CB Series
Tantalum Capacitors

Features:

- Lead-Free.
- Specially designed of general purpose.
- Highly reliable resin dipped type.
- Excellent frequency and temperature characteristics.
- Non-flammable epoxy resin.

Specifications:

<table>
<tr><th>Item</th><th>Performance Characteristics</th></tr>
<tr><td>Operating temperature range</td><td>-55 to +125°C (>85°C with rated voltage derating)</td></tr>
<tr><td>Rated working voltage range</td><td>6.3 to 50V dc</td></tr>
<tr><td>Nominal capacitance range</td><td>0.1 to 300µF</td></tr>
<tr><td>Capacitance tolerance</td><td>±20% (±10% is available) (120Hz, +20°C)</td></tr>
<tr><td>Leakage current</td><td>Not more than 0.008CV (µA) or 0.5µA whichever is greater</td></tr>
<tr><td>Tan δ (120Hz, +20°C)</td><td>
<table>
<tr><td>Working voltage</td><td colspan="4">6.3 to 50V</td></tr>
<tr><td>Capacitance</td><td>≤1.0µF</td><td>1.5 to 6.8µF</td><td>10 to 68µF</td><td>≥100µF</td></tr>
<tr><td>Maximum tan δ</td><td>0.04</td><td>0.06</td><td>0.08</td><td>0.1</td></tr>
</table>
</td></tr>
<tr><td>Characteristics at high and low temperature</td><td>
<table>
<tr><td>-55°C</td><td>Capacitance change</td><td>±12% of initial measured value at +20°C</td></tr>
<tr><td rowspan="2">+105°C</td><td>Leakage current</td><td>≤10% of initial measured value</td></tr>
<tr><td>Capacitance change</td><td>±12% of initial measured value at +20°C</td></tr>
</table>
</td></tr>
<tr><td>Moisture resistance</td><td>
Test conditions

Relative humidity : 90 to 95% without load
Ambient temperature : +40°C
Duration : 500 hours
Post test requirements at +20°C
Leakage current : ≤0.012CV or 0.75 (µF), whichever is greater
Capacitance change : ±10% of initial measured value
Tan δ : ≤150% of initial specified value
</td></tr>
</table>

Specifications:

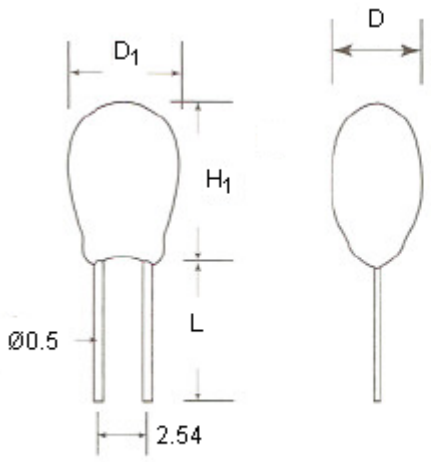
<table>
<tr><th>Item</th><th>Performance Characteristics</th></tr>
<tr><td>Endurance</td><td>
Test conditions
<table>
<tr><td>Conditions / Item</td><td>Derating (for 10 to 50V only)</td><td>Rating</td></tr>
<tr><td>Duration</td><td>1000 hours</td><td>1000 hours</td></tr>
<tr><td>Ambient temperature</td><td>+105°C</td><td>+85°C</td></tr>
<tr><td>Applied voltage</td><td>Derated working voltage</td><td>Rated working voltage</td></tr>
<tr><td>Source impedance</td><td>1Ω/V</td><td>1Ω/V</td></tr>
</table>
Derating voltage +105°C for 10 to 50V working
<table>
<tr><td>Working Voltage (V dc)</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr>
<tr><td>Derating Voltage (V dc)</td><td>6.3</td><td>10</td><td>16</td><td>23</td><td>33</td></tr>
</table>
Post test requirements at +20°C

Leakage current : ≤0.01% CV or 00625 (μA), whichever is greater
Capacitance change : ±10% of initial measured value
Tan δ : ≤Initial specified value
</td></tr>
<tr><td>Shelf life</td><td>
Test Conditions

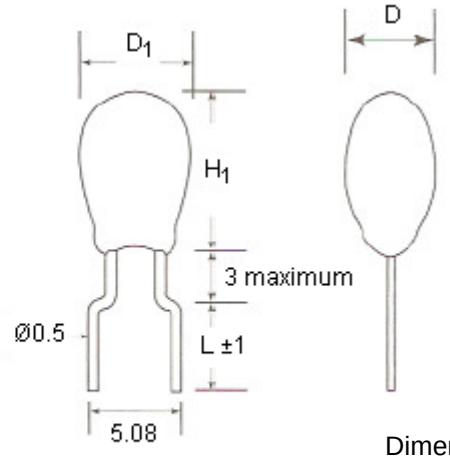
Duration : 1000 hours
Ambient temperature : +85°C
Applied voltage : (none)
Post test requirements at +20°C
Same limits for “Endurance”
</td></tr>
</table>

