

# ALUMINUM ELECTROLYTIC CAPACITOR

Suntan®

GENERAL SUPER MINIATURIZED

# TS13D CD110X

## FEATURES

- CD 110 Miniatured Series Miniatured
- 85°C 2000 hours Guaranteed

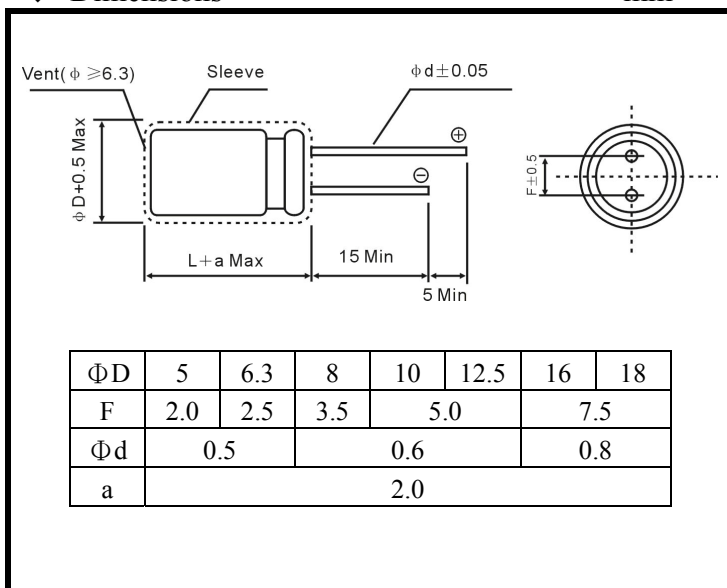


## ◆ Specifications

ITEMS	PERFORMANCE CHARACTERISTICS																																														
Operating Temperature Range(°C)	-40~+85																																														
Capacitance Tolerance (25°C, 120Hz)	±20%																																														
Leakage Current(μA)	<table border="1"> <tr> <th rowspan="2">Rated Voltage(V)</th> <th colspan="7">6.3~100</th> <th colspan="7">160~450</th> </tr> <tr> <td colspan="7">0.03cv or 4 whichever is greater(at 25°C, after 1 minutes) 0.01cv or 3 whichever is greater(at 25°C, after 2 minutes)</td> <td colspan="7">CV≤1000:0.1 CV+40(at 25°C, after 1 minutes) CV&gt;1000:0.04 CV+100(at 25°C, after 1 minutes)</td> </tr> </table>	Rated Voltage(V)	6.3~100							160~450							0.03cv or 4 whichever is greater(at 25°C, after 1 minutes) 0.01cv or 3 whichever is greater(at 25°C, after 2 minutes)							CV≤1000:0.1 CV+40(at 25°C, after 1 minutes) CV>1000:0.04 CV+100(at 25°C, after 1 minutes)																							
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Dissipation Factor (25°C, 120Hz)	<table border="1"> <tr> <th>Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>315</th> <th>350</th> <th>400</th> <th>450</th> </tr> <tr> <th>Tan δ</th> <td>0.28</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.24</td> <td>0.24</td> <td>0.24</td> <td>0.24</td> </tr> </table> <p>0.02 is added to every 1000 μF increase over</p>	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	315	350	400	450	Tan δ	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.20	0.20	0.24	0.24	0.24	0.24														
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Temperature Stability (120Hz)	<table border="1"> <tr> <th>Rated Voltage(V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>315</th> <th>350</th> <th>400</th> <th>450</th> </tr> <tr> <th rowspan="2">Impedance</th> <td>Z-25°C/Z+20°C</td> <td>5</td> <td>4</td> <td>3</td> <td colspan="3">2</td> <td colspan="8">4</td> </tr> <tr> <td>Z-40°C/Z+20°C</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td colspan="3">3</td> <td colspan="2">15</td> <td colspan="3">10</td> </tr> </table>	Rated Voltage(V)	6.3	10	16	25	35	50	63	100	160	200	250	315	350	400	450	Impedance	Z-25°C/Z+20°C	5	4	3	2			4								Z-40°C/Z+20°C	12	10	8	5	4	3			15		10		
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Load Life (+85°C)	Time	2000 hours																																													
	Leakage current	Not more than the specified value.																																													
	Capacitance Change	Within±20% of initial value																																													
	Dissipation factor	Not more than 200% of the specified value.																																													
Shelf Life (+85°C)	1000hours. No voltage applied. After test: U <sub>R</sub> to be applied for 30 minutes, 24 to 48 hours before measurement.																																														

## ◆ Dimensions

mm



## ◆ Multiplier for ripple current

### Frequency coefficient

Rated Voltage(V)	Freq(Hz) CV(μF · WV)	50,60	120	1K	10K	100K
		6.3~16	----	0.80	1	1.1
25~35	≤1000	0.80	1	1.5	1.7	1.7
	>1000	0.80	1	1.2	1.3	1.3
50~100	≤1000	0.80	1	1.6	1.9	1.9
	>1000	0.80	1	1.2	1.3	1.3
160~450	----	0.80	1	1.3	1.5	1.6

