7 ± 0.4]	0.055 ± 0.016 [1.4 ± 0.4]	0.181 ± 0.024 [4.6 ± 0.6]	0.244 [6.2]	0.004 [0.1]
Z	0.299 [7.6]	0.238 ± 0.016 [6.0 ± 0.4]	0.236 ± 0.016 [6.0 ± 0.4]	0.055 ± 0.016 [1.4 ± 0.4]	0.181 ± 0.024 [4.6 ± 0.6]	0.244 [6.2]	0.004 [0.1]
M	0.315 [8.0]	0.260 + 0.016/- 0.024 [6.6 + 0.4/- 0.6]	0.142 ± 0.016 [3.6 ± 0.4]	0.051 ± 0.012 [1.3 ± 0.3]	0.197 ± 0.024 [5.0 ± 0.6]	0.260 [6.6]	0.004 [0.1]
H	0.315 [8.0]	0.260 + 0.016/- 0.024 [6.6 + 0.4/- 0.6]	0.205 ± 0.016 [5.2 ± 0.4]	0.055 ± 0.016 [1.4 ± 0.4]	0.197 ± 0.024 [5.0 ± 0.6]	0.260 [6.6]	0.004 [0.1]

Note

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

For technical questions, contact: tantalum@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

RATINGS AND CASE CODES

µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V	63 V	75 V
10									D	R
15								E/R	R	
22								R	F	
33								F		
47							R	Z		
68						R	F			
100						F	F			
150						F				
220				E	R	M				
330		V	E	F	H					
470	V	E	E	H						
680	E	E	R							
1000	E/R	R	F							
1500	R									
2200										

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 (mΩ)	MAX. RIPPLE 100 kHz I_{RMS} (A)
4 V_{DC} AT + 85 °C; 2.7 V_{DC} AT + 125 °C						
470	V	597D477(1)004V(2)(3)	19	8	60	2.2
680	E	597D687(1)004E(2)(3)	27	6	25	2.9
1000	E	597D108(1)004E(2)(3)	40	8	20	3.3
1000	R	597D108(1)004R(2)(3)	40	8	18	3.7
1500	R	597D158(1)004R(2)(3)	60	8	24	2.9
6.3 V_{DC} AT + 85 °C; 4 V_{DC} AT + 125 °C						
330	V	597D337(1)6R3V(2)(3)	21	8	56	2.0
470	E	597D477(1)6R3E(2)(3)	30	6	30	2.7
680	E	597D687(1)6R3E(2)(3)	43	6	25	2.9
1000	R	597D108(1)6R3R(2)(3)	63	8	31	2.8
10 V_{DC} AT + 85 °C; 7 V_{DC} AT + 125 °C						
330	E	597D337(1)010E(2)(3)	33	6	35	2.5
470	E	597D477(1)010E(2)(3)	47	6	28	2.8
680	R	597D687(1)010R(2)(3)	68	6	28	3.0
1000	F	597D108(1)010F(2)(3)	100	20	120	1.4
16 V_{DC} AT + 85 °C; 10 V_{DC} AT + 125 °C						
220	E	597D227(1)016E(2)(3)	35	8	60	2.3
330	F	597D337(1)016F(2)(3)	53	10	100	1.6
470	H	597D477(1)016H(2)(3)	75	14	100	1.4
20 V_{DC} AT + 85 °C; 13 V_{DC} AT + 125 °C						
220	R	597D227(1)020R(2)(3)	44	8	80	1.8
330	H	597D337(1)020H(2)(3)	66	10	100	1.6
25 V_{DC} AT + 85 °C; 17 V_{DC} AT + 125 °C						
68	R	597D686(1)025R(2)(3)	17	6	100	1.6
100	F	597D107(1)025F(2)(3)	25	8	100	1.6

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 solder plated 60/40 specify “8”
  (3) Packaging code: For 7" reels specify “T”

