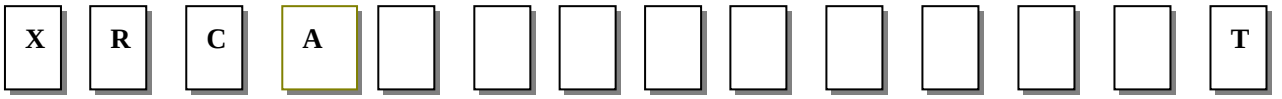
1. Scope

This specification applies to the _____ wet electrolyte tantalum capacitor.

2. Product identification



(1) (2) (3) (4) (5) (6) (7)

(1) company logo

(2)series: For type recognition,series is expressed by three digits,that is:the first letters CA represent tantalum capacitors,3rd digit represent series No., in case of no 3rd digit for specific product series,it is expressed by symbol“-”.

(3)capacitance code: Capacitance code:expressed in Pico farad,1st two digits represent significant figures and 3rd digit represents multiplier(number of zeros to follow)

(4)capacitance tolerance:Capacitance tolerance code is listed as follows:

Allowable Tolerance Code of the Capacitance

Allowable Tolerance%	Tolerance Code
±5	J
±10	K
±20	M

(5) rated DC voltage: Rated DC voltage Code is expressed in three digits,if voltage value is only two digits,1st digit is expressed in“0”.

(6) case size: Case Code is specified in specification sheets of the individual product series.

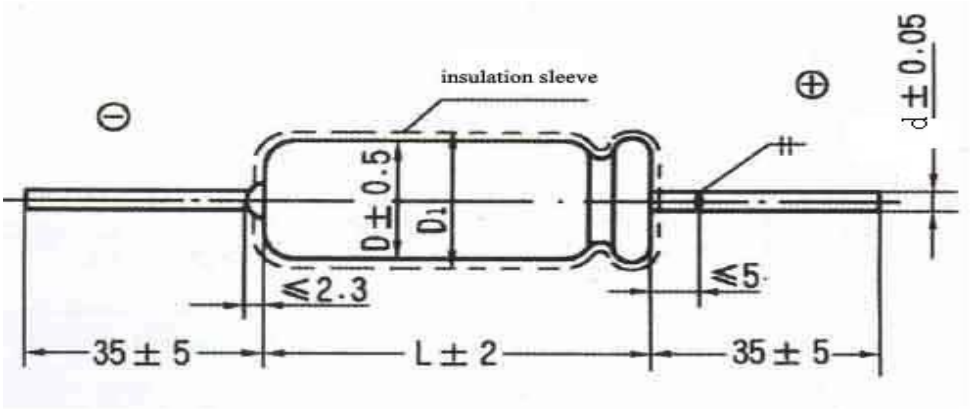
packing style(B:Bulk): Packaging Code :B-Bulk.

EX: Series CA301Δc/c±20%,100V10μF, Bulk,XRCA301106M1001B

For special order,other part number can be specified by users.

