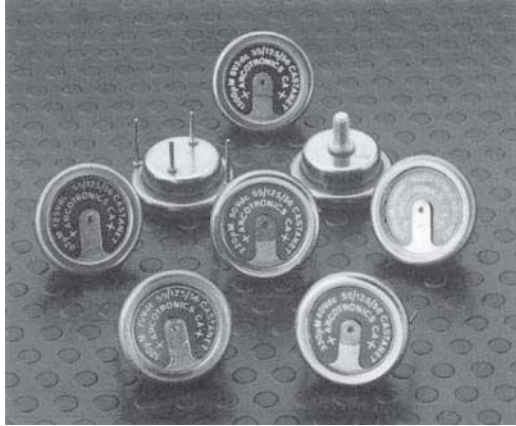


## Wet Tantalum Capacitor, Button, All-Tantalum Case, - 55 °C to + 125 °C Operation



### INTRODUCTION

The design employs a non-solid electrolyte and a sintered tantalum anode.

The cathode is also of tantalum and overcomes the restriction of the 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 is common to all button styles it is largely responsible for their long life and high reliability and severe military environment.

### APPLICATIONS

The CS2 series are designed as a direct replacement for the obsolete "A" series, where there is no standard CA unit at the required capacitance, and voltage, or when the standard CA unit (8.5 mm) is not acceptable.

It should be noted that the upper category temperature of the CS2 unit is 125 °C for the "A" unit.

### WEIGHT

The approximate weights (in grams) for the CS2 capacitors is 14.5 g.

### FEATURES

- All-Tantalum electrodes eliminate silver migration
- Withstands high ripple current
- Long life reliability
- Reverse voltage capability
- Replacement for "A" series range of silver cased buttons
- Mounting: Through-hole

### PERFORMANCE CHARACTERISTICS

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

**Voltage Range:** 3 V<sub>DC</sub> to 70 V<sub>DC</sub>

**Capacitance Range:** 50 µF to 750 µF

### SPECIFICATIONS

**Environmental classification:** 55/125/56

**Vibration:** 10 Hz to 2000 Hz, 0.75 mm or 98 m/s<sup>2</sup>, 15 h

**Bump:** 390 m/s<sup>2</sup>, 4000 bumps

**Shock:** 981 m/s<sup>2</sup>

**Acceleration:** 981 m/s<sup>2</sup>

**Low air pressure:** 1 kPa

### REVERSE VOLTAGE CAPABILITY

The CS2 series employs 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.

**ORDERING PROCEDURE**

Example: CS2C (220  $\mu$ F, 50 V<sub>DC</sub>)

Vishay Part Number: CS2C227M050P

ORDERING INFORMATION						
CS2	C	227	M	050	P	-
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 millimeters

A	B max.	C	D	E	F	G	H	J	K crs.	L crs.	M dia.	N nom.	P	Q dia.	R	S	T dia.	U crs.	V dia.	W nom.
3.6	6.7	21.8	8.4 <sup>(1)</sup>	8.1	16.2	8.4	1.8	0.8	20.3	10.2	1.1	2.4	12.9	1.0	6.5	9.7	1.6	13.0	3.5	0.30

**Notes**

- All dimensions are in mm, and are maximum unless otherwise stated
- <sup>(1)</sup> 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 25 °C 100 kHz (Ω)	MAX. ESR AT - 55 °C 100 kHz (Ω)	MAX. DCL AT 25 °C (μA)	MAX. DCL AT 125 °C (μA)	ΔC AT 50 Hz (%)	
			20 °C	125 °C					- 55 °C	125 °C
70 V <sub>DC</sub> AT 85 °C; 54 V <sub>DC</sub> AT 125 °C										
CS2B506(1)070(2)	B	50	5.0	-	1.0	5.0	3.0	50	10	-
30 V <sub>DC</sub> AT 85 °C; 23 V <sub>DC</sub> AT 125 °C										
CS2B147(1)030(2)	B	140	15	-	1.0	5.0	3.0	50	30	-
15 V <sub>DC</sub> AT 85 °C; 11.3 V <sub>DC</sub> AT 125 °C										
CS2B257(1)015(2)	B	250	25	-	1.0	5.0	3.0	50	50	-
6 V <sub>DC</sub> AT 85 °C; 4.6 V <sub>DC</sub> AT 125 °C										
CS2B507(1)006(2)	B	500	40	-	1.0	5.0	3.0	50	60	-
3 V <sub>DC</sub> AT 85 °C; 2.3 V <sub>DC</sub> AT 125 °C										
CS2B757(1)003(2)	B	750	50	-	1.0	5.0	3.0	50	75	-

**Notes**

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

CROSS REFERENCE	
VISHAY PART NUMBER	ARCOTRONICS PART NUMBER
<b>CS2 (STUD)</b>	
CS2B506M070A	402/1/50159/001
CS2B147M030A	402/1/50159/002
CS2B257M015A	402/1/50159/004
CS2B507M006A	402/1/50159/007
CS2B757M003A	402/1/50159/005
Contact marketing <sup>(1)</sup>	402/1/50159/012
<b>CS2 (PC PINS)</b>	
CS2B506M070B	402/1/50175/001
CS2B147M030B	402/1/50175/002
CS2B257M015B	402/1/50175/004
CS2B507M006B	402/1/50175/007
CS2B757M003B	402/1/50175/005
Contact marketing <sup>(1)</sup>	402/1/50175/012
<b>CS2 (TWIN TAGS)</b>	
CS2B506M070C	402/1/50183/001
CS2B147M030C	402/1/50183/002
CS2B257M015C	402/1/50183/004
CS2B507M006C	402/1/50183/007
CS2B757M003C	402/1/50183/005
Contact marketing <sup>(1)</sup>	402/1/50183/012
<b>CS2 (PANEL TAG)</b>	
CS2B506M070D	402/1/50169/001
CS2B147M030D	402/1/50169/002
CS2B257M015D	402/1/50169/004
CS2B507M006D	402/1/50169/007
CS2B757M003D	402/1/50169/005
Contact marketing <sup>(1)</sup>	402/1/50169/012

**Note**

<sup>(1)</sup> Special tolerance of + 20 % to 0 %



## 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.**