



Wet Tantalum Capacitor, Button, All-Tantalum Case, -55 °C to +125 °C Operation



INTRODUCTION

This conveniently-packaged polar button unit employs a non-solid electrolyte, and has a sintered tantalum anode. The anode is produced from a high capacitance powder resulting in a capacitor of small size and large CV product.

The cathode is also of tantalum and overcomes the restrictions of a silver cathode system in allowing a high ripple current rating and application of a 3 V reverse potential. This all-tantalum construction results in a non-catastrophic wear-out mechanism.

The seal is a high efficient system comprising a PTFE gasket clamped between coined plates of tantalum by a work-hardened nickel ring. This type of seal, common to all button styles, is largely responsible for their long life and high reliability and severe military environments.

The CA2 series ranges are available in several termination options. These include a mounting stud and pins for circuit mounting.

APPLICATIONS

The CA2 series are designed for use in general military and professional applications. For example: Power supply "smoothing" filter networks, switching, by-pass, timer functions and where reverse potentials occur.

WEIGHT

The CA2 style with a stud termination weighs approximately 18.1 g, including the nut. The CA2 styles, which has a printed circuit board mounting, weighs approximately 17.3 g.

FEATURES

- All-Tantalum electrodes eliminate silver migration
- Withstands high ripple current
- Long life reliability
- Reverse voltage capability
- Instant use after long storage

PERFORMANCE CHARACTERISTICS

Operating Temperature: -55 °C to +125 °C

Voltage Range: 6 V_{DC} to 125 V_{DC}

Capacitance Range: 47 µF to 1800 µF

SPECIFICATIONS

Environmental classification: 55/125/56

Vibration: 10 Hz to 2000 Hz, 0.75 mm or 98 m/s², 15 h

Bump: 390 m/s², 4000 bumps

Shock: 981 m/s²

Acceleration: 981 m/s²

Low air pressure: 1 kPa

APPROVALS

These capacitors are available released to:

- BS CECC 30 202 002

RIPPLE CURRENT CAPABILITY

The maximum allowable ripple current is 1 A_{RMS} up to 85 °C and 750 mA_{RMS} to 125 °C. These values apply under normal cooling conditions and are irrespective of frequency or waveform. The algebraic sum of the AC peak and DC voltages must not exceed the forward or reverse voltage ratings at the relevant temperature.

At certain frequency/temperature/DC voltage combinations higher levels of ripple current may be used. The applications department should be contacted before the above levels are exceeded.

REVERSE VOLTAGE CAPABILITY

The CA2 series employ tantalum cathodes which allow the continuous application of reverse potentials not exceeding 3 V over the whole temperature range.

SURGE VOLTAGE

The surge voltage capability is 115 % of the voltage rating at the relevant temperature.

TEMPERATURE RANGE

The capacitor is designed for operation between -55 °C and +125 °C, with linear voltage derating above +85 °C to 66 % of the rated voltage at +125 °C.

CAPACITANCE TOLERANCE

The standard capacitance tolerance is ± 20 % although special tolerances are available by arrangement.



APPLICATION INFORMATION

Capacitors may be operated at less than the rated voltage, resulting in significantly reduced leakage current values.

In timing circuits, or other applications where the device is subjected only to a DC voltage, the ballistic or DC capacitance will be somewhat larger than measured at 50 Hz.

The parametric information must necessarily be brief, although additional comprehensive data is available on request, and the tests tailored to customers' requirements can be made.

RELIABILITY

All capacitors are subjected to burn-in. This is to remove infant mortalities and ensure reliability. The capacitor lifetime is enhanced when the unit is subjected to a reduced ripple current, a low ambient temperature, and is externally cooled. The use of a heat sink is recommended.