3. Appearance,Dimensions,Material & Marking

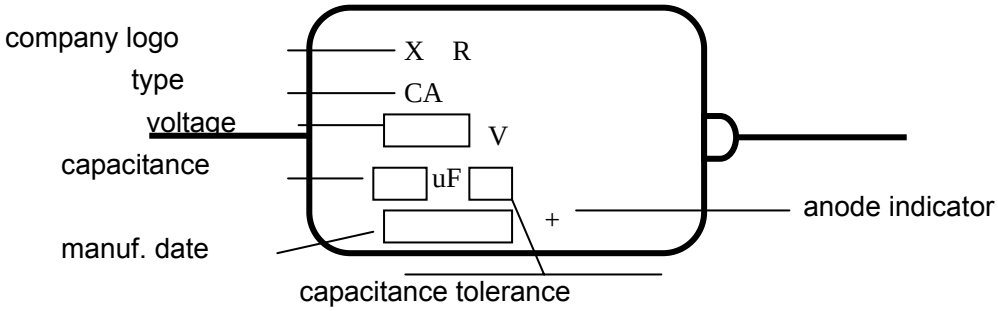
3.1 Appearance,Dimensions



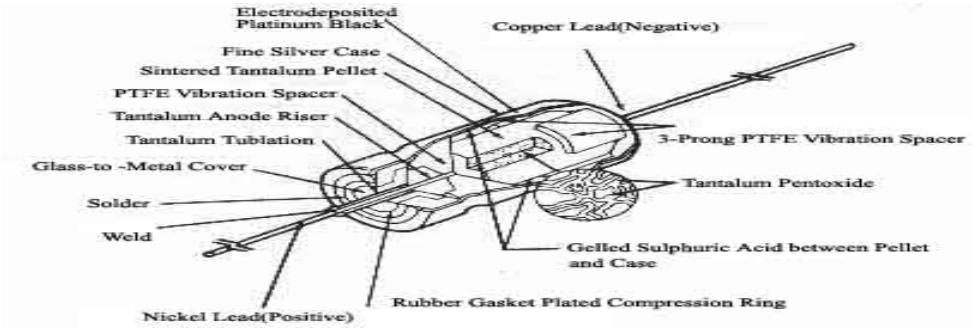
Case Sizes and Dimensions(D×L) in millimeter

Case Sizes		1	2	3	4	5	6
dimensions	d	0.7		0.8			
	D×L	5×14	6×16	8×16	8×22	10×22	10×25

3.2 Marking



3.3 composition



4.Testing conditions

unless otherwise specified

temperature: ordinary temperature(5 to 35'C);humidity:relative humidity(25 to 75%RH)

atmospheric pressure:86 to 106kpa;

in case of doubt

temperature:20±2'C;humidity:60 to 75%RH;atmospheric pressure:86 to 106kpa

5. Rating

operating temperature range:-55 to +125'C

5.1 capacitance,DF and DCL

●Capacitance Tolerance:±20%,±10%

●DC Leakage: at +20'C, I≤0.001$C_R V_R$(μA)or 1μA(Whichever is greater);

at +85'C, I≤0.008$C_R V_R$ (μA)or 8μA(Whichever is greater);

at +125'C, I≤0.01$C_R V_R$ (μA)or 10μA(Whichever is greater);

●Dissipation Factor at 20'C: within the limits as shown in Table 1.

5.2 Value of Dissipation Factor

table 1

Rated Voltage(V)	6.3	10	16	25	40	63	100	125
apacitance(μF)	Max Values of Dissipation Factor (%) at 100Hz, +20'C, +85'C , +125'C							
1.0						6	6	6
1.5						6	6	6
2.2						6	6	6
3.3						6	6	6
4.7					6	6	6	6
6.8				8	8	8	8	8
10			10	8	8	8	10	15
15		10	10	10	10	10	18	15
22	15	15	10	10	20	18	20	23
33	20	15	12	20	25	18	25	23
47	25	15	20	25	25	25	28	25
68	30	30	20	30	30	25	30	25
100	35	40	35	40	35	30	35	
150	40	50	35	50	35	30		
220	70	60	60	50	40			
330	75	70	70	55	45			
470	85	75	70	60				
680	80	75	70					
1000	90	80						

5.3 Rated Voltage, Voltage Derating, Surge Voltage and Normal Capa citance

table 2

Rated voltage U_R (V)	6.3	10	16	25	40	63	100	125
Voltage Derating Uc (V)	4	6.3	10	16	25	40	63	75
capacitance (μF)	Dimensions(D×L)							
1.0								5×14
1.5							5×14	5×14
2.2						5×14	5×14	5×14
3.3						5×14	5×14	5×14
4.7					5×14	5×14	5×14	5×14
6.8				5×14	5×14	5×14	5×14	6×16
10			5×14	5×14	5×14	5×14	6×16	6×16
15		5×14	5×14	5×14	5×14	6×16	6×16	8×16
22	5×14	5×14	5×14	5×14	5×14	6×16	8×16	8×16
33	5×14	5×14	5×14	5×14	6×16	8×16	8×16	8×22
47	5×14	5×14	5×14	6×16	6×16	8×16	8×22	10×22
68	5×14	5×14	6×16	6×16	8×16	8×22	10×22	10×25
100	5×14	6×16	6×16	8×16	8×16	10×22	10×25	
150	6×16	6×16	8×16	8×16	8×22	10×25	10×25	
220	6×16	8×16	8×16	8×22	10×22			
330	8×16	8×16	8×22	10×22	10×25			
470	8×16	8×22	10×22	10×25				
680	8×22	10×22	10×25					
1000	10×22	10×25	10×25					

