

BRITISH STANDARDS INSTITUTION

2, PARK STREET, LONDON. W1A 2BS.

BS CECC 30 202 006

Specification available from:— As shown in PD 9002, CECC 00 200

HUGHES MICROELECTRONICS LTD.QUEENSWAY INDUSTRIAL ESTATE,
GLENROTHES, FIFE, KY7 5PY.

TELEPHONE 0592-754311

TELEX 72148

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ELECTRONIC COMPONENTS OF ASSESSED QUALITY

DETAIL SPECIFICATION IN ACCORDANCE WITH

BS E9070: 1975 AND BS E9073: 1976

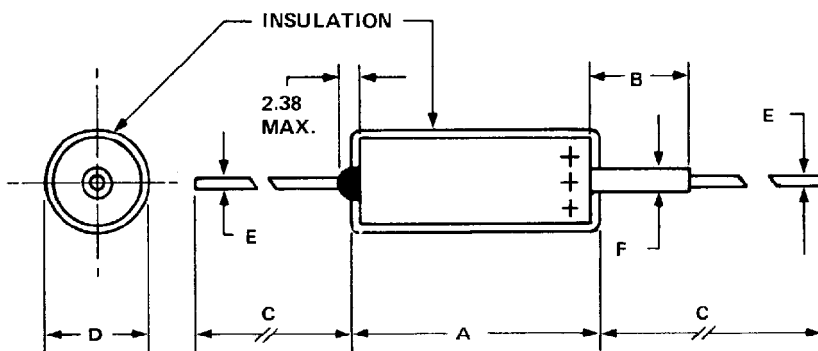
CECC 30 000: 1975 AND CECC 30 200: 1975

MANUFACTURER'S TYPE NUMBER**40 AW Series**

SEE PD 9002 AND CECC 00 200

For ordering information
see clause 7.

Outline and dimensions First angle projection



FIXED CAPACITORS.

TANTALUM ELECTROLYTIC

GLASS TO TANTALUM SEAL

POROUS ANODE POLAR
NON SOLID ELECTROLYTE
TUBULAR TANTALUM CASE
INSULATEDAll dimensions are in millimetres. (see Table 1 below)
Marking information see clause 5.Complies with the minimum requirements of
Table 2 & 3 of BSE 9073: 1976. Plus
Additional Assessment see Clause 7.**TABLE 1: Outline Dimensions (in millimetres)**

Case Size	A ±1.0	B Max.	C Min.	D Max.	E ±0.05	F Max.
1	12.9	6.35	30	5.56	0.64	1.98
2	17.7	6.35	50	7.92	0.64	1.98
3	20.8	6.35	50	10.31	0.64	1.98
4	27.8	6.35	50	10.31	0.64	1.98

Note 1. The complete range of capacitance/rated voltage/pattern is given in table 2.

Note 2. All leads are 60/40 solder coated nickel.

Refer to Qualified Products List PD 9002 and/or CECC 00 200 for details of manufacturers approved to this specification

**Documents**

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TABLE 2A: Capacitance and Rated Voltage

NON PREFERRED RANGE TO CONFORM WITH EXISTING MIL-RANGE STYLE CLR-79

U_R (2)	6	8	10	15	25	30	50	60	75	100	125
U_C (2)	4	5	7	10	15	20	30	40	50	65	85
RATED CAPACITANCE μF	CASE SIZE										
1.7	←			(3) ←							1(1)
3.6	←										1
4.7	←									1	
6.8	←								1		
8.2	←							1			
9	←										2
10	←						1				
11	←									2	
14	←										2
15	←					1 ←			2		
18	←										3
20	←							2			
22	←				1 ←					2	
25	←						2 ←				3
30	← 1 ←										3
33	←			1 ←					2		
39	←							2			
40	←					2 ←			3		
43	←										3
47	←		1 ←				2				
50	←				2 ←			3			
56	← 1 ←								3 ←		4
60	←						3				
68	← 1					2 ←		3			
70	←			2							
82	←						3				
86	←										4
100	←				2 ←	3					
110	←								4		
120	←			2 ←	3						
140	← 2 ←							4			
150	←					3					
160	←						4				
170	←			3							
180	←		2 ←		3						
220	←	2									
250	←		3								
270	← 2 ←			3							
290	←	3									
300	←					4					
330	← 3										
350	←				4						
390	←		3								
430	←	3									
540	←			4							
560	← 3										
750	←		4								
850	←	4									

