

ALUMINUM ELECTROLYTIC CAPACITOR

Suntan®

GENERAL, MINIATURIZED

TS13D CD135

FEATURES

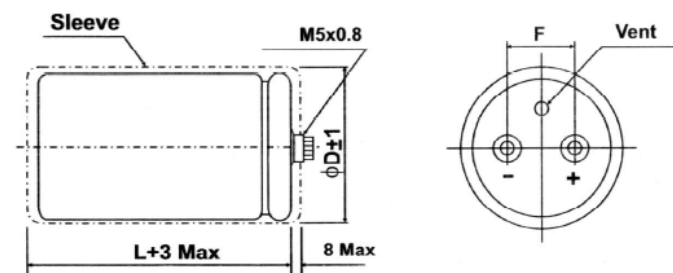
- Load life of 2000 hours at 85°C
- Size may be selected
- High ripple current
- Used for computers, communication powers and inverters



◆ Specifications

ITEMS		PERFORMANCE CHARACTERISTICS	
Operating Temperature Range(°C)		-40~+85 (315WV, -25~+85)	
Capacitance Tolerance(25°C, 120Hz)		±20%	
Leakage Current(μA)		0.02CV or 5mA, whichever is smaller. (at 25°C, after 5 minutes) C: Nominal capacitance (μF) V: Rated voltage (V)	
Dissipation Factor		See Standard Ratings Table	
Load Life (+85°C)	Time	2000hours	
	Leakage Current	Not more than the specified value.	
	Capacitance Change	Within±20% of the initial value	
	Dissipation Factor	Not more than 200% of the specified value.	
Shelf Life (+85°C)	Time	1000hours	
	Leakage Current	Not more than the specified value.	
	Capacitance Change	Within ±20% of the initial value	
	Dissipation Factor	Not more than 200% of the specified value.	
		After Test: U _R to be applied for 60 minutes, 24 to 48 hours before measurement	

◆ Dimensions



ΦD	35	51	63.5	78	89
F	13	22	28	32	32

◆ Case code

mm

L ΦD	580	63	72	80	90	100	115	120	130	140	160
35	A5	A6	A7	A8	A9	A10	A11	A12	---	---	---
51	---	C6	C7	C8	C9	C10	C11	C12	C13	---	---
63.5	---	---	D7	D8	D9	D10	D11	D12	D13	D14	---
76	---	---	---	E8	E9	E10	E11	E12	E13	E14	E16
89	---	---	---	F8	F9	F10	F11	F12	F13	F14	F16

◆ Multiplier for ripple current

Frequency coefficient

Rated Voltage (V)	Frequency(Hz)							
	50	120	300	1K	3K	5K	10K	20K
10~50	0.95	1	1.04	1.10	1.12	1.13	1.15	1.15
63~100	0.95	1	1.06	1.16	1.20	1.25	1.30	1.363
160~200	0.90	1	1.10	1.20	1.35	1.40	1.50	1.55
250~450	0.80	1	1.10	1.20	1.35	1.40	1.50	1.55

Temperature coefficient

Rated Voltage(V)	Temperature(°C)			
	+40	+55	+70	+85
10~100	2.1	1.8	1.5	1
160~450	2.6	2.2	1.7	1