Tantalum electrolytic capacitors resin dipped type

Tantalum capacitor dipped type outline drawings



Format 1



Format 2

Dimensions : Millimetres

Dimensions Table

Case Size (Maximum)	A	B	C	D	E	F
Formats 1/2 H_1	7.0	8.0	9.5	11.0	13.0	16.5
D_1	4.5	5.0	5.5	6.5	8.5	9.5
D	4.2	4.7				

Wire Length (L)	5,7 ±1	12, 14 ±1	18, 20 ±1
Code	A	B	C

Dimensions in Millimetres

Rated Voltage, Capacitance of Capacitors

VR (V)	6.3	10	16	25	35	50
Code	0J	1A	1C	1E	1V	1H
Capacitance (µF)	Case Size					
0.10 (104)	-	-	-	-	A	A
0.15 (154)	-	-	-	-	-	-
0.22 (224)	-	-	-	-	-	-
0.33 (334)	-	-	-	-	-	-
0.47 (474)	-	-	-	-	-	-
0.68 (684)	-	-	-	-	-	-
1.0 (105)	-	-	-	A	-	B
1.5 (155)	-	-	A		-	C
2.2 (225)	-	A			B	
3.3 (335)	A			B		D
4.7 (475)			B		C	
6.8 (685)		B		C	D	E
10 (106)	B					
15 (156)		C	C	D	E	F
22 (226)	C					

Rated voltage, capacitance of capacitors

VR (V)	6.3	10	16	25	35	50
Code	0J	1A	1C	1E	1V	1H
Capacitance (µF)	Case Size					
33 (336)	C	D	D	E	F	-
47 (476)	D					-
68 (686)			E	F	-	-
100 (107)	E	E			-	-
150 (157)			F	-	-	-
220 (227)		F	-	-	-	-

Ratings

Case Size	Capacitance µF	DCL (µA) Maximum	DF % Maximum	ESR Maximum (Ω) at 100kHz	Part Number
6.3 Volt at 85°C (4 Volt, at 125°C)					
A	4.7	0.5	6	10.0	CB0J475##A##
	6.8			8.0	CB0J685##A##
B	10		8	6.0	CB0J106##B##
	15	0.8		5.0	CB0J156##B##
C	22	1.1		3.7	CB0J226##C##
	33	1.7		3.0	CB0J336##C##
D	47	2.4		2.0	CB0J476##D##
	68	3.4		1.8	CB0J686##D##
E	100	5.0	10	1.6	CB0J107##E##
	150	7.6		0.9	CB0J157##E##
	220	11.0		0.9	CB0J227##E##
10 Volt at 85°C (6.3 Volt, at 125°C)					
A	4.7	0.5	6	8.0	CB1A475##A##
B	6.8			6.0	CB1A685##B##
	10	0.8	8	5.0	CB1A106##B##
C	15	1.2		3.7	CB1A156##C##
	22	1.7		2.7	CB1A226##C##

Ratings

Case Size	Capacitance µF	DCL (µA) Maximum	DF % Maximum	ESR Maximum (Ω) at 100kHz	Part Number
10 Volt at 85°C (6.3 Volt, at 125°C)					
D	33	2.6	8	2.1	CB1A336##D##
	47	3.7		1.7	CB1A476##D##
	68	5.4		1.3	CB1A686##D##
E	100	8.0	10	1.0	CB1A107##E##
E	150	12.0		0.8	CB1A157##E##
F	220	17.6			CB1A227##F##
16 Volt at 85°C (10 Volt, at 125°C)					
A	2.2	0.5	6	8.0	CB1C225##A##
	3.3			6.0	CB1C335##A##
B	4.7	0.6		5.0	CB1C475##B##
	6.8	0.8	8	4.0	CB1C685##B##
	10	1.2		3.2	CB1C106##B##
C	15	1.9		2.5	CB1C156##C##
	22	2.8		2.0	CB1C226##C##
D	33	4.2		1.6	CB1C336##D##
	47	6.0		1.3	CB1C476##D##
E	68	8.7		1.0	CB1C686##E##
	100	12.8	10	0.8	CB1C107##E##
F	150	19.2		0.6	CB1C157##F##
25 Volt at 85°C (16 Volt, at 125°C)					
A	1.0	0.5	4	10.0	CB1E105##A##
	1.5			8.0	CB1E155##A##
	2.2		6	6.0	CB1E225##A##
B	3.3	0.6		5.0	CB1E335##B##
	4.7	0.9		4.0	CB1E475##B##
C	6.8	1.3		3.1	CB1E685##C##
	10	2.0	8	2.5	CB1E106##C##
D	15	3.0		2.0	CB1E156##D##
	22	4.4		1.5	CB1E226##D##
E	33	6.6		1.2	CB1E336##E##
	47	9.4		1.0	CB1E476##E##
F	68	13.6		0.8	CB1E686##F##
	100	20	10	0.8	CB1E107##F##

