

BRITISH STANDARD INSTITUTION
2 PARK STREET, LONDON, W1A 2BS.

Specification available from:-

AS SHOWN IN PD 9002, CECC 00 200 AND



Wood Burcote Trading Estate
 Burcote Road, Towcester
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BS CECC 30 202 001
ISSUE 2. JANUARY 1984



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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

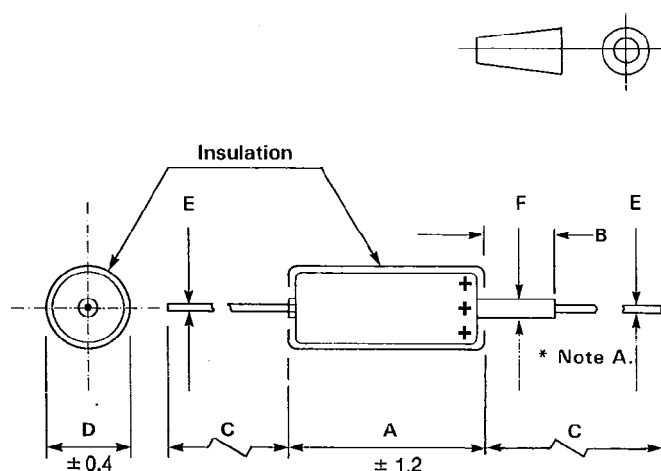
TH SERIES
 AXIAL WIRE TERMINATIONS

See PD 9002 and CECC 00 200

For ordering information see Clause 6

Outline and Dimensions

First Angle Projection



* Note A. The anode lead out stub must not be bent.

FIXED CAPACITORS
 TANTALUM ELECTROLYTIC
 GLASS TO METAL SEAL
 POROUS ANODE
 POLAR
 NON SOLID ELECTROLYTE
 TUBULAR METALLIC CASE
 INSULATED
 ALL TANTALUM CONSTRUCTION

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

All dimensions are in millimetres (see Table 1. below).

Marking information see Clause 5.

TABLE 1. DIMENSIONS (in millimetres)

Case Size	A	B max	C min	D	E		F max
					min	max	
T1	12.7	6.35	30	5.2	0.59	0.76	1.58
T2	17.5	6.35	30	7.6	0.59	0.76	1.58
T3	20.6	6.35	30	9.9	0.59	0.76	1.58
T4	28.2	6.35	30	9.9	0.59	0.76	1.58

Note 1: The complete range of capacitance/voltage values is given in Table 2A(1) and 2A(2)

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200: Qualified Products List.

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2. MOUNTING

The axial lead wires are intended for electrical connections and not for mechanical fixing. For vibration and bump testing the component shall be mounted by clamping the body and the terminations.

3. RATINGS, CHARACTERISTICS

Capacitance Range :	2.7 μ F to 2200 μ F	see Table 2A (1 - 2)
Capacitance Tolerance :	$\pm 20\%$, $\pm 10\%$, $\pm 5\%$	
Rated Voltage :	6 VDC to 125 VDC	see Table 2A and 6
Category Voltage :	4 VDC to 85 VDC	see Table 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	
Permissible Reverse Voltage:	3V	

Note:

The capacitance range has been enhanced to include extended range capacitors the addition of these items is included in Tables 2A and Table 2B where appropriate.

The range of values available in each voltage range is given in the Qualified Product List.

TABLE 2A (1)