ORDERING PROCEDURE

Example: CA2C (220 μ F, 50 V_{DC})

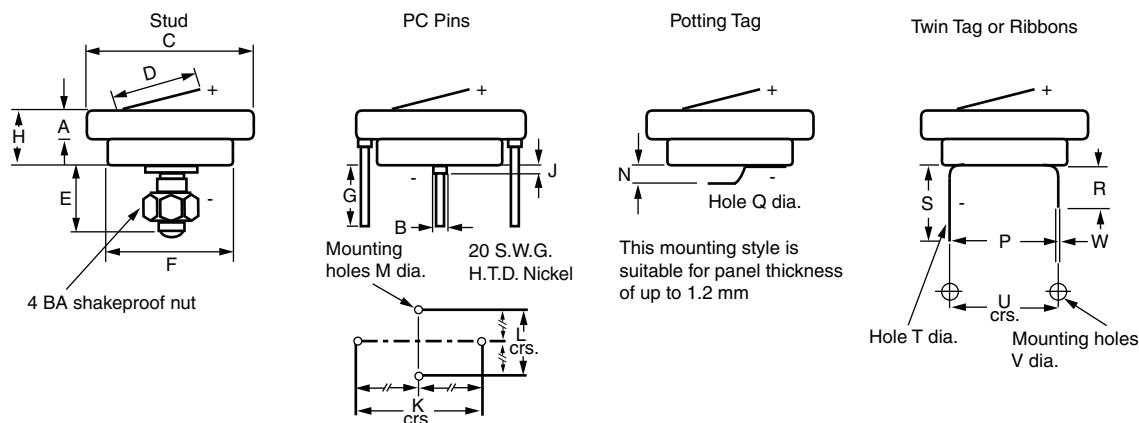
Vishay Part Number: CA2C227M050P

ORDERING INFORMATION

CA2	C	227	M	100	A	-
MODEL	CASE CODE	CAPACITANCE	TOLERANCE	VOLTAGE	TERMINATION AND PACKAGING	
	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	M = 20 % (std) K = 10 % (special order)	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V)	A = Stud B = PC mount pins C = Twin tag or ribbon D = Panel or potting tag	Blank = Standard (tin/lead coating)

DIMENSIONS in inches [millimeters]

The CA2 series is comprised of two case sizes, differing in depth of cup only. The case size dimensions are shown in the table. Four mounting styles are available in both case sizes.



CASE CODE	A	H max.	C	D	E	F	G	B	J	K crs.	L crs.	M dia.	N nom.	P	Q dia.	R	S	T dia.	U crs.	V dia.	W nom.
C	3.6 [0.142]	8.5 ⁽¹⁾ [0.335]	21.8 [0.858]	8.4 ⁽²⁾ [0.331]	8.4	16.2	8.4	1.8	0.8	20.3	10.2	1.1	2.4	13.1	1.0	7.5	10.7	1.6	13.0	3.5	0.30

Notes

- All dimensions are in mm, and are maximum unless otherwise stated
- (1) For B case size, case height is 6.7 mm
- (2) Width of anode tag 4.22 mm max.