Ratings

Case Size	Capacitance µF	DCL (µA) Maximum	DF % Maximum	ESR Maximum (Ω) at 100kHz	Part Number
35 Volt at 85°C (23 Volt, at 125°C)					
A	0.1	0.5	4	26.0	CB1V104##A##
	0.15			21.0	CB1V154##A##
	0.22			17.0	CB1V224##A##
	0.33			15.0	CB1V334##A##
	0.47			13.0	CB1V474##A##
	0.68			10.0	CB1V684##A##
	1.0			8.0	CB1V105##A##
	1.5			6.0	CB1V155##A##
B	2.2	0.6	6	5.0	CB1V225##B##
	3.3	0.9		4.0	CB1V335##B##
C	4.7	1.3		3.0	CB1V475##C##
D	6.8	1.9		2.5	CB1V685##D##
	10	2.8	8	2.0	CB1V106##D##
E	15	4.2		1.6	CB1V156##E##
	22	6.1		1.3	CB1V226##E##
F	33	9.2		1.0	CB1V336##F##
	47	10.0		0.8	CB1V476##F##
50 Volt at 85°C (33 Volt, at 125°C)					
A	0.1	0.5	4	26.0	CB1H104##A##
	0.22			17.0	CB1H224##A##
	0.33			15.0	CB1H334##A##
	0.47			13.0	CB1H474##A##
	0.68			10.0	CB1H684##A##
B	1.0			8.0	CB1H105##B##
C	1.5	0.6		6.0	CB1H155##C##
	2.2	0.8	6	3.5	CB1H225##C##
D	3.3	1.3		3.0	CB1H335##D##
	4.7	1.8		2.5	CB1H475##D##
E	6.8	2.7		2.0	CB1H685##E##
	10	4.0	8	1.6	CB1H106##E##

Note: All # # A # # to ambient temperature of +20°C measured at 120Hz, 0.5V rms unless otherwise stated

- insert capacitance tolerance : K for ±10% and M for ±20%
- insert format 1 for pitch 2.54mm; format 2. for pitch 5.08mm
- insert wire length see page 8.
- insert bulk : Code B or Ammo pack : Code T.

CB Series
Tantalum Capacitors

Packaging of bead tantalum capacitors explanation of part numbers

CB	OJ	475	M	I	A	B	B&T
Series Code	Rated Voltage	Nominal Capacitance	Capacitance Tolerance	Format & Lead Space	Size Code	Wire Length	Bulk & Ammo Pack

Quantity per bag: Code B.
The capacity of the plastic bags depends on.

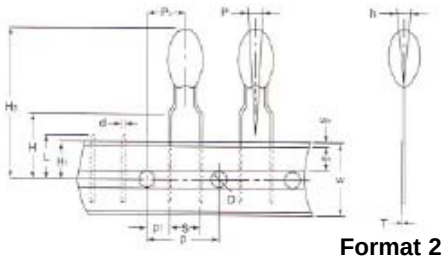
Case Size Format (1)	Qty per bag (cut ≤ 7mm)
Form A to B	1000
Form C to D	1000
Form E to F	500

Case Size Format (1)	Qty per bag (cut ≤ 14mm)
Form A to B	1000
Form C to D	1000
Form E to F	500

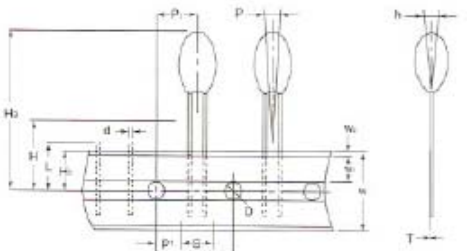
Case Size Format (2)	Qty per bag (cut ≤ 7mm)
Form A to B	1000
Form C to D	1000
Form E to F	500

Tape and Ammo Packing (conform to: IEC286-2) Code T.

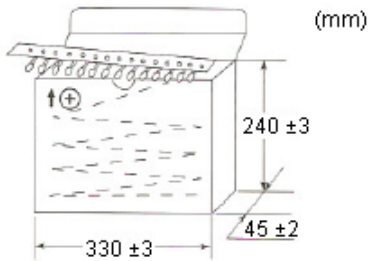
Tape and ammo packing (conform to: IEC286-2)



Format 2



Format 1



Item	Code	Dimension (mm)
Carrier tape width	W	$18.0^{+1.0}_{-0.5}$
Hold down tape width	W_1	6.0 ±0.5
Hold down tape position	W_2	1.0 maximum
Feed hole diameter	D	4.0 ±0.2
Feed hole pitch	P	12.7 ±0.3
Hole centre to lead	P_1	Format 1: 5.05 ±0.7
		Format 2: 3.85 ±0.7
Hole centre to component centre	P	6.35 ±1.0
Lead wire clench height	H	16 ±0.5
Hole position	H_1	9.0 ±0.5
Base of component height	H_2	.0.8 minimum
Component height	H_3	32.2 maximum
Component alignment	ΔP	0 ±1.3
	Δh	0 ±2.0
Lead spacing	S	'S' wires: $2.5^{+0.6}_{-0.1}$
		'B' wires: $5.0^{+0.6}_{-0.5}$
Lead diameter	d	0.5 ±0.05
Length of snipped lead	L	11.0 maximum
Carrier tape thickness	T	0.5 ±0.1

Case Code	A to B	C to D	E to F
Qty. (PCS/box)	2500	2000	1000