BS CECC 30 202 001
ISSUE 2. JANUARY 1984PREFERRED RANGECASE SIZES RELATED TO CAPACITANCE AND VOLTAGE VALUES

Rated Voltage @ 85 °C	6.3	10	16	25	40	63	75	100	125
Category Voltage @ 125 °C	4	6.3	10	16	25	40	50	63	85
Rated (μF) Capacitance	Case Size								
2.7	←								T1*
3.3	←								T1
3.9	←								T1*
4.7	←							T1	
5.6	←							T1*	
6.8	←						T1		
8.2	←						T1*		
10.0	←					T1			
12.0	←					T1*			
15.0	←				T1	T1*	←		T2
18.0	←				T1*	←			T2*
22.0	←			T1	T1*	←		T2*	
27.0	←			T1*					
33.0	←		T1	T1*	←		T2	T2*/T3	
39.0	←			T1*	←			T2*/T3	T3
47.0	←	T1	T1*	←		T2	T2*	T3	T3
56.0	←		T1*	←		T2*	←	T3	
68.0	T1	T1*	←		T2	←	T2*/T3	T4/T3*	T4
82.0	←	T1*	←			T2*	T3	T4*	T4
100	←	T1*	←	T2	T2*	T3	T3*	T4	
120	T1*	←	T2	←	T2*	T3*	T4		
150	T1*	T2	←	T2*	T3	T4	T3*/T4*		
180	←	T2	←	T2*	←		T3*		
220	T2	←	T2*	T3	T4	T3*	T4*		
270	←		T2*	←	T3*	T4*			
330	←	T2*	T3	T4	T3*	T4*			
390	←	T2*	←	T4/T3*	T4*				
470	T2*	T3	T4	T3*	T4*				
560	T3/T2*	←	T4	T3*					
680	←	T4	T3*	T4*					
820	←	T4	T3*	T4*					
1000	T4	T3*	T4*						
1200	←	T3*	T4*						
1500	T3*	T4*							
1800	←	T4*							
2200	T4*								

Note:

1. T Notation indicates case size - see Table 1
2. Preferred rated voltages are underlined
3. U_R = Rated Voltage U_C = Category Voltage
4. The capacitors may be used at lower voltages this is indicated by the arrows.
5. * Indicates additions to the range in Issue 1 of this specification.

NON PREFERRED RANGE TO GIVE MIL-C CAPACITANCE AND VOLTAGE VALUES

CASE SIZES RELATED TO CAPACITANCE AND VOLTAGE VALUES

Rated Voltage @ 85 °C	6	8	10	15	25	30	50	60	75	100	125
Category Voltage @ 125 °C	4	5	7	10	15	20	30	40	50	65	85
Rated (µF) Capacitance	Case Size										
3.5	←								T1 x		
3.6	←										T1
4.0	←							T1 x			
5.0	←						T1 x				
8.0	←						T1 x				
8.2	←							T1			
9	←								T1 x		
10	←				T1 x	←	T1				
14	←										T2
15	←			T1 x	←	T1	←		T2 x		
18	←						T1 x				
20	←		T1 x	←				T2 x			
22	←						T1 x				
25	←	T1 x	←				T1 x	T2 x	←		T3
30	T1 x	←								T2 x/T3 x	
33	←			T1	←	T1 x					
39	←							T2			
40	←						T2 x	←		T3 x	
43	←				T1 x	←			T2 x	T3	
47	←			T1 x	←		T2				
50	←				T2 x	←		T3 x			
56	←	T1	←	T1 x	←				T2 x/T3	←	T4
60	←						T3 x				
68	T1	←					T2	←	T3		
70	←			T2 x							
82	←							T3	T2 x		
86	←									T4	
100	←		T2 x	←			T3 x	T2 x			
110	←								T4		
120	←	T1 x/T2 x	←	T2	T3 x	T2 x					
140	T2 x	←						T4			
150	←						T2 x/T3				
160	T1 x	←				T2 x	←	T4			
170	←			T3 x	←	T2 x					
180	←		T2	←	T3						
220	←	T2	←	T2 x	←			T3 x			
250	←		T3 x	←					T4 x		
270	T2	←		T2 x/T3	←			T3 x	T4 x		
290	←	T3 x	←	T2 x							
300	←		T2 x	←			T3 x/T4				
330	T3 x	←					T3 x	←	T4 x		
350	←		T2 x	←	T4		T3 x	T4 x			
390	←		T3	←			T3 x	T4 x			
430	←	T3/T2 x	←				T3 x	T4 x			
540	←			T4							
560	T2 x/T3	←					T4 x				
750	←		T4	T3 x							
850	←	T4	T3 x	T4 x	T4 x						
1200	T4	←		T4 x							
1500	T3 x										
2200	T4 x										

- Note:
1. T Notation indicates case size - see Table 1.
 2. U_R = Rated Voltage U_C = Category Voltage
 3. The capacitors may be used at lower voltages this is indicated by the arrows.
 4. x Indicates additions to the range in Issue 1 of this specification.