STANDARD RATINGS										
VISHAY PART NUMBERS	CASE CODE	CAPACITANCE AT 50 Hz (μF)	DISSIPATION FACTOR AT 50 Hz (%)		MAX. ESR AT 20 °C 100 kHz (Ω)	MAX. ESR AT -55 °C 100 kHz (Ω)	MAX. DC AT 20 °C (μA)	MAX. DC AT 125 °C (μA)	ΔC AT 50 Hz (%)	
			20 °C	125 °C					-55 °C	125 °C
6 V _{DC} AT 85 °C; 4 V _{DC} AT 125 °C										
CA2C128(1)006(2)	C	1200	75.0	95.0	1.0	5.0	15.0	50	-80	25.0
8 V _{DC} AT 85 °C; 5.3 V _{DC} AT 125 °C										
CA2C108(1)008(2)	C	1000	65.0	85.0	1.0	5.0	10.0	50	-75	25.0
10 V _{DC} AT 85 °C; 6.6 V _{DC} AT 125 °C										
CA2C827(1)010(2)	C	820	55.0	70.0	1.0	5.0	10.0	50	-70	20.0
15 V _{DC} AT 85 °C; 10 V _{DC} AT 125 °C										
CA2C687(1)015(2)	C	680	45.0	55.0	1.0	5.0	8.0	50	-65	20.0
20 V _{DC} AT 85 °C; 13.4 V _{DC} AT 125 °C										
CA2C397(1)020(2)	C	390	25.0	30.0	1.0	5.0	5.0	50	-50	15.0
CA2C477(1)020(2)	C	470	30.0	40.0	1.0	5.0	5.0	50	-55	15.0
CA2C567(1)020(2)	C	560	35.0	45.0	1.0	5.0	5.0	50	-60	15.0
30 V _{DC} AT 85 °C; 20 V _{DC} AT 125 °C										
CA2C277(1)030(2)	C	270	17.0	20.0	1.0	5.0	5.0	50	-45	10.0
CA2C337(1)030(2)	C	330	20.0	25.0	1.0	5.0	5.0	50	-50	10.0
50 V _{DC} AT 85 °C; 33.3 V _{DC} AT 125 °C										
CA2C157(1)050(2)	C	150	9.5	12.0	1.0	5.0	3.0	50	-30	10.0
CA2C187(1)050(2)	C	180	11.5	15.0	1.0	5.0	3.0	50	-35	10.0
CA2C227(1)050(2)	C	220	14.0	18.0	1.0	5.0	3.0	50	-40	10.0
75 V _{DC} AT 85 °C; 50 V _{DC} AT 125 °C										
CA2C686(1)075(2)	C	68	5.0	6.5	1.0	5.0	3.0	50	-15.0	7.5
CA2C826(1)075(2)	C	82	5.5	7.0	1.0	5.0	3.0	50	-17.5	7.5
CA2C107(1)075(2)	C	100	7.0	9.0	1.0	5.0	3.0	50	-20	7.5
CA2C127(1)075(2)	C	120	7.5	10.0	1.0	5.0	3.0	50	-25	7.5
100 V _{DC} AT 85 °C; 66.7 V _{DC} AT 125 °C										
CA2C566(1)100(2)	C	56	3.5	4.5	1.0	5.0	3.0	50	-12.5	7.5
125 V _{DC} AT 85 °C; 83.3 V _{DC} AT 125 °C										
CA2C476(1)125(2)	C	47	3.0	4.0	1.0	5.0	3.0	50	-10.0	7.5

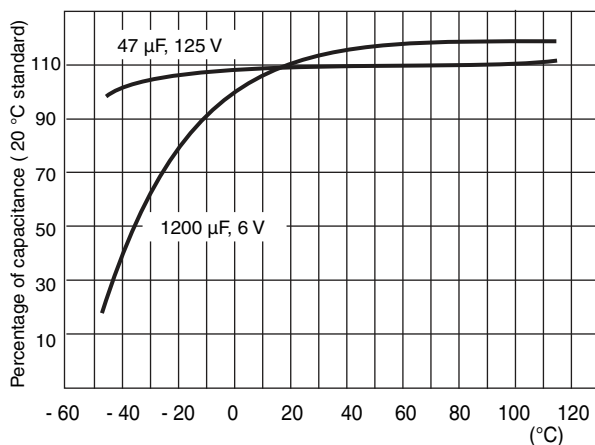
Note

- Part number definitions:
 - (1) Capacitance tolerance: M= 20 % standard, K = 10 % special order
 - (2) Termination type: A = Stud or bolt, B = Pins for PCB, C = Twin tags or ribbons, D = Potting tag