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Rated Voltage (V.DC)	Surge Voltage (V.DC)	Rated Capacitance (μ F)	Dissipation Factor MAX	Ripple Current 85°C 120Hz	Outline Size	
					Code	ØDxL(mm)
10	13	33000	0.80	4.3	A5	36x53
		39000	0.80	4.7	A5	36x53
		47000	0.80	5.2	A6	36x65
		56000	0.80	6.1	A8	36x83
		68000	0.80	6.7	A8	36x83
		82000	0.80	7.7	A10	36x100
		100000	0.80	8.8	A10	36x100
		120000	0.80	10.0	A12	36x121
		150000	1.00	10.8	A12	36x121
		180000	1.00	12.0	C10R	51x96
		220000	1.50	11.2	C12	51x121
		270000	1.50	12.8	C12	51x121
		330000	1.50	15.3	D10R	64x96
		390000	1.50	17.3	D12R	64x115
		470000	2.00	16.7	D13R	64x130
		560000	2.00	19.0	E12R	77x115
		680000	2.00	21.7	E13R	77x130
820000	2.00	24.7	E16R	77x155		
16	20	22000	0.60	4.1	A5	36x53
		27000	0.60	4.5	A5	36x53
		33000	0.60	5.0	A5	36x53
		39000	0.60	5.9	A6	36x65
		47000	0.60	6.4	A8	36x83
		56000	0.60	7.3	A8	36x83
		68000	0.60	8.4	A10	36x100
		82000	0.80	8.3	A10	36x100
		100000	0.80	9.5	A12	36x121
		120000	0.80	10.9	A12	36x121
		150000	1.00	11.3	C10R	51x96
		180000	1.00	12.8	C12R	51x115
		220000	1.00	15.3	C13R	51x130
		270000	1.00	17.6	D10R	64x96
		330000	1.50	16.8	D12R	64x115
		390000	1.50	18.3	D13R	61x130
		470000	1.50	21.3	E12R	77x115
560000	1.50	23.6	E13R	77x130		
680000	1.50	27.6	E16R	77x115		
820000	2.00	27.1	F16R	90x157		
25	32	15000	0.50	3.7	A5	36x53
		18000	0.50	4.1	A5	36x53
		22000	0.50	4.5	A5	36x53
		27000	0.50	5.0	A6	36x65
		33000	0.50	5.9	A8	36x83
		39000	0.50	6.7	A8	36x83
		47000	0.50	7.7	A10	36x100
		56000	0.60	7.9	A10	36x100
		68000	0.60	9.1	A12	36x121
		82000	0.60	10.4	A12	36x121
		100000	0.80	10.3	C10R	51x96
		120000	0.80	11.7	C12R	51x115
		150000	0.80	14.1	C13R	51x130
		180000	0.80	15.7	D10R	64x96
		220000	1.00	16.1	D12R	64x115
		270000	1.00	18.6	D13R	64x130
		330000	1.00	21.9	D16R	64x155
		390000	1.20	22.0	E12R	77x115
		470000	1.20	25.6	E16R	77x115
560000	1.20	27.9	F13R	90x131		
680000	1.20	32.5	F16R	90x157		

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■STANDARD RATINGS

Rated Voltage (V.DC)	Surge Voltage (V.DC)	Rated Capacitance (μ F)	Dissipation Factor MAX	Ripple Current 85°C 120Hz	Outline Size	
					Code	ØDxL(mm)
35	44	10000	0.40	3.4	A5	36x53
		12000	0.40	3.7	A5	36x53
		15000	0.40	4.2	A6	36x65
		18000	0.40	4.9	A8	36x83
		22000	0.40	5.7	A8	36x83
		27000	0.40	6.3	A10	36x100
		33000	0.40	7.2	A10	36x100
		39000	0.50	7.3	A12	36x121
		47000	0.50	8.7	C10R	51x96
		56000	0.60	8.6	C10R	51x96
		68000	0.60	9.8	C12R	51x115
		82000	0.60	11.6	D10R	64x96
		100000	0.60	13.3	D12R	64x115
		120000	0.60	14.8	D12	64x121
		150000	0.80	14.9	D13R	64x130
		180000	0.80	17.0	E12R	77x115
		220000	0.80	20.0	E13R	77x130
		270000	1.00	2.0.3	E16R	77x155
		330000	1.00	23.5	F13R	90x131
390000	1.00	26.4	F16R	90x157		
470000	1.00	29.6	F16R	90x157		
50	63	5600	0.30	3.0	A5	36x53
		6800	0.30	3.3	A5	36x53
		8200	0.30	3.6	A5	36x53
		10000	0.30	4.0	A6	36x65
		12000	0.30	4.7	A8	36x83
		15000	0.30	5.5	A8	36x83
		18000	0.30	6.2	A10	36x100
		22000	0.40	6.3	A12	36x121
		27000	0.40	7.1	A12	36x121
		33000	0.40	8.2	C10R	51x96
		39000	0.50	8.1	C10R	51x96
		47000	0.50	9.3	C12R	51x115
		56000	0.50	10.5	D10R	64x96
		68000	0.50	12.0	D10R	64x96
		82000	0.50	13.7	D12R	64x115
		100000	0.60	14.7	E12R	77x115
		120000	0.60	16.7	E12	77x115
		150000	0.60	19.3	E13R	77x130
		180000	0.60	21.9	E16R	77x155
220000	0.60	21.4	F13R	90x131		
270000	0.60	24.6	F16R	90x157		
63	79	3900	0.25	2.7	A5	36x53
		4700	0.25	3.0	A5	36x53
		5600	0.25	3.3	A5	36x53
		6800	0.25	3.6	A6	36x65
		8200	0.25	4.3	A8	36x83
		10000	0.25	4.9	A8	36x83
		12000	0.25	5.6	A10	36x100
		15000	0.30	5.9	A10	36x100
		18000	0.30	6.7	A12	36x121
		22000	0.30	7.8	A12	36x121
		27000	0.40	7.4	C10R	51x96
		33000	0.40	8.4	C10R	51x96
		39000	0.40	9.5	C12R	51x115
		47000	0.40	11.3	C13R	51x130
		56000	0.40	12.8	D12R	64x115
		68000	0.50	12.7	D12	64x121
		82000	0.50	14.5A5	D13R	64x130