(1) MANUFACTURERS REFERENCE NO. +20 % 402/1/-	(3) CASE SIZE	CAPACIT- ANCE (μ F)	(CR) RATED VOLTS 85°C	(UR) CATEGORY VOLTS 125°C	MAX. CAPACITANCE CHANGE			TANGENT OF THE LOSS ANGLE % at 100 Hz			IMPEDANCE -55°C 100 Hz Ω	LEAKAGE CURRENT		(2) MAX. R.M.S. RIPPLE 85°C 40 kHz (mA)
					-55°C %	85°C %	125°C %	20°C	125°C	-55°C		25°C μ A	85 + 125°C μ A	
57611/017	T1	68	6.3	4	-40	14	16	15	15	120	60	1	2	960
57611/020	T1	120	6.3	4	-41	15	16	21	21	210	81	1.5	3	820
57611/021	T1	150	6.3	4	-42	16	16	34	34	300	80	2	9	820
57621/023	T2	220	6.3	4	-44	16	18	40	36	320	30	1	6.5	1370
57621/027	T2	470	6.3	4	-60	20	20	90	90	720	46	2	10	1281
57621/028	T2	560	6.3	4	-68	20	20	106	106	850	48	2	10	1255
57631/029	T3	560	6.3	4	-64	18	20	50	50	440	25	2	16	1900
57641/031	T4	1000	6.3	4	-80	25	25	72	68	576	22	3	14	2388
57641/033	T3	1500	6.3	4	-90	25	25	172	172	1375	36	5	20	1615
57641/035	T4	2200	6.3	4	-90	25	25	170	170	1360	22	6	24	2265
57612/015	T1	47	10	6.3	-36	14	16	13	13	104	100	1	2	855
57612/017	T1	68	10	6.3	-40	15	16	21	21	170	85	1.5	3	820
57612/018	T1	82	10	6.3	-40	16	16	25	25	200	84	2	6	820
57612/019	T1	100	10	6.3	-40	16	16	30	30	260	82	2	6	820
57622/021	T2	150	10	6.3	-32	14	16	30	28	240	45	1	7	1271
57622/022	T2	180	10	6.3	-35	14	16	30	30	264	40	1	7	1300
57622/025	T2	330	10	6.3	-54	17	18	65	65	520	52	2	10	1195
57622/026	T2	390	10	6.3	-60	19	20	74	74	592	54	2	10	1195
57632/027	T3	470	10	6.3	-65	18	20	44	44	384	25	2	15	1800
57642/029	T4	680	10	6.3	-80	25	25	46	42	368	20	3	16	2487
57642/030	T4	820	10	6.3	-80	25	25	57	53	456	22	3	16	2360
57632/031	T3	1000	10	6.3	-80	25	25	92	92	736	36	4	16	1720
57632/032	T3	1200	10	6.3	-80	25	25	137	137	1096	36	5	20	1720
57642/033	T4	1500	10	6.3	-88	30	30	114	114	912	23	7	25	2360
57642/034	T4	1800	10	6.3	-88	30	30	138	138	1104	24	7	25	2360
57613/013	T1	33	16	10	-28	14	16	10	10	80	90	1	2	820
57613/015	T1	47	16	10	-28	16	16	20	20	160	100	1.5	3	760
57613/016	T1	56	16	10	-28	16	16	22	22	176	100	1.5	3	760
57623/020	T2	120	16	10	-28	14	16	25	25	200	50	1	7	1230
57623/023	T2	220	16	10	-35	16	16	42	42	340	62	2	10	1215
57623/024	T2	270	16	10	-45	18	18	55	55	440	60	2	12	1215
57633/025	T3	330	16	10	-58	18	20	40	40	344	30	2	14	1760
57643/027	T4	470	16	10	-75	25	25	37	33	296	24	3	18	2100
57643/028	T4	560	16	10	-80	25	25	40	36	320	23	3	18	2300
57633/029	T3	680	16	10	-80	25	25	80	80	640	42	5	20	1582
57633/030	T3	820	16	10	-80	25	25	95	95	760	42	6	24	1582
57643/031	T4	1000	16	10	-82	25	25	92	92	736	25	8	32	2300
57643/032	T4	1200	16	10	-84	25	30	103	103	824	25	8	32	2300
57614/011	T1	22	25	16	-20	10	12	7	7	56	140	1	2	800
57614/012	T1	27	25	16	-20	12	12	11	11	94	140	1.5	3	715
57614/013	T1	33	25	16	-24	14	14	13	13	106	130	1.5	3	715
57614/014	T1	39	25	16	-28	16	16	16	16	128	120	2	9	715
57624/019	T2	100	25	16	-28	13	15	21	21	168	50	1	9	1215
57624/021	T2	150	25	16	-35	15	15	35	35	270	62	2	10	1130

NOTE (1) & (2) - SEE REFERENCE AT THE END OF TABLE 2B1.