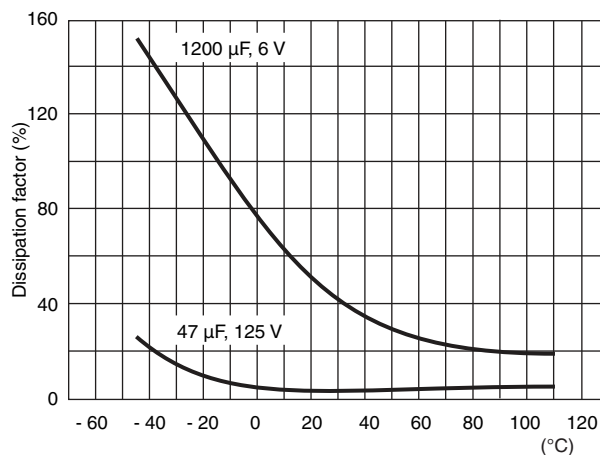


PERFORMANCE CURVES

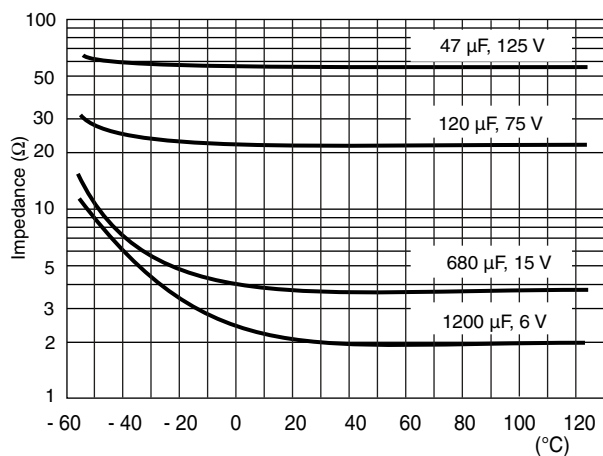
Capacitance/temperature at 50 Hz



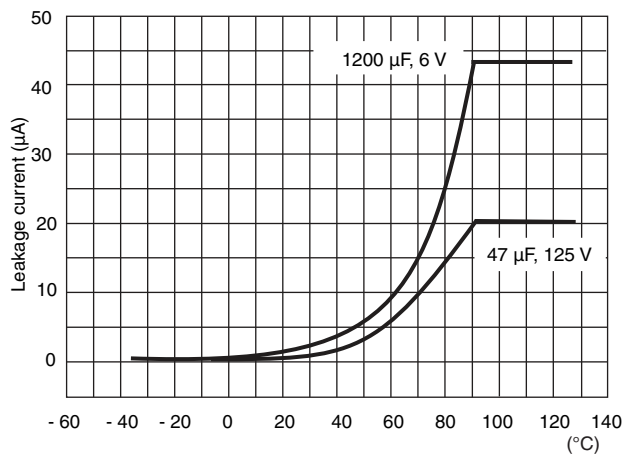
Dissipation factor/temperature at 50 Hz



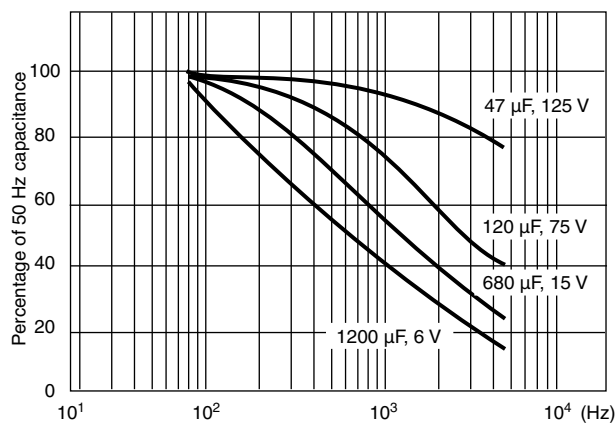
Impedance/temperature at 50 Hz



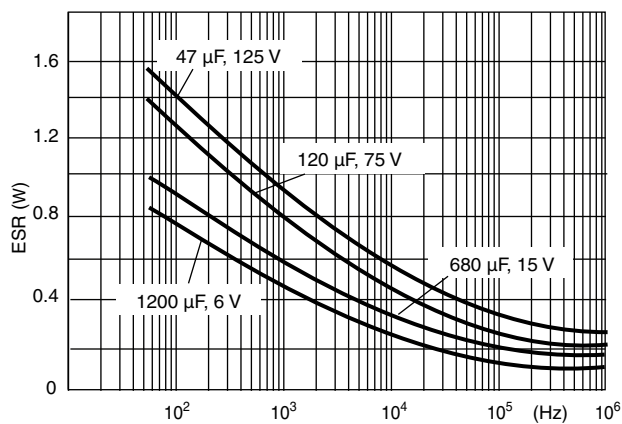
Leakage current/temperature at maximum voltage