- Note 1. Denotes case size (See Table 1).
Note 2. U_R = Rated Voltage, U_C = Category Voltage.
Note 3. Capacitors may be used for any lower voltage rating, this is indicated by the arrows.

TABLE 2B: Capacitance and Rated Voltage

PREFERRED RANGE

U_R (3)	<u>6.3</u> (2)	<u>10</u>	<u>16</u>	<u>25</u>	<u>40</u>	<u>63</u>	75	<u>100</u>	125
U_C (3)	4	6.3	10	16	25	40	50	63	85
RATED CAPACITANCE μF	CASE SIZES								
2.2	←		(4) ←						1(1)
3.3	←								1
4.7	←							1	
6.8	←						1		
10	←					1			
15	←				1 ←				2
22	←			1 ←				2	
33	←		1 ←				2 ←	3	
39	←								3
47	←	1 ←				2 ←			3
56	←							3	
68	← 1 ←				2 ←		3 ←		4
82	←						3 ←		4
100	←			2 ←		3 ←		4	
120	←		2 ←				4		
150	←	2 ←			3 ←	4			
180	←	2							
220	← 2 ←			3 ←	4				
330	←		3 ←	4					
390	←			4					
470	←	3 ←	4						
560	← 3 ←		4						
680	←	4							
820	←	4							

Note 1. Denotes case size (See Table 1).

Note 2. Preferred rated voltages are underlined.

Note 3. U_R = Rated Voltage, U_C = Category Voltage.

Note 4. Capacitors may be used for any lower voltage working, this is indicated by the arrows.

2. MOUNTING

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

3. RATINGS, CHARACTERISTICS

Capacitance range:	1.7 μ F to 850 μ F	See Tables 2A & 2B
Capacitance tolerance:	$\pm 20\%$, $\pm 10\%$, $\pm 5\%$	See Table 4
Rated voltage:	6 VDC to 125 VDC	See Table 3
Category voltage:	4 VDC to 85 VDC	See Table 3
Rated temperature:	85°C	
Upper category temperature:	125°C	
Lower category temperature:	-55°C	
Leakage current:	---	See Table 5
Tangent of loss angle:	---	See Table 5
Impedance:	---	See Table 5
Climatic category:	55/125/56	

TABLE 3: D.C. Rated, Surge and Category Voltages

PREFERRED RANGE (See Table 2B)				NON-PREFERRED TO CONFORM WITH EXISTING MIL-RANGE STYLE CLR-79 (See Table 2A)			
D.C. Rated Voltage 85°C	D.C. Category Voltage 125°C	D.C. Surge Voltage		D.C. Rated Voltage 85°C	D.C. Category Voltage 125°C	D.C. Surge Voltage	
		85°C	125°C			85°C	125°C
6.3	4.0	7.2	4.6	6.0	4.0	7.0	4.7
10	6.3	11.5	7.2	8.0	5.0	9.2	5.8
16	10	18.5	11.5	10	7.0	11.6	8.2
25	16	29	18.5	15	10	17.5	11.6
40	25	46	29	25	15	29	17.5
63	40	72	46	30	20	35	23.2
75	50	86	57	50	30	58	35
100	63	115	72	60	40	69	46
125	85	143	98	75	50	87	58
—	—	—	—	100	65	115	75
—	—	—	—	125	85	144	98