For technical questions, contact: tantalum@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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 (mΩ)	MAX. RIPPLE 100 kHz I_{RMS} (A)
25 V_{DC} AT + 85 °C; 17 V_{DC} AT + 125 °C						
150	F	597D157(1)025F(2)(3)	38	8	80	1.8
220	M	597D227(1)025M(2)(3)	55	8	100	1.6
35 V_{DC} AT + 85 °C; 23 V_{DC} AT + 125 °C						
47	R	597D476(1)035R(2)(3)	17	6	100	1.6
68	F	597D686(1)035F(2)(3)	24	6	100	1.6
100	F	597D107X0035F(2)(3)	35	8	100	1.6
50 V_{DC} AT + 85 °C; 33 V_{DC} AT + 125 °C						
15	E	597D156(1)050E(2)(3)	8	6	300	0.9
15	R	597D156(1)050R(2)(3)	8	6	250	1.0
22	R	597D226(1)050R(2)(3)	11	6	220	1.1
33	F	597D336(1)050F(2)(3)	17	6	150	1.3
47	Z	597D476(1)050Z(2)(3)	24	6	240	1.1
63 V_{DC} AT + 85 °C; 42 V_{DC} AT + 125 °C						
10	D	597D106(1)063D(2)(3)	10	6	400	0.6
15	R	597D156(1)063R(2)(3)	10	6	400	0.8
22	F	597D226(1)063F(2)(3)	14	6	250	1.0
75 V_{DC} AT + 85 °C; 50 V_{DC} AT + 125 °C						
10	R	597D106(1)075R(2)(3)	8	6	500	0.7

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 solder plated 60/40 specify “8”
  (3) Packaging code: For 7" reels specify “T”

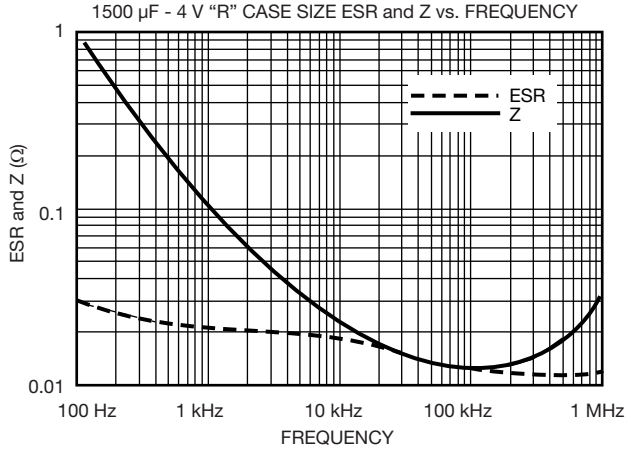
RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperature below + 85 °C)

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
63	37.8
75	45
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
63	32
75	37

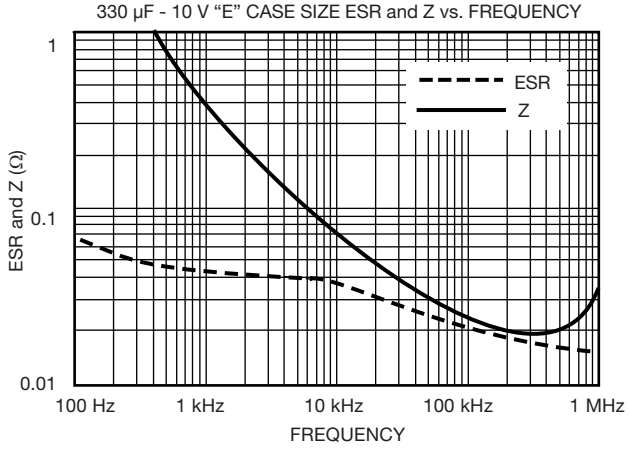
For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