6 Electrical performance

6.1 Electrical specification

item	specification	measuring condition
(1) Capacitance	±20%,±10%	Measurement circuit: Equivalent series circuit Measuring frequency:100Hz±1% Measuring voltage max.:0.3,0.5, 0.81Vrms.
(2) Tangent of loss angle (tanδ)	see table 5.1	
3) leakage current	see table 5.1	Series protective resistor:1000Ω Measuring voltage:rated voltage Measuring time:2minutes

6.2 Temperature Characteristics

rated voltage(V)	6.3				10			
Capacitance (μF)	Cap ChangeΔC/C(%)			Impedance (Ω) 100H_Z	Cap ChangeΔC/C(%)			Impedance(Ω) 100H_Z
	-55'C	+85'C	+125'C		-55'C	+85'C	+125'C	
1.0~10								
15					-30	+11	+13	200
22	-35	+12	+13	180	-35	+11	+13	175
33	-40	+12	+15	125	-35	+11	+13	125
47	-45	+15	+18	125	-40	+15	+18	100
68	-50	+15	+18	125	-50	+15	+18	80
100	-55	+15	+18	100	-50	+15	+18	60
150	-55	+15	+20	80	-60	+15	+18	55
220	-65	+15	+20	70	-60	+15	+18	45
330	-65	+15	+20	60	-70	+20	+25	40
470	-75	+15	+20	50	-75	+20	+25	35
680	-85	+18	+20	35	-85	+25	+25	30
1000	-85	+20	+25	25	-85	+25	+25	25

rated voltage(V)	16				25			
Capacitance (μF)	Cap ChangeΔC/C(%)			Impedance (Ω) 100H_Z	Cap ChangeΔC/C(%)			Impedance(Ω) 100H_Z
	-55'C	+85'C	+125'C		-55'C	+85'C	125'C	
1.0~4.7								
6.8					-25	+10	+12	300
10	-25	+11	+13	200	-25	+10	+13	260
15	-30	+11	+13	180	-30	+10	+13	175
22	-30	+11	+13	150	-30	+11	+13	150
33	-35	+15	+20	110	-35	+11	+13	110
47	-40	+15	+20	90	-35	+11	+13	80
68	-40	+15	+20	80	-45	+11	+13	75
100	-50	+20	+25	70	-50	+13	+15	70
150	-60	+20	+25	60	-55	+13	+15	60
220	-65	+20	+25	55	-60	+13	+15	55
330	-70	+25	+25	45	-70	+25	+25	45
470	-75	+25	+25	40	-75	+25	+25	40
680	-80	+25	+25	35				

rated voltage(V)	40				63			
Capacitance (μF)	Cap ChangeΔC/C(%)			Impedance (Ω) 100HZ	Cap ChangeΔC/C(%)			Impedance(Ω) 100HZ
	-55'C	+85'C	+125'C		-55'C	+85'C	+125'C	
1.0~1.5	-16	+8	+12	600	-16	+8	+12	1200
2.2	-16	+8	+12	550	-16	+8	+12	1100
3.3	-20	+8	+12	500	-20	+8	+12	700
4.7	-25	+10	+12	450	-25	+10	+13	500
6.8	-25	+10	+12	350	-25	+10	+13	350
10	-25	+15	+18	260	-25	+10	+13	260
15	-30	+15	+18	175	-30	+10	+13	175
22	-30	+15	+18	140	-30	+15	+18	140
33	-35	+15	+18	100	-35	+15	+18	100
47	-40	+15	+20	80	-40	+15	+18	80
68	-45	+15	+20	75	-40	+15	+18	65
100	-50	+15	+20	65	-50	+20	+25	60
150	-50	+25	+25	50	-50	+20	+25	50
220	-60	+25	+25	45	-55	+22	+25	50
330	-70	+25	+25	35	-60	+25	+28	50
470	-80	+28	+28	35	-70	+28	+30	50
680	-85	+28	+28	35				