Capacitance/frequency at 20 °C

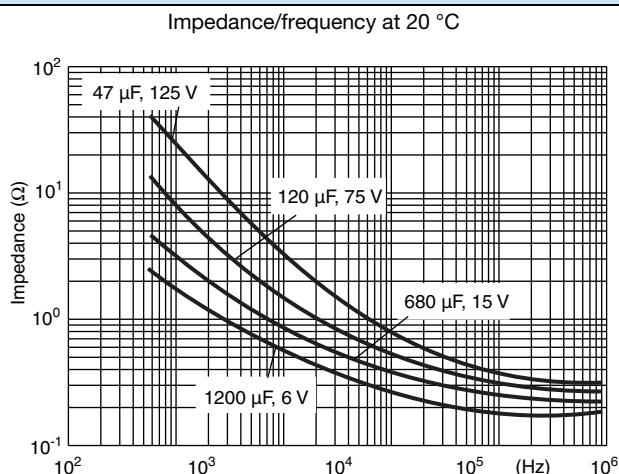


ESR/frequency at 20 °C





PERFORMANCE CURVES



Note

- All performance curves are provided from historic Arcotronics style CA/CAE datasheet information

CROSS REFERENCE

VISHAY PART NUMBER	ARCOTRONICS PART NUMBER	NATO PART NUMBER
CA		
CA2C476M125A	402/1/50157/003	5910-99017-2755
CA2C566M100A	402/1/50157/004	5910-99017-2754
CA2C686M075A	402/1/50157/005	5910-99017-2750
CA2C826M075A	402/1/50157/006	5910-99017-2751
CA2C107M075A	402/1/50157/007	5910-99017-2752
CA2C127M075A	402/1/50157/008	5910-99017-2753
CA2C157M050A	402/1/50157/009	5910-99017-2747
CA2C187M050A	402/1/50157/010	5910-99017-2748
CA2C227M050A	402/1/50157/011	5910-99017-2749
CA2C277M030A	402/1/50157/012	5910-99017-2745
CA2C337M030A	402/1/50157/013	5910-99017-2746
CA2C397M020A	402/1/50157/014	5910-99017-2742
CA2C477M020A	402/1/50157/015	5910-99017-2743
CA2C567M020A	402/1/50157/016	5910-99017-2744
CA2C687M015A	402/1/50157/017	5910-99017-2741
CA2C827M010A	402/1/50157/018	5910-99017-2740
CA2C108M008A	402/1/50157/019	5910-99017-2739
CA2C128M006A	402/1/50157/020	5910-99017-2738
CAPC		
CA2C476M125B	402/1/50158/003	5910-99017-2773
CA2C566M100B	402/1/50158/004	5910-99017-2772
CA2C686M075B	402/1/50158/005	5910-99017-2756
CA2C826M075B	402/1/50158/006	5910-99017-2769
CA2C107M075B	402/1/50158/007	5910-99017-2770
CA2C127M075B	402/1/50158/008	5910-99017-2771
CA2C157M050B	402/1/50158/009	5910-99017-2765
CA2C187M050B	402/1/50158/010	5910-99017-2766
CA2C227M050B	402/1/50158/011	5910-99017-2767
CA2C277M030B	402/1/50158/012	5910-99017-2763
CA2C337M030B	402/1/50158/013	5910-99017-2764
CA2C397M020B	402/1/50158/014	5910-99017-2760
CA2C477M020B	402/1/50158/015	5910-99017-2761
CA2C567M020B	402/1/50158/016	5910-99017-2762
CA2C687M015B	402/1/50158/017	5910-99017-2759
CA2C827M010B	402/1/50158/018	5910-99017-2758
CA2C108M008B	402/1/50158/019	5910-99017-2757
CA2C128M006B	402/1/50158/020	5910-99017-2756



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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Vishay:](#)

[CA2C476M125A](#)