3. SEE TABLE 1.

(1) MANUFACTURERS REFERENCE NO. +20% 402/1/-	(3) CASE SIZE	CAPACITANCE (μ F)	(C _R) RATED VOLTS 85°C	(U _R) CATEGORY VOLTS 125°C	MAX. CAPACITANCE CHANGE			TANGENT OF THE LOSS ANGLE % at 100 Hz			IMPEDANCE -55°C 100 Hz Ω	LEAKAGE CURRENT		(2) MAX R.M.S. RIPPLE 85°C 40 kHz (mA)
					-55°C %	85°C %	125°C %	20°C	125°C	-55°C		25°C μ A	85 + 125°C μ A	
57624/022	T2	180	25	16	-48	14	15	35	34	290	60	2	10	1130
57634/023	T3	220	25	16	-52	18	20	35	33	280	33	2	13	1614
57644/025	T4	330	25	16	-60	25	25	30	28	240	27	3	20	1862
57634/026	T3	390	25	16	-70	25	25	48	48	384	48	7	28	1396
57644/026	T4	390	25	16	-68	25	25	35	32	280	24	3	20	2025
57634/027	T3	470	25	16	-76	25	25	48	48	400	48	7	28	1398
57634/028	T3	560	25	16	-80	25	25	60	60	480	48	7	28	1398
57644/029	T4	680	25	16	-80	25	25	60	60	480	24	8	32	1939
57644/030	T4	820	25	16	-80	25	25	82	82	652	26	8	32	1862
57615/009	T1	15	40	25	-20	10	12	7	7	56	175	1	2	660
57615/010	T1	18	40	25	-20	12	12	10	10	80	200	1.5	4	580
57615/011	T1	22	40	25	-24	12	12	11	11	94	190	1.5	4	580
57625/017	T2	68	40	25	-24	13	15	15	15	120	60	1	8	1285
57625/019	T2	100	40	25	-40	15	15	25	25	190	60	2	10	1285
57625/020	T2	120	40	25	-32	15	15	30	30	220	62	2	12	1241
57635/021	T3	150	40	25	-48	14	15	23	23	184	35	2	12	1525
57645/023	T4	220	40	25	-58	23	23	23	22	184	27	3	22	1900
57635/024	T3	270	40	25	-60	25	25	37	37	344	52	7	28	1373
57635/025	T3	330	40	25	-65	25	25	43	43	368	52	8	32	1373
57645/026	T4	390	40	25	-75	25	25	43	43	344	30	8	32	1900
57645/027	T4	470	40	25	-80	25	25	45	45	360	30	9	36	1900
57616/007	T1	10	63	40	-20	8	9	4	4	32	250	1	2	572
57616/008	T1	12	63	40	-20	8	9	7	7	67	233	2	4	572
57616/009	T1	15	63	40	-22	9	9	8	8	72	220	2	9	562
57626/015	T2	47	63	40	-24	13	15	13	13	104	70	1	9	1150
57626/016	T2	56	63	40	-26	14	15	18	18	112	72	2	12	1150
57626/018	T2	82	63	40	-36	15	15	22	22	144	70	2	12	1150
57636/019	T3	100	63	40	-37	14	15	18	18	144	42	2	11	1420
57636/020	T3	120	63	40	-40	18	18	20	20	160	49	3	18	1420
57646/021	T4	150	63	40	-45	20	20	17	17	136	27	3	22	1865
57636/023	T3	220	63	40	-50	25	25	37	37	344	55	8	32	1341
57646/024	T4	270	63	40	-70	24	25	26	26	186	33	9	36	1850
57646/025	T4	330	63	40	-72	25	25	32	32	248	31	10	40	1850
57617/005	T1	6.8	75	50	-20	8	9	3	3	24	300	1	2	610
57617/006	T1	8.2	75	50	-22	9	9	6	6	36	280	1.5	3	610
57627/013	T2	33	75	50	-24	10	12	10	10	80	90	1	9	1079
57627/015	T2	47	75	50	-30	14	14	15	15	124	87	2	10	1051
57627/017	T2	68	75	50	-36	15	15	21	21	168	86	2	12	1051
57637/017	T3	68	75	50	-30	14	15	13	13	104	50	2	10	1522
57637/018	T3	82	75	50	-32	15	15	15	15	120	45	2	10	1335
57637/019	T3	100	75	50	-36	17	18	19	19	150	60	8	32	1335
57647/020	T4	120	75	50	-36	20	20	12	12	96	28	3	24	1914
57637/021	T3	150	75	50	-40	20	20	25	25	200	60	9	36	1335