rated voltage(V)	100				125			
Capacitance (μF)	Cap ChangeΔC/C(%)			Impedance(Ω) 100HZ	Cap ChangeΔC/C(%)			Impedance(Ω) 100HZ
	-55'C	+85'C	+125'C		-55'C	+85'C	125'C	
1.0	-16	+8	+12	1500	-16	+8	+12	1800
1.5	-16	+8	+12	1400	-16	+8	+12	1400
2.2	-16	+8	+12	1100	-16	+8	+12	1100
3.3	-16	+8	+12	700	-16	+8	+12	700
4.7	-16	+10	+13	500	-20	+10	+13	500
6.8	-20	+10	+13	350	-22	+10	+13	350
10	-20	+10	+13	260	-25	+10	+13	260
15	-25	+10	+13	175	-25	+15	+18	175
22	-25	+10	+13	150	-30	+15	+18	150
33	-30	+10	+13	100	-35	+15	+18	120
47	-30	+10	+13	70	-35	+15	+18	90
68	-40	+12	+15	65	-40	+15	+18	70
100	-45	+15	+18	60	-50	+18	+20	70
150	-50	+18	+20	60	-55	+20	+22	70
220	-55	+20	+22	60				

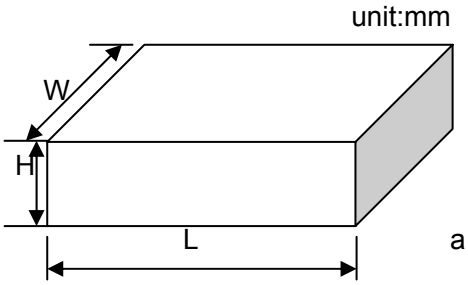
7 Reliable performance

<table>
<tr><th>Items</th><th colspan="3">Performance characteristics</th><th>Conditions of test</th></tr>
<tr><td rowspan="8">(1)Characteristics at high and low temperature</td><td>Step</td><td colspan="2">Performance characteristics</td><td rowspan="8">Step temp.'C dur.
1 +20±2
2 -55±2 30min.
3+85±2 30mn
4+125±2 30min</td></tr>
<tr><td rowspan="2">1</td><td>Change in cap.</td><td rowspan="2">not exceed value in table 2</td></tr>
<tr><td>impedance</td></tr>
<tr><td rowspan="3">2</td><td>Change in cap.</td><td>not exceed value in table 2</td></tr>
<tr><td>Tangent of loss (tanδ)</td><td>not exceed value in table 1</td></tr>
<tr><td>leakage current</td><td>not exceed value in item 5.1</td></tr>
<tr><td rowspan="3">3</td><td>Change in cap.</td><td rowspan="2">not exceed value in table 2</td></tr>
<tr><td>Tangent of loss(tanδ)</td></tr>
<tr><td>leakage current</td><td>not exceed value in item 5.1</td></tr>
<tr><td rowspan="3">(2) Surge test</td><td>Change in cap.</td><td>Relative to the value before test ±10%</td><td rowspan="3">test Temperature:85/125±2'C
protective series resistor (charge resistor):1000Ω
cycles:1000
charge time:30±5s
discharge time:5min.30s
measuring voltage: surge voltage
85'C:1.15U_R
125'C:U_C</td></tr>
<tr><td>Tangent of loss(tanδ)</td><td>≤1.3×table 1</td></tr>
<tr><td>leakage current</td><td>not exceed value in item 5.1</td></tr>
<tr><td>(3) Resistance to soldering heat</td><td>Appearance</td><td>no visible damage, no electrolyte is leakage,marking is legible</td><td>Conditioning of solder dip:
Solder temperature::260±5'C
Dip duration:5±0.5s</td></tr>
<tr><td>(4) Solder ability</td><td colspan="2">A new uniform coating of solder shall cover the surface being immersed</td><td>Conditioning of solder dip
Solder temperature:235±5'C
Dip duration:2±0.5s</td></tr>
</table>