### Temperature coefficient

Temperature (°C)	+70	+85
Factor	1.35	1

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## ◆ STANDARD RATINGS

WV (V) Cap ( $\mu$ F)	6.3		10		16		25		35		50	
	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple
	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms
0.1~0.47	--	--	--	--	--	--	--	--	--	--	5x11	5
1	--	--	5x11	10	--	--	5x11	10	--	--	5x11	10
2.2	--	--	5x11	15	--	--	5x11	15	--	--	5x11	23
3.3	--	--	5x11	20	--	--	5x11	20	--	--	5x11	35
4.7	--	--	5x11	30	5x11	30	5x11	30	--	--	5x11	40
10	--	--	5x11	50	5x11	40	5x11	50	5x11	55	5x11	50
22	--	--	5x11	55	5x11	75	5x11	80	5x11	85	5x11	80
33	--	--	5x11	80	5x11	80	5x11	95	5x11	95	6.3x11	120
47	--	--	5x11	95	5x11	110	5x11	115	6.3x11	130	6.3x11	155
100	--	--	5x11	145	5x11	130	6.3x11	190	6.3x11	180	8x12	260
220	5x11	150	5x11 6.3x11	180 230	6.3x11	200	8x12	330	8x12	300	10x16 10x12	380 410
330	6.3x12	270	6.3x11	250	8x12	280	8x12	400	10x16	470	10x17	500
470	6.3x12	300	6.3x12	310	8x12	316	8x14 8x16	430	10x17	560	10x20 12.5x20	600 740
680	--	--	--	--	8x16	560	10x17	540	10x20	620	12.5x20	800
820	--	--	--	--	--	--	10x17	700	10x20	760	--	--
1000	8x12	520	8x14 8x12	560	10x16	710	10x17 10x20	830	12.5x20	880	13x26	1100
1500	--	--	--	--	--	--	--	--	13x26	1050	--	--
2200	10x17	900	10x17	970	10x20 12.5x20	900 1050	13x26	1100	16x25	1400	16x35	1550
3300	12.5x20	1050	12.5x20	1250	13x25	1400	16x25	1500	16x30	1850	18x35	2000
3900	--	--	12.5x20	1350	--	--	--	--	--	--	--	--
4700	12.5x20	1300	13x26	1500	16x25	1700	16x25	1850	18x35	2400	22x40 22x35	2900 2700
6800	13x26	1600	16x25	1850	16x35	2150	16x35	2150	22x40	2800	--	--
8200	--	--	16x30	2000	--	--	--	--	--	--	--	--
10000	16x25	2000	16x25	2300	18x35	2700	18x40	2900	22x45	3700	--	--
12000	--	--	16x35	2550	--	--	--	--	--	--	--	--
15000	16x35	2550	18x35	2950	--	--	--	--	--	--	--	--

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### ◆ STANDARD RATINGS

WV (V) / Cap (μF)	63		100	
	Size(mm)	Ripple	Size(mm)	Ripple
	□DxL	mArms	□DxL	mArms
0.1~0.47	5x11	5	5x11	8
1	5x11	10	5x11	21
2.2	5x11	25	5x11	30
3.3	5x11	35	5x11	40
4.7	5x11	40	5x11	45
10	5x11	65	6.3x11	60
22	6.3x11	100	--	--
33	--	--	8x12	140
47	8x12	140	10x16	230
100	8x14 10x12	230 300	10x20	340
220	10x17	450	13x26	620

WV (V) / Cap (μF)	63		100	
	Size(mm)	Ripple	Size(mm)	Ripple
	□DxL	mArms	□DxL	mArms
330	12.5x20	710	13x26	700
470	12.5x20	860	16x25	900
680	13x26	970	16x35	1000
820	--	--	18x35	1150
1000	16x25	1200	18x40	1380
1500	--	--	--	--
2200	18x35	2100	--	--
3300	22x40	2700	--	--
3900	--	--	--	--
4700	22x40	3100	--	--
6800	25x45	3800	--	--

WV (V) Cap (μF)	160		200		250		350		400		450	
	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple	Size(mm)	Ripple
	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms	□DxL	mArms
1	5x11	17	--	--	6.3x11	17	6.3x11	18	6.3x11	18	8x11	18
2.2	6.3x11	26	--	--	6.3x11	26	6.3x11	25	8x12	34	8x12	40
3.3	6.3x11	32	--	--	6.3x11	29	8x11	35	8x12	41	--	--
4.7	6.3x11	39	--	--	8x12	39	8x12	45	8x12	50	10x17	64
6.8	--	--	--	--	8x14	60	10x12	70	10x12	80	10x17	80
10	8x12	60	10x16	80	10x12	90	10x16	90	10x16	94	10x20 12.5x20	100 120
22	10x13	110	10x16	140	10x20 12.5x20	150 190	12.5x20	180	12.5x20	173	13x21	170
33	10x16	190	10x16	180	13x26 16x20	210 140	12.5x20	220	13x25	230	16x25	230
47	10x20	235	12.5x20	260	13x26 16x20	250 170	16x25	280	16x25	300	16x25	300
68	12.5x20	270	13x26	330	16x25	330	16x30	400	18x25	450	18x30	360
82	--	--	--	--	--	--	16x35	440	--	--	--	--
100	13x26	330	16x25	470	16x30	460	18x30	500	18x35	580	18x40	430
120	13x26	390	16x25	560	--	--	--	--	18x35	650	18x40	500
150	16x25	450	16x30	650	--	--	--	--	--	--	--	--
180	16x30	530	--	--	--	--	--	--	--	--	--	--
220	16x30	636	16x35	727	22x35	1000	--	--	--	--	--	--
330	18x30	900	18x30	880	--	--	--	--	--	--	--	--