NOTE (1) & (2) - SEE REFERENCE AT THE END OF TABLE 2B1.
3. SEE TABLE 1.

TABLE 2B1.

PREFERRED RANGE
CHARACTERISTICS AT HIGH & LOW TEMPERATURES
MAXIMUM VALUES

BS CECC 30 202 001
ISSUE 2, JANUARY 1984

(1) MANUFACTURERS REFERENCE NO. +20% 402/1/-	(3) CASE SIZE	CAPACIT- ANCE (μF)	(CR) RATED VOLTS 85°C	(UR) CATEGORY VOLTS 125°C	MAX. CAPACITANCE CHANGE			TANGENT OF THE LOSS ANGLE % at 100 Hz			IMPEDANCE -55°C 100 Hz Ω	LEAKAGE CURRENT		(2) MAX R.M.S. RIPPLE 85°C 40 kHz (mA)
					-55°C %	85°C %	125°C %	20°C	125°C	-55°C		25°C μA	85 + 125°C μA	
57647/021	T4	150	75	50	-48	21	22	17	17	136	30	9	36	1914
57637/022	T3	180	75	50	-50	22	22	28	28	280	60	9	36	1335
57647/023	T4	220	75	50	-60	22	22	37	37	296	32	10	40	1850
57618/003	T1	4.7	100	63	-16	7	8	3	3	24	500	1	2	565
57618/004	T1	5.6	100	63	-17	8	8	6	6	36	475	2	5	530
57628/011	T2	22	100	63	-16	8	8	8	8	64	100	1	9	1065
57628/013	T2	33	100	63	-16	8	8	14	14	92	95	3	15	1065
57638/013	T3	33	100	63	-16	8	8	7	7	58	93	2	10	1200
57628/014	T2	39	100	63	-24	12	12	10	10	90	92	2	12	1065
57638/014	T3	39	100	63	-16	8	8	8	8	64	90	2	10	1282
57638/015	T3	47	100	63	-23	10	10	9	9	72	70	2	10	1389
57638/016	T3	56	100	63	-28	14	15	11	11	88	60	2	10	1335
57638/017	T3	68	100	63	-30	15	15	15	15	118	60	10	40	1335
57648/017	T4	68	100	63	-24	15	15	8	8	64	42	3	26	1859
57648/018	T4	82	100	63	-24	18	18	10	10	80	39	3	24	1859
57648/019	T4	100	100	63	-35	20	20	11	11	88	36	3	24	1859
57619/099	T1	2.7	125	85	-16	7	8	3	3	24	780	1	2	452
57619/001	T1	3.3	125	85	-16	7	8	3	3	24	600	1	2	495
57619/002	T1	3.9	125	85	-16	8	8	3.5	3.5	28	557	2	5	495
57629/009	T2	15	125	85	-16	7	8	6	6	48	167	1	7	1050
57629/010	T2	18	125	85	-16	8	8	8	8	56	133	2	10	1065
57639/014	T3	39	125	85	-16	8	8	8	8	64	90	2	10	1282
57639/015	T3	47	125	85	-23	10	10	9	9	72	70	2	10	1282
57649/017	T4	68	125	85	-24	15	15	8	8	64	42	3	26	1859
57649/018	T4	82	125	85	-24	18	18	10	10	80	39	3	24	1859

MANUFACTURERS REFERENCES FOR OTHER TOLERANCES ARE SHOWN IN CLAUSE 6.

NOTE (1)

RIPPLE CURRENT MULTIPLIERS TO BE USED IN CONJUNCTION WITH THESE RIPPLE CURRENTS ARE SHOWN IN CLAUSE 8
(THIS INFORMATION IS NOT FOR INSPECTION PURPOSES)

SEE TABLE 1.

(2)

(3)