

# SX [ For Low Impedance & Low E.S.R ]

105°C Single-Ended Lead Aluminum Electrolytic Capacitors For High Frequency Applications

## Miniature Size Aluminum Electrolytic Capacitors

### ELECTRICAL CHARACTERISTICS

Operating Temperature : -40° ~ +105°C

Working Voltage : 6.3 ~ 100V

Rate Capacitance Range : 22 ~ 15000μF

Capacitance Tolerance : -20 ~ +20%

DC Leakage Current (μA) : I = 0.01 CV or 3(μA) Whichever is greater.

( Measurements shall be Made After a 2 Minute Charge at Rated Working Voltage )

Dissipation Factor : at 120 Hz, 25°C

WV (V) :	6.3	10	16	25	35	50	63	80	100
D.F (%) :	19	16	14	12	10	8	8	7	7

For capacitor whose capacitance exceeds 1000μF. The value of D.F(%) is increased by 2% for every addition of 1000μF.

Temperature Characteristics : at 120 Hz

WV (V) :	6.3	10	16	25	35	50	63	100
Impedance : Z -40°C / Z +20°C	10	6	5	4	4	4	4	4

Load Life : At 105°C Assured with Full Rated Maximum Ripple Current Applied

Case Dia	øD ≤ 8	øD = 10	øD ≥ 12
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Load Life	2000	3000	5000
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- (a) Capacitance Change : Within 20% of Initial Value
- (b) Dissipation Factor : Not Exceed 200% of Initial Requirement
- (c) Leakage Current : Not Exceed the Initial Requirement

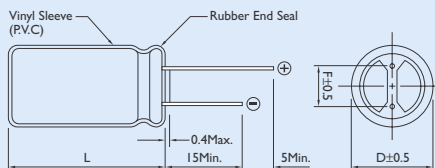
Shelf Life : 1000 Hours, No Voltage Applied, at 105°C

- (a) Capacitance Change : Within 20% of Initial Value
- (b) Dissipation Factor : Not Exceed 200 % of Initial Requirement
- (c) Leakage Current : Not Exceed 200% of Initial Requirement

### DIAGRAM OF DIMENSIONS

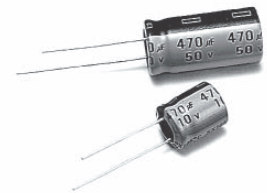
Dø	F	dø
4.0	1.5	0.45
5.0	2.0	0.5
6.0	2.5	
8.0	3.5	
10.0	5.0	0.6
12.0		
13.0		
16.0	7.5	0.8
18.0		
22.0	10.0	0.8

#### Rubber Stand-off



L ≤ 12 L + 1.5Max.  
 13 ≤ L ≤ 15 L + 1.0Max.  
 L ≥ 16 L + 2.0Max.

### DESCRIPTION



Used in switching regulator applications in computers. Especially for high frequency.

Low impedance and E.S.R., high permissible ripple current at high frequency and higher operation temperature (-40°C to +105°C).

High Temperature Load Life at 105°C for 2000 ~ 5000 Hours

### Multiplier for Ripple Current

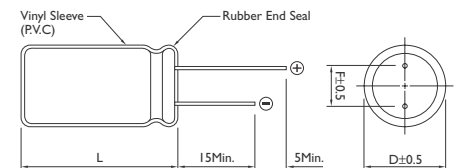
Frequency coefficient

Frequency(Hz)	50	120	300	1K	10K	100K
~4.4μF	0.30	0.40	0.50	0.70	0.80	1.00
5.6~33μF	0.40	0.50	0.60	0.80	0.90	1.00
34~330μF	0.60	0.70	0.80	0.90	0.95	1.00
331~1000μF	0.65	0.90	0.90	0.98	1.00	1.00
1200μF higher	0.85	0.90	0.95	0.98	1.00	1.00

Temperature coefficient

Temperature(°C)	65	85	105
Factor	1.80	1.50	1.00

Dimensions : mm





## CASE SIZE OF STANDARD PRODUCTS $D\varnothing \geq 6\text{mm}$ with Safety Vent at Can Bottom

CAP. ( $\mu\text{F}$ )	RATED VOLTAGE								
	SIZE	6.3 Ripple	ESR	SIZE	10 Ripple	ESR	SIZE	16 Ripple	ESR
4.7									
6.8									
10				5 × 11	20	5.900			
							5 × 11	42	1.180
22				5 × 11	44	5.400	5 × 11	53	3.300
33				5 × 11	66	3.300	5 × 11	79	2.100
47				5 × 11	94	2.200	5 × 11	113	1.300
68				5 × 11	136	1.300	5 × 11	145	0.920
							6 × 11	163	0.920
100	5 × 11	166	1.500	5 × 11	170	1.150	6 × 11	190	1.100
				6 × 11	200	1.150	8 × 11	241	0.890
120	5 × 11	175	1.300	6 × 11	240	0.910	8 × 11	290	0.580
150	6 × 11	225	0.920	6 × 11	265	0.700	8 × 11	380	0.470
220	8 × 11	285	0.610	6 × 11	290	0.590	8 × 11	410	0.330
				8 × 11	370	0.480			
330	8 × 11	410	0.400	8 × 11	470	0.330	10 × 12	600	0.230
470	10 × 12	550	0.280	8 × 11	480	0.300	8 × 20	710	0.180
				10 × 12	590	0.240	10 × 15	750	0.180
680	10 × 15	735	0.220	8 × 20	790	0.180	10 × 19	1050	0.140
				10 × 15	750	0.170			
820	10 × 15	795	0.190	10 × 19	990	0.140	10 × 25	1220	0.120
1000	10 × 19	950	0.170	10 × 15	900	0.135	10 × 30	1400	0.091
				10 × 19	1060	0.120			
1200	10 × 19	1020	0.140	10 × 25	1290	0.120	10 × 25	1240	0.100
							12 × 25	1450	0.086
1500	10 × 19	1000	0.140	10 × 30	1450	0.093	12 × 25	1650	0.072
	10 × 25	1200	0.120						
2200	10 × 30	1450	0.095	12 × 30	1570	0.087	12 × 30	1820	0.069
				13 × 20	1900	0.073	13 × 25	2000	0.063
3300	12 × 35	1700	0.081	10 × 30	1690	0.077	13 × 40	2400	0.055
				12 × 35	2110	0.062			
4700	12 × 35	2110	0.063	13 × 40	2300	0.057	16 × 6	2650	0.046
				16 × 32	2450	0.054			
6800	16 × 32	2350	0.055	16 × 36	2680	0.046	18 × 36	2900	0.040
8200	16 × 36	2550	0.047	16 × 40	2850	0.038	18 × 40	3050	0.036
10000	16 × 40	2750	0.039	16 × 40	3050	0.037			
15000	18 × 40	2950	0.037						

Note : \* 1. D × L : mm

\*2. Ripple Current : ( mA r.m.s 105°C / 100kHz )

\*3. ESR (  $\Omega$  Max20°C / 100kHz )



## CASE SIZE OF STANDARD PRODUCTS $D\varnothing \geq 6\text{mm}$ with Safety Vent at Can Bottom

CAP. ( $\mu\text{F}$ )	RATED VOLTAGE								
	SIZE	25 Ripple	ESR	SIZE	35 Ripple	ESR	SIZE	50 Ripple	ESR
4