TABLE 4: Selection Tolerances

Tolerance %	Group Suffix Insulated Case
± 5	J10
± 10	K8
± 20	M7

TABLE 5A: Standard Ratings

NON PREFERRED RANGE TO CONFORM WITH EXISTING MIL-RANGE STYLE CLR-79

MANUFACTURER'S REFERENCE NUMBER	CAPACITANCE μF	D.C. VOLTAGES		MAXIMUM D.C. LEAKAGE μA		TANGENT OF THE LOSS ANGLE (MAX)		IMPEDANCE @ -55°C (MAX) Ω	MAXIMUM % CHANGE IN CAPACITANCE FROM INITIAL MEASURED VALUE		
		RATED U _R	CATEGORY U _C	+25°C	+85°C to +125°C	+25°C to +125°C	-55°C		-55°C	+85°C	+125°C
40AW 105	30	6	4	1	2	.09	.80	100	-40	+10	+12
40AW 106	68	6	4	1	2	.15	1.20	60	-40	+14	+16
40AW 205	140	6	4	1	3	.21	1.68	40	-40	+14	+16
40AW 206	270	6	4	1	6.5	.45	3.52	25	-44	+17	+20
40AW 305	330	6	4	2	8	.36	3.20	20	-44	+14	+16
40AW 306	560	6	4	2	13	.55	4.50	25	-64	+17	+20
40AW 115	25	8	5	1	2	.075	.60	100	-40	+10	+12
40AW 116	56	8	5	1	2	.14	1.12	59	-40	+14	+16
40AW 214	120	8	5	1	2	.20	1.60	50	-44	+17	+20
40AW 215	220	8	5	1	7	.40	3.20	30	-40	+17	+20
40AW 314	290	8	5	2	6	.40	3.20	25	-64	+17	+20
40AW 315	430	8	5	2	14	.46	3.68	25	-64	+17	+20
40AW 415	850	8	5	4	16	.60	4.80	22	-80	+25	+25
40AW 125	20	10	7	1	2	.06	.48	175	-32	+10	+12
40AW 126	47	10	7	1	2	.13	1.04	100	-36	+14	+16
40AW 225	100	10	7	1	4	.15	1.20	60	-36	+14	+16
40AW 226	180	10	7	1	7	.33	2.44	40	-36	+14	+16
40AW 325	250	10	7	2	10	.30	2.40	30	-40	+14	+16
40AW 326	390	10	7	2	16	.44	3.52	25	-64	+17	+20
40AW 425	750	10	7	4	16	.50	4.00	23	-80	+25	+25
40AW 135	15	15	10	1	2	.05	.40	155	-24	+10	+12
40AW 136	33	15	10	1	2	.10	.80	90	-28	+14	+16
40AW 235	70	15	10	1	4	.13	1.04	75	-28	+14	+16
40AW 236	120	15	10	1	7	.25	2.00	50	-28	+17	+20
40AW 335	170	15	10	2	10	.25	2.00	35	-32	+14	+16
40AW 336	270	15	10	2	16	.43	3.44	30	-56	+17	+20
40AW 435	540	15	10	6	24	.40	3.20	23	-80	+25	+25
40AW 145	10	25	15	1	2	.04	.32	220	-16	+ 8	+ 8
40AW 146	22	25	15	1	2	.07	.56	140	-20	+10	+12
40AW 244	50	25	15	1	2	.11	.88	70	-28	+13	+15
40AW 245	100	25	15	1	10	.21	1.68	50	-28	+13	+15
40AW 344	120	25	15	2	6	.25	2.00	38	-32	+13	+15
40AW 345	180	25	15	2	18	.28	2.24	32	-48	+13	+15
40AW 445	350	25	15	7	28	.35	2.80	24	-70	+25	+25
40AW 155	8	30	20	1	2	.04	.32	275	-16	+ 8	+12
40AW 156	15	30	20	1	2	.07	.56	175	-20	+10	+12
40AW 255	40	30	20	1	5	.12	.96	65	-24	+10	+12
40AW 256	68	30	20	1	8	.15	1.20	60	-24	+13	+15
40AW 355	100	30	20	2	12	.17	1.36	40	-28	+10	+12
40AW 356	150	30	20	2	18	.23	1.84	35	-48	+13	+15

