

BRITISH STANDARD INSTITUTION
2 PARK STREET, LONDON W1A 2BS

Specification available from:-

AS SHOWN IN PD 9002, CECC 00 200 AND
ARCOTRONICS LIMITED
CASTANET CAPACITOR DIVISION
WOODBURCOTE TRADING ESTATE
BURCOTE ROAD TOWCESTER
NORTHAMPTONSHIRE NN12 7LX

BS CECC 30 202 002
ISSUE 2 NOVEMBER 1986

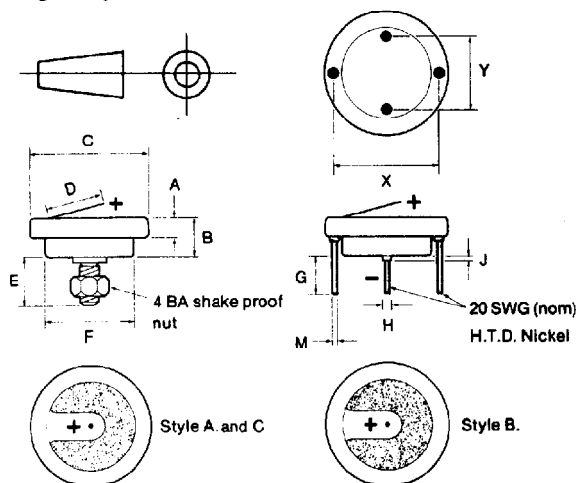


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Electronic Components of Assessed Quality
Detail Specification in Accordance with
BS E 9070 : 1975 and BS E 9073 : 1976
CECC 30 000 1975 and CECC 30 200 1975

MANUFACTURERS TYPE NUMBER
CA and CAE Series — Style A. and C.
Mounting Stud and Solder Tag
Terminations
CAPC and CAEPC Series — Style B.
Printed Circuit Board Mounting
See PD 9002 and CECC 00 200
For ordering information see Clause 6.

Outline and Dimensions
First Angle Projection



For dimensions see table 1 below.
For marking information see Clause 5.

Fixed Capacitors
Tantalum Electrolytic
Tantalum Porous Anode and
Cathode
Polar
Non Solid Electrolyte
Button Style
Uninsulated
Metal Casing

*Complies with the minimum
requirements of Tables 2 & 3 of
BS 9073 : 1976. Plus Additional
Assessment see Table 3 of the
specification*

Table 1. Dimensions (In millimetres)

A max	B max	C max	D max	E max	F max	G min	H max	J max	M dia max	X crs	Y crs
3.6	8.5	21.8	8.4	8.4 11.5*	16.3	5.8	1.8	0.8	1.1	20.3 ± 0.2	10.2 ± 0.2

* Style C only

- Note 1. The complete range of capacitance/voltage values is given in TABLE 2A.
2. This detail specification supercedes detail specification BS 9073 F003 & F004.
3. Additional mounting information and polarity connection information is shown in Appendix B.

Refer to Qualified products List PD 9002 and/or CECC 00200 for details
of manufacturers approved to this specification.

2. Specified method of mounting for vibration, and bump testing.

Normal mounting is by stud for the CA & CAE series (Style A & C) and by pins for the printed circuit series CAPC & CAEPC (Style B), with the seating plane coincident with the top surface of the printed circuit board.
See appendix B.

In addition for vibration and bump and shock testing the component shall be clamped by the body.

3. RATINGS, CHARACTERISTICS

Capacitance Range :	47 uF to 1800 uF. See Table 2A
Capacitance Tolerance:	+20%, +10%, +5%
Rated Voltage :	6 VDC to 125 VDC see Tables 2A and 6.
Category Voltage:	4 VDC to 83 VDC see Tables 2A and 6
Rated Temperature:	85°C
Upper Category Temperature:	125°C
Lower Category Temperature :	-55°C
Leakage Current:	--- see Table 2B
Tangent of loss angle:	--- see Table 2B
Impedance :	--- see Table 2B
Climatic Category :	55/125/56

Note: The derating above 85°C is linear to a maximum of 66.7% of the rated voltage at 125°C.

TABLE 2A.

CAPACITANCE AND VOLTAGE VALUES

	$U_R^{(1)(4)}$	<u>6</u>	<u>6.3</u>	8	<u>10</u>	15	<u>16</u>	20	<u>25</u>	30	<u>40</u>	50	<u>63</u>	75	<u>100</u>	125
	$U_C^{(1)}$	4.0	4.0	5	6.3	10	10	13	16	20	25	33	40	50	63	83
Rated (μ F) Capacitance																
47	← (3)															X ⁽²⁾
56	←														X	
68	←													X		
82	←													X	← 0 ⁽²⁾	
100	←													X	0	
120	←													X	0	
150	←											X	← 0			
180	←											X	← 0			
220	←											X	0			
270	←								X	0						
330	←								X	0						
390	←							X	← 0							
470	←							X	0							
560	←							X	0							
680	←				X	0										
820	←				X	← 0										
1000	←		X	0												
1200	X ←		0													
1500	← 0															
1800	← 0															

Note : (1) U_R = rated voltage; U_C = category voltage(2) X denotes CA and CAPC values
0 denotes CAE and CAEPC values

(3) The capacitors may be used at voltages lower than their rated/category values, this is indicated by arrows.

(4) Preferred rated voltages are underlined.

