

Arcotronics

Castanet All-Tantalum Capacitors

Series CA and CAE

**47 μF - 1800 μF
125V - 6VDC
-55°C to +125°C**

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 volt reverse potential. This all-tantalum construction results in a non-catastrophic wear-out mechanism.

The seal is a highly 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 under severe military environments.

The CAE series is an extension of the CA series with the anode produced from selected powder of very high capacitance giving a higher CV product.

The CA and CAE ranges are stud mounted and are also available in printed circuit mounting form, designated CAPC and CAEPC respectively.

Applications

The CA and CAE 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.

Approval of the manufacturing facility

The Capacitor Unit is approved to manufacture non-solid electrolytic tantalum capacitors under BS 9000, CECC, and IECQ. The unit is registered on the Defence Contracts List as satisfying the requirements of DEF STAN 05-21.



- **All-Tantalum electrodes eliminate silver migration.**
- **Withstands high ripple current.**
- **Long life reliability.**
- **Reverse voltage capability.**
- **Approved to BS CECC 30 202 002.**
- **Instant use after long storage.**

Ripple current capability

The maximum allowable ripple current is 1 A r.m.s. up to 85°C, and 750 mA r.m.s. to 125°C. These values apply under normal cooling conditions and are irrespective of frequency or waveform. The algebraic sum of the a.c. peak and d.c. 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 CA and CAE series employs tantalum cathodes which allow the continuous application of reverse potentials not exceeding 3V over the whole temperature range.

Specification

These capacitors are BS 9000 approved, and are available released to BS CECC 30 202 002.

Alternatively, capacitors can be supplied to any of the following specifications:

DEF STAN 59-44 (Part 3) section 2.
Arcotronics Specification 402/SD/180. DQAB.
MIL-C-83500/1A for the CA and CAPC devices only.

This device is included in the German QPL, the certificate numbers being F97-80 (CA and CAE style) and F98-80 (CAPC and CAEPC style). It is also included in the French and Belgium QPL.

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The BS severities met by this range :-

Environmental classification 55/125/56
 Rated temperature 85°C
 Vibration: 10-2000 Hz, 0.75mm or 98m/s², 15h
 Bump: 390m/s², 4000 bumps
 Shock: 981 m/s²
 Acceleration: 981 m/s²
 Low Air Pressure: 1kPa.

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.

Weight

The CA and CAE style has a stud mounting, and weighs approximately 18.1 grams, including the nut. The CAPC and CAEPC style, which has a printed circuit board mounting, weighs approximately 17.3 grams.

Notes on measurements

Capacitance and dissipation factor are measured at 50 Hz on components released to BS, DEF STAN and the Arcotronic Specification. The parametric limits listed below relate to these specifications.

MIL capacitors are measured at 120 Hz, this information being available on request.

The leakage current values quoted are measured after the application of the full working voltage for 3 minutes. The performance curves are drawn for typical parametric values. The maximum allowable values are detailed in the relevant specification.

Vibration

It is recommended that where high vibration levels are likely to be experienced the base insulator disc should be fitted whenever Printed Circuit Mounting styles are used. Arcotronics Part No. 402/2/50167/401 see Publication No. 3005.

Ordering procedure

Example CAPC (220 µF, 50V)
 Arcotronics part Number 402/1/50158/011
 NATO Stock Number 5910-99-017-2767

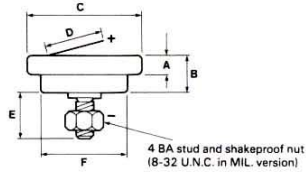
Arcotronics Part Numbers, NATO Stock Numbers and Parametric Limits

Capacitance at 50 Hz (µF)	Rated Voltage (85°C)	Category Voltage (125°C)	Dissipation Factor at 50 Hz (%)		Impedance at 100 KHz (Ω)		Leakage Current (µA)		ΔC at 50 Hz (%)		PART Nos and NATO STOCK Nos			
			20°C	125°C	20°C	-55°C	20°C	125°C	-55°C	125°C	CA		CAPC	
			PART No *		N.S.N		PART No *		N.S.N					
47	125	83.3	3.0	4.0	1.0	5.0	3.0	50	10.0	7.5	003	2755	003	2773
56	100	66.7	3.5	4.5	1.0	5.0	3.0	50	12.5	7.5	004	2754	004	2772
68	75	50.0	5.0	6.5	1.0	5.0	3.0	50	15.0	7.5	005	2750	005	2768
82	75	50.0	5.5	7.0	1.0	5.0	3.0	50	17.5	7.5	006	2751	006	2769
100	75	50.0	7.0	9.0	1.0	5.0	3.0	50	20	7.5	007	2752	007	2770
120	75	50.0	7.5	10.0	1.0	5.0	3.0	50	25	7.5	008	2753	008	2771
150	50	33.3	9.5	12.0	1.0	5.0	3.0	50	30	10.0	009	2747	009	2765
180	50	33.3	11.5	15.0	1.0	5.0	3.0	50	35	10.0	010	2748	010	2766
220	50	33.3	14.0	18.0	1.0	5.0	3.0	50	40	10.0	011	2749	011	2767
270	30	20.0	17.0	20	1.0	5.0	5.0	50	45	10.0	012	2745	012	2763
330	30	20.0	20	25	1.0	5.0	5.0	50	50	10.0	013	2746	013	2764
390	20	13.4	25	30	1.0	5.0	5.0	50	50	15.0	014	2742	014	2760
470	20	13.4	30	40	1.0	5.0	5.0	50	55	15.0	015	2743	015	2761
560	20	13.4	35	45	1.0	5.0	5.0	50	60	15.0	016	2744	016	2762
680	15	10.0	45	55	1.0	5.0	8.0	50	65	20	017	2741	017	2759
820	10	6.6	55	70	1.0	5.0	10.0	50	70	20	018	2740	018	2758
1000	8	5.3	65	85	1.0	5.0	10.0	50	75	25	019	2739	019	2757
1200	6	4.0	75	95	1.0	5.0	15.0	50	80	25	020	2738	020	2756