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					Code	ØxL(mm)
63	79	100000	0.50	16.7	E12R	77x115
		120000	0.50	18.9	E13R	77x130
		150000	0.50	22.4	E16R	77x155
		180000	0.60	22.4	F13R	90x131
		220000	0.60	26.2	F16R	90x157
80	100	3300	0.25	2.5	A5	36x53
		3900	0.25	2.8	A5	36x53
		4700	0.25	3.0	A6	36x65
		5600	0.25	3.6	A8	36x83
		6800	0.25	3.9	A8	36x83
		8200	0.25	4.5	A8	36x83
		10000	0.25	5.2	A10	36x100
		12000	0.25	5.9	A10	36x100
		15000	0.25	6.8	A12	36x121
		18000	0.25	7.8	A12	36x121
		22000	0.30	8.0	C10R	51x96
		27000	0.30	9.2	C10R	51x96
		33000	0.30	10.5	C12R	51x115
		39000	0.30	12.0	C13R	51x130
		47000	0.30	13.6	D12R	64x115
		56000	0.40	13.4	D13R	64x130
		68000	0.40	15.4	E12R	77x115
		82000	0.40	17.5	E13R	77x130
		100000	0.40	20.5	E16R	77x155
		120000	0.40	22.4	F13R	90x131
150000	0.40	26.5	F16R	90x157		
100	125	1800	0.25	1.9	A5	36x53
		2200	0.25	2.1	A5	36x53
		2700	0.25	2.3	A5	36x53
		3300	0.25	2.6	A6	36x65
		3900	0.25	3.0	A8	36x83
		4700	0.25	3.5	A8	36x83
		5600	0.25	3.9	A10	36x100
		6800	0.25	4.5	A10	36x100
		8200	0.25	5.1	A12	36x121
		10000	0.25	5.9	A12	36x121
		12000	0.25	6.4	C8R	51x75
		15000	0.25	7.0	C10R	51x96
		18000	0.25	8.3	C12R	51x115
		22000	0.25	10.0	C13R	51x130
		27000	0.25	11.5	D12R	64x115
		33000	0.25	11.9	D13R	64x130
		39000	0.25	13.4	E12R	77x115
		47000	0.35	14.2	E13R	77x130
		56000	0.35	16.0	E16R	77x155
		68000	0.35	18.8	F13R	90x131
82000	0.35	20.5	F16R	90x157		
100000	0.35	24.0	F17R	90x171		
160	200	3300	0.25	5.18	A12	36x121
		3900	0.25	5.33	C8R	51x75
		4700	0.25	5.85	C8R	51x75
		5600	0.25	7.03	C10R	51x96
		6800	0.25	7.77	C10R	51x96
		8200	0.25	9.14	C12R	51x115
		10000	0.25	10.36	D10R	64x96
		12000	0.25	11.32	D10R	64x96
		15000	0.25	14.28	D13R	64x130
		18000	0.25	15.61	D13R	64x130
		22000	0.25	18.28	E13R	77x130
		27000	0.25	20.24	E13R	77x130
		33000	0.25	23.75	E13R	90x131
39000	0.25	27.86	F16R	90x157		