TABLE 2B. CHARACTERISTICS AT
HIGH & LOW TEMPERATURES MAXIMUM VALUESNote: (1) X REPRESENTS CA AND CAPC VALUES
0 REPRESENTS CAE AND CAEPC VALUES

Capacitance μF (CR)	47	56	68	82	82	100	100	100	120	120	150	150	180	180	220	220	270	270	330	330	390	390	470	470	560	560	680	680	820	820	1000	1000	1200	1200	1500	1800
Rated Voltage (UR)	125	100	75	75	125	75	100	75	100	75	50	75	50	75	50	63	30	40	30	40	20	40	20	25	20	25	15	16	10	16	8	10	6	10	6.3	6.3
Category Voltage	83	63	50	50	83	50	63	50	63	50	33	50	33	50	33	40	20	25	20	25	13	25	13	16	13	16	10	10	6.3	10	5	6.3	4	6.3	4	4
Capacitance Change % at 50 Hz at 125°C	7.5	7.5	7.5	7.5	10	7.5	10	7.5	10	7.5	10	12.5	10	12.5	10	12.5	10	12.5	10	12.5	15	20	15	20	15	20	20	25	20	25	25	30	25	30	30	30
Capacitance Change % at 50 Hz at 85°C	4	4	4	4	5	4	5	4	5	4	5	7	5	7	5	7	5	7	5	7	8	10	8	10	8	10	10	13	10	13	13	15	15	15	15	
Capacitance Change % at 50 Hz at -55°C	10	12.5	15	17.5	20	20	22	25	28	30	35	35	40	40	45	45	50	50	50	50	55	55	60	60	65	65	70	70	75	75	80	80	80	80	80	
Tan δ % 50 Hz 20°C	3.0	3.5	5.0	5.5	7.0	7.0	7.5	7.5	9.0	9.5	11.0	11.5	13.0	14	15	17	18	20	22	25	30	30	35	35	40	45	45	55	60	65	65	75	75	80	85	
Tan δ % 50 Hz 125°C	4.0	4.5	6.5	7	7	9	8	10	9	12	11	15	13	18	15	20	18	25	22	30	30	40	40	35	45	40	55	70	60	85	65	95	75	80	85	
Tan δ % 50 Hz -55°C	72	88	90	110	145	130	165	144	187	192	225	225	255	280	300	310	340	344	365	355	387	372	400	380	430	398	470	440	515	530	600	650	770	865	1000	
Impedance (ohms) 100 Hz -55°C	70	60	55	50	55	45	53	40	50	38	49	36	46	33	43	32	40	30	38	29	36	28	35	27	34	26	33	25	32	24	31	24	30	28	24	
Leakage Current μA 20°C at rated voltage	3.0	3.0	3.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	8.0	10	10	10	10	15	15	15	15	
Leakage Current μA 85°C at rated voltage	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
Leakage Current μA 125°C at category voltage	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	
Series (I)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	

TABLE 3

BS CECC 30202 002
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The following characteristics are additional to or more severe than those required in the sectional specification.

<u>GROUP C1b</u>	Rapid change in temperature, test Na of IEC 68-2-14 but with 30 cycles, in place of the 3 mandatory cycles.
<u>Additional Test</u>	Rapid change of temperature, test Na of IEC 68-2-14 but with 300 cycles in place of the 3 mandatory cycles.
<u>GROUP C3(11)</u>	Endurance BS CECC 30 200 4.17 Continuation to 10000 hours. (For information only)
<u>GROUP C1</u>	Climatic Sequence, Low Air Pressure Test M of IEC 68-2-13 but at 1 kN/m ² for 30 minutes not 2 kN/m ² for 6 minutes.

4. RELATED DOCUMENTS

IEC 68. Basic Environmental Testing Procedures
 BS E9070 (BS CECC 30 000). Generic Specification
 BS E9073 (BS CECC 30 200). Sectional Specification
 BS 9000 General requirement for electronic components of assessed quality.
 PD 9002 BS 9000 Component Selection Guide
 CECC 00200 CECC Qualified Products List
 IEC 410. Sampling procedures and tables for inspection by attributes.

5. MARKING

The following information is to be marked on the capacitors:-

Polarity. Marking as in figure on front page.
 Rated capacitance in microfarads
 Rated Voltage
 Tolerance on rated capacitance; M = $\pm 20\%$; K = $\pm 10\%$; J = $\pm 5\%$
 Manufacturers type designation

The Date Code will be marked on the underside of the capacitor and will be a 6 character manufacturing date code.

Example : 6th Batch of the 5th Week of 1972 = 72 05 06

Additional characters will indicate the individual capacitor.

e.g. 72 05 06 12 indicates the serialization number on the 12th capacitor of the above batch.

Where voltage ratings which indicate a decimal point, are marked on the component, the decimal point will be replaced by a capital V.
 i.e. a component rated at 6.3 Volts will be coded 6V3.

The package containing the capacitors shall be marked with the above items plus the following:

Manufacturers name or trademark
 Climatic Category
 Indication of the type within the manufacturers type designation
 National or CECC number of the detail specification.

6. ORDERING INFORMATION

When ordering capacitors to this specification the following minimum information shall be given : -

- (a) Quantity
- (b) Manufacturers type number and style
- (c) BS CECC Specification Number, Issue Number, and Date
- (d) Capacitance value and selection tolerance
- (e) Rated Voltage
- (f) Modification Kit if required. See Note below.

Example: 100 off
Type CA 47 $\mu\text{F} \pm 20\%$ 125V Style A.
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Note - See Appendix A for details of Modification Kit for insulated mounting of stud units CA and CAE, style A.

7. QUALIFICATION APPROVAL AND QUALITY CONFORMANCE INSPECTION

- 1. For qualification approval test and quality conformance inspection the test schedule, severities and requirements given in BS CECC 30 200 shall apply.
- 2. In addition table 4, specifies the tests, severities and requirements.
- 3. Samples submitted to tests marked 'D' shall not be accepted for release under BSE 9000
- 4. The tests shall be performed in the order in which they appear in the schedule.