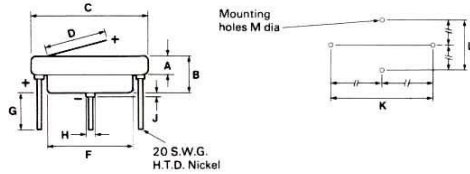
Capacitance at 50 Hz (µF)	Rated Voltage (85°C)	Category Voltage (125°C)	Dissipation Factor at 50 Hz (%)		Impedance at 100 KHz (Ω)		Leakage Current (µA)		ΔC at 50 Hz (%)		PART Nos and NATO STOCK Nos			
			20°C	125°C	20°C	-55°C	20°C	125°C	-55°C	125°C	CAE		CAEPC	
			PART No *		N.S.N		PART No *		N.S.N					
62	125	83.3	7.0	7.0	1	15	4	50	20	10	050		050	
100	100	66.7	7.5	7.5	1	15	4	50	22	10	051		051	
120	100	66.7	9.0	9.0	1	15	4	50	28	10	052		052	
150	75	50.0	11.0	11.0	1	15	4	50	35	12.5	053		053	
180	75	50.0	13.0	13.0	1	15	4	50	40	12.5	054		054	
220	63	40.0	15.0	15.0	1	15	4	50	45	12.5	055		055	
270	40	25.0	18.0	18.0	1	15	5	50	50	12.5	056		056	
330	40	25.0	22.0	22.0	1	15	5	50	50	12.5	057	To be allocated	057	To be allocated
390	40	25.0	30.0	30.0	1	15	5	50	55	20	058		058	
470	25	16.0	35.0	35.0	1	15	5	50	60	20	059		059	
560	25	16.0	40.0	40.0	1	15	5	50	65	20	060		060	
680	16	10.0	45.0	45.0	1	15	8	50	70	25	061		061	
820	16	10.0	60.0	60.0	1	15	10	50	75	25	062		062	
1000	10	6.6	65.0	65.0	1	15	10	50	80	30	063		063	
1200	10	6.6	75.0	75.0	1	15	15	50	80	30	064		064	
1500	6.3	4.0	80.0	80.0	1	15	15	50	80	30	065		065	
1800	6.3	4.0	85.0	85.0	1	15	15	50	80	30	066		066	

* Note: Part numbers may be shown as 402/8/- . Numbers 402/8/- and 402/1/- are interchangeable. 402/8/- exists for historic reasons only.

Dimensions for CA and CAE styles



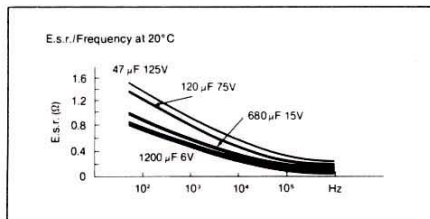
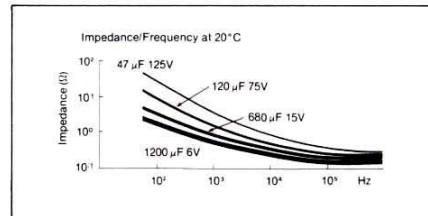
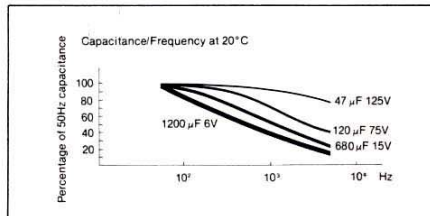
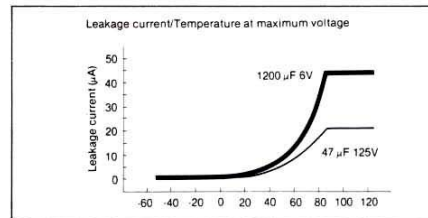
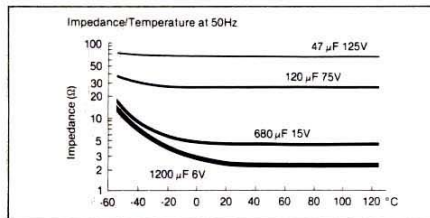
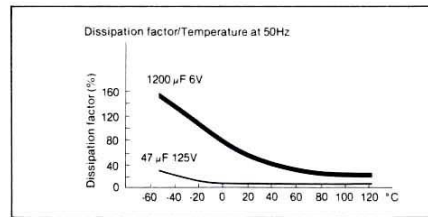
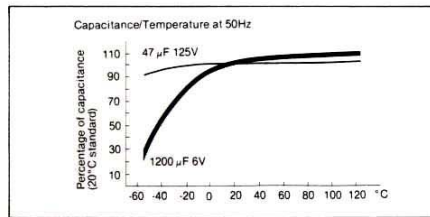
Dimensions for CAPC and CAEPC styles