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Rated Voltage (V.DC)	Surge Voltage (V.DC)	Rated Capacitance (μ F)	Dissipation Factor MAX	Ripple Current 85°C 120Hz	Outline Size	
					Code	ØDxL(mm)
200	250	2200	0.25	3.92	A10	36x100
		2700	0.25	4.70	A12	36x121
		3300	0.25	4.92	C8R	51x75
		3900	0.25	5.33	C8R	51x75
		4700	0.25	6.44	C10R	51x96
		5600	0.25	7.55	C12R	51x115
		6800	0.25	8.77	C13R	51x130
		8200	0.25	9.40	D10R	64x96
		10000	0.25	10.36	D10R	64x96
		12000	0.25	12.06	E10R	77x96
		15000	0.25	14.43	E10R	77x96
		18000	0.25	16.50	E13R	77x130
		22000	0.25	19.61	E16R	77x155
		27000	0.25	21.51	F13R	90x131
33000	0.25	25.53	F16R	90x157		
250	300	1500	0.25	3.22	A10	36x100
		1800	0.25	3.52	A10	36x100
		2200	0.25	4.00	C8R	51x75
		2700	0.25	4.44	C8R	51x75
		3300	0.25	5.40	C10R	51x96
		3900	0.25	6.29	C12R	51x115
		4700	0.25	7.10	D10R	64x96
		5600	0.25	7.77	D10R	64x96
		6800	0.25	9.14	D12R	64x115
		8200	0.25	10.03	D12R	64x115
		10000	0.25	11.66	D13R	64x130
		12000	0.25	12.88	E12R	77x115
		15000	0.25	15.10	E13R	77x130
		18000	0.25	17.69	E16R	77x155
22000	0.25	20.91	F16R	90x157		
350	400	390	0.20	1.67	A5	36x53
		470	0.20	2.15	A8	36x83
		560	0.20	2.37	A8	36x83
		680	0.20	2.59	A8	36x83
		820	0.20	3.07	A10	36x100
		1000	0.20	3.41	A10	36x100
		1200	0.20	3.81	C8R	51x75
		1500	0.20	4.26	C8R	51x75
		1800	0.20	5.14	C10R	51x96
		2200	0.20	5.70	C10R	51x96
		2700	0.20	7.14	C13R	51x130
		3300	0.20	7.92	C13R	51x130
		3900	0.20	9.00	D12R	64x115
		4700	0.20	10.33	D13R	64x130
		5600	0.20	11.36	E12R	77x115
		6800	0.20	13.10	E13R	77x130
		8200	0.20	15.43	F16R	77x155
		10000	0.20	18.13	F16R	90x157
		12000	0.20	20.02	F16R	90x157
15000	0.20	24.50	F20R	90x196		
18000	0.20	28.83	F24R	90x236		
400	450	330	0.20	1.52	A5	36x53
		390	0.20	1.96	A8	36x83
		470	0.20	2.15	A8	36x83
		560	0.20	2.37	A8	36x83
		680	0.20	2.82	A10	36x100
		820	0.20	3.07	A10	36x100
		1000	0.20	3.48	C8R	51x75
		1200	0.20	3.82	C8R	51x75
		1500	0.20	4.70	C10R	51x96
		1800	0.20	5.15	C10R	51x96
		2200	0.20	6.44	C13R	51x120

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					Code	ØDxL(mm)
400	450	2700	0.20	6.96	D10R	64x96
		3300	0.20	8.22	D12R	64x115
		3900	0.20	9.40	D13R	64x130
		4700	0.20	10.44	E12R	77x115
		5600	0.20	11.92	E13R	77x130
		6800	0.20	14.06	E16R	77x155
		8200	0.20	16.43	F16R	90x157
		10000	0.20	18.28	F16R	90x157
		12000	0.20	21.84	F20R	90x196
		15000	0.20	26.31	F24R	90x236
450	500	270	0.20	1.37	A5	36x53
		330	0.20	1.82	A8	36x83
		390	0.20	1.96	A8	36x83
		470	0.20	2.15	A8	36x83
		560	0.20	2.55	A10	36x100
		680	0.20	2.81	A10	36x100
		820	0.20	3.18	C8R	51x75
		1000	0.20	3.48	C8R	51x75
		1200	0.20	4.22	C10R	51x96
		1500	0.20	5.07	C12R	51x115
		1800	0.20	5.85	C13R	51x130
		2200	0.20	6.29	D10R	64x96
		2700	0.20	7.48	D12R	64x115
		3300	0.20	8.66	D13R	64x130
		3900	0.20	9.47	E12R	77x115
		4700	0.20	10.88	E13R	77x130
		5600	0.20	12.80	E16R	77x155
		6800	0.20	15.00	F16R	90x157
		8200	0.20	16.50	F16R	90x157
		10000	0.20	20.00	F20R	90x196
12000	0.20	23.61	F24R	90x236		

Note: Specification are subject to change without notice. For more detail and update, please visit our website.