(5) Vibration	Appearance	no visible damage, no electrolyte is leakage	Only endurance conditioning by sweeping shall be made. The entire frequency range, from 10 to 500Hz and return to 10Hz,shall be transverse in 1 min. Amplitude (total excursion):0.75mm This motion shall be applied for a period of 2 hours in each of 3 mutually perpendicular directions (a total of 6 hours)
(6) Damp heat	Change in cap.	Relative to the value before test ±10%	Test temp:40±2'C Humidity:90-95% R.H Test time:10 days No voltage applied Recovery:16h(min.)
	Tangent of loss(tanδ)	less than 1.15 times of table 1	
	leakage current	not exceed value in item 5.1	
	Appearance	no visible damage, no electrolyte is leakage,marking is legible	
(7)Electrical endurance	Change in cap.	Relative to the value before test ±20%	Test temp:85'C±2'C Test time:1000Hr Voltage:Rated voltage Test temp:125'C±2'C Test time:1000h Voltage: Derated voltage Recovery:1-2h
	Tangent of loss(tanδ)	less than 1.3 times of table 1	
	leakage current	not exceed 1.25 times of value in item 5.1	
	Appearance	no visible damage, The marking shall be legible.	

8. Packaging

8.1 Box dimensions



L(±2)	W(±2)	H(±2)
214	111	33

a)5 layers and 20pcs Per layer for no more than φ6.

b)5 layers and 10pcs Per layer for φ8.

c)3 layers and 10pcs Per layer for φ10.

9. Packing documents and marking

9.1 inner label

a. type:CA
b. size
c. lot number
d. quantity per box
e. inspection date

all above shall be shown on marking label.

9.2 marking on box

f. trade mark
g. type:CA
h. size
i. quantity per box
j. manuf. date

all above shall be shown on marking label.

10. Mounting

In mounting the capacitor to the circuit boards, in case of loading excessive mechanical stress, heat stress, etc., deterioration of electric properties, shot circuit and open circuit will occur. Use after sufficiently checking on mounting conditions.

10.1 processing and measurement

Do not remove or flaw the body of capacitor and the lead wire, and do not apply strong force in using.

- After mounting, do not process the capacitors or bend the lead wire.
- Do not touch directly by hand the capacitor lead wire to avoid deterioration of solder ability caused by contamination from sweat stains, oil sludge, etc.

10.2 circuit board cleaning

Surely remove flux used in soldering and wash away acid and alkali. In cleaning, perform within 5 minutes of ultrasonic, vapor and dipping washing at not more than 50'C. In some ultrasonic cleaning conditions, the lead wire may be broken.

11 In using

11.1 environmental conditions

do not use the equipment fit with the capacitor in the below environment.

- Environment where capacitors are directly splashed with water, salt water and oil.
- Environment where capacitors are directly exposed to sunlight.
- Environment in high temperature and humidity causing dewing on capacitor surface.
- Environment where capacitors touch various active gases.
- Acid and alkaline atmosphere.
- Environment with high frequency induction.
- Environment with excessive vibration and shock.

11.2 maintenance/inspection

When testing the capacitor terminals with the tester, etc., check on potential and polarity of the tester beforehand. If reverse voltage is applied to the capacitor, short circuit may occur. When testing by touching the electrodes during turning on, do not touch terminals of other parts or do not bend the capacitor terminals.

12. Storage

12.1 storage condition

environmental temperature:-10'C~ +40'C;

relative humidity: no more than 70%;

12.2 storing period

No more than one and half year since date of stocking.