TYPICAL CURVES

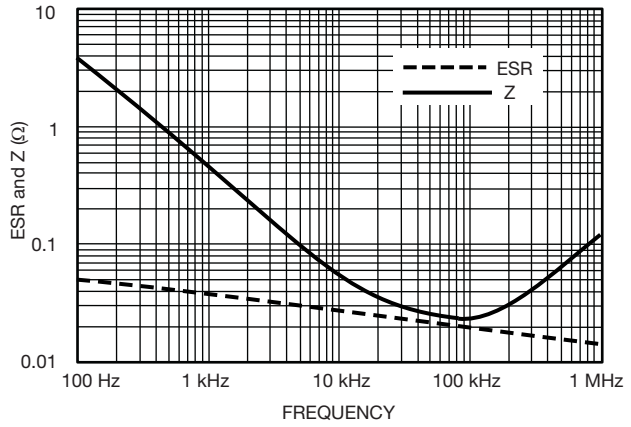
1500 µF - 4 V "R" CASE SIZE ESR and Z vs. FREQUENCY



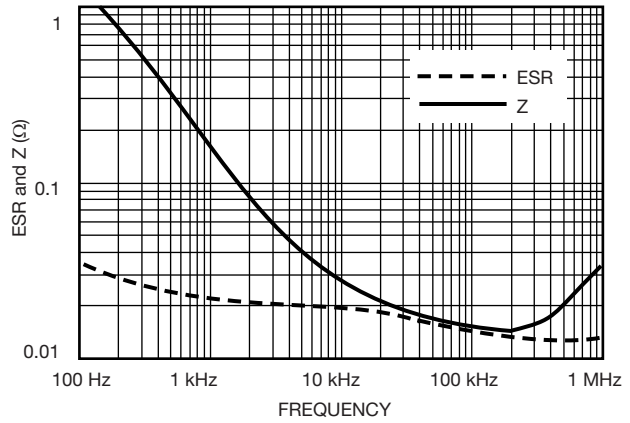
330 µF - 10 V "E" CASE SIZE ESR and Z vs. FREQUENCY



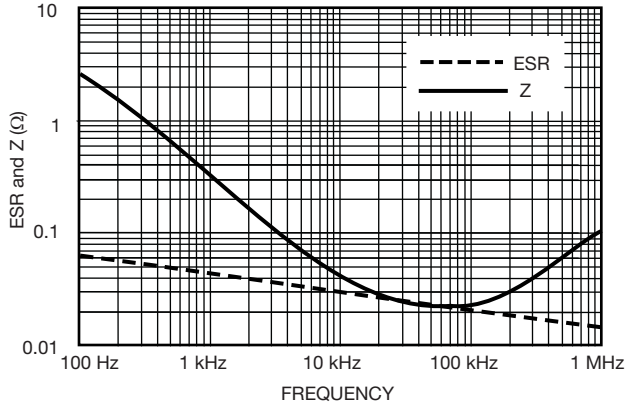
330 µF - 6.3 V "V" CASE SIZE and Z vs. FREQUENCY



1000 µF - 6.3 V "R" CASE SIZE ESR and Z vs. FREQUENCY



470 µF - 4 V "V" CASE SIZE ESR and Z vs. FREQUENCY



For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

POWER DISSIPATION	
CASE CODE	**MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR**
V	0.141
D	0.215
E	0.240
R, F, M	0.250
Z	0.265
H	0.265

STANDARD PACKAGING QUANTITY	
CASE CODE	**UNITS PER 7" REEL**
V	1000
D	400
E	500
R	300
F	250
Z	250
M	200
H	200

PRODUCT INFORMATION	
Conformal Coated Guide	www.vishay.com/doc?40150
Pad Dimensions	
Packaging Dimensions	
Moisture Sensitivity	www.vishay.com/doc?40135
SELECTOR GUIDES	
Solid Tantalum Selector Guide	www.vishay.com/doc?49053
FAQ	
Frequently Asked Questions	www.vishay.com/doc?40110

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

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.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.