A max	B max	C max	D max	E max	F max	G min	H max	J max	K crs	L crs	M dia
3.6	8.5	21.8	8.4	8.4	16.2	5.8	1.8	0.8	20.3 (0.800")	10.2 (0.400")	1.1

All dimensions are in millimetres

Performance curves CA & CAPC Series



Reliability

All capacitors are subjected to burn-in. This is to remove infant mortalities and ensure reliability.

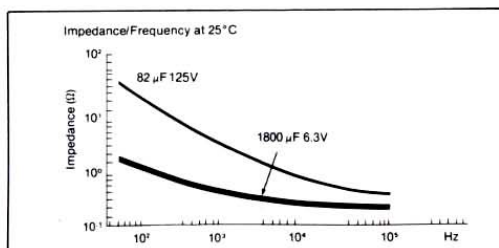
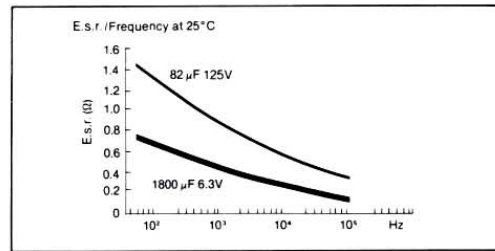
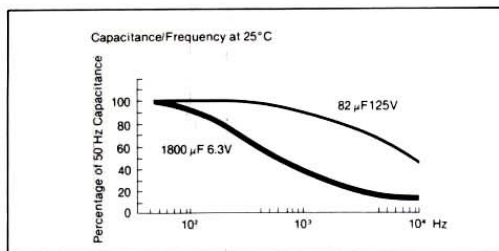
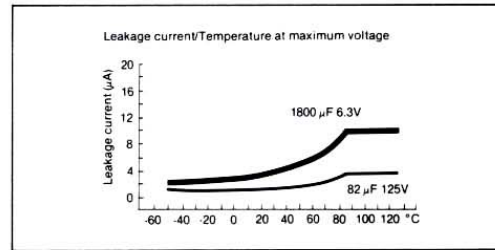
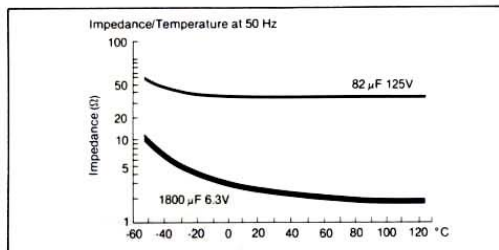
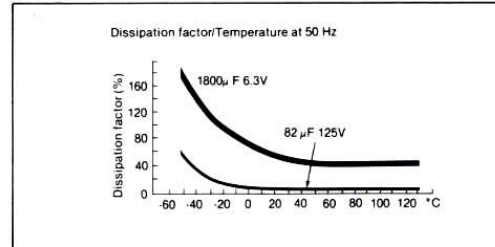
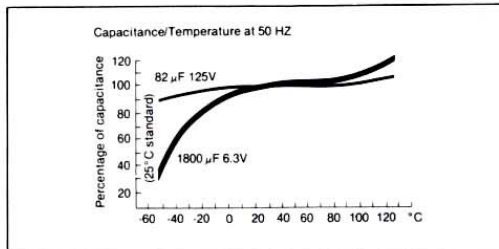
The capacitor lifetime is enhanced when the unit is subjected to a reduced ripple current, a low ambient temperature, and is externally cooled.

Safety aspects

These capacitors must be used within the stated limits, any deviation must be agreed with the manufacturer.

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Performance curves CAE & CAEPC Series



Note: Other forms of mounting e.g. tag mounting are available on request.

Applications 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 d.c. voltage, the ballistic or d.c. capacitance will be somewhat larger than that measured at 50 Hz.

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



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