TABLE 5A: Standard Ratings

NON PREFERRED RANGE TO CONFORM WITH EXISTING MIL-RANGE STYLE CLR-79

MANUFACTURER'S REFERENCE NUMBER	CAPACITANCE μF	D.C. VOLTAGES		MAXIMUM D.C. LEAKAGE μA		TANGENT OF THE LOSS ANGLE (MAX)		IMPEDANCE @ -55°C (MAX) Ω	MAXIMUM % CHANGE IN CAPACITANCE FROM INITIAL MEASURED VALUE		
		RATED U _R	CATEGORY U _C	+25°C	+85°C to +125°C	+25°C to +125°C	-55°C		-55°C	+85°C	+125°C
40AW 455	300	30	20	8	32	.31	2.48	25	-60	+25	+25
40AW 165	5	50	30	1	2	.03	.24	400	-16	+ 5	+ 6
40AW 166	10	50	30	1	2	.05	.40	250	-24	+ 8	+ 9
40AW 265	25	50	30	1	5	.09	.72	95	-20	+10	+12
40AW 266	47	50	30	1	9	.13	1.04	70	-28	+13	+15
40AW 365	60	50	30	2	12	.13	1.04	45	-16	+10	+12
40AW 366	82	50	30	2	16	.15	1.20	45	-32	+13	+15
40AW 465	160	50	30	8	32	.17	1.36	27	-50	+25	+25
40AW 175	4	60	40	1	2	.03	.24	550	-16	+ 5	+ 6
40AW 176	8.2	60	40	1	2	.04	.32	275	-24	+ 8	+ 9
40AW 275	20	60	40	1	5	.07	.56	105	-16	+10	+12
40AW 276	39	60	40	1	9	.12	.96	90	-28	+10	+12
40AW 375	50	60	40	2	12	.11	.88	50	-16	+10	+12
40AW 376	68	60	40	2	16	.13	1.04	50	-32	+10	+12
40AW 469	140	60	40	8	32	.16	1.28	28	-40	+20	+20
40AW 185	3.5	75	50	1	2	.025	.20	650	-16	+ 5	+ 6
40AW 186	6.8	75	50	1	2	.035	.28	300	-20	+ 8	+ 9
40AW 285	15	75	50	1	5	.06	.48	150	-16	+ 8	+ 9
40AW 286	33	75	50	1	10	.10	.80	90	-24	+10	+15
40AW 385	40	75	50	2	12	.09	.72	60	-16	+10	+12
40AW 386	56	75	50	2	17	.11	.88	60	-28	+10	+15
40AW 475	110	75	50	9	36	.12	.96	29	-35	+20	+20
40AW 195	2.5	100	65	1	2	.02	.16	950	-16	+ 7	+ 8
40AW 196	4.7	100	65	1	2	.03	.24	500	-16	+ 7	+ 8
40AW 295	11	100	65	1	4	.05	.40	200	-16	+ 8	+ 8
40AW 296	22	100	65	1	9	.08	.64	100	-16	+ 8	+ 8
40AW 395	30	100	65	2	12	.075	.60	80	-16	+ 8	+ 8
40AW 396	43	100	65	2	17	.085	.68	70	-20	+ 8	+ 8
40AW 485	86	100	65	9	36	.20	.80	30	-25	+15	+15
40AW 197	1.7	125	85	1	2	.02	.16	1250	-16	+ 7	+ 8
40AW 198	3.6	125	85	1	2	.03	.24	600	-16	+ 7	+ 8
40AW 297	9	125	85	1	5	.05	.40	240	-16	+ 7	+ 8
40AW 298	14	125	85	1	7	.06	.48	167	-16	+ 7	+ 8
40AW 398	18	125	85	2	9	.05	.40	129	-16	+ 7	+ 8
40AW 397	25	125	85	2	13	.06	.48	93	-16	+ 7	+ 8
40AW 484	56	125	85	10	40	.065	.52	32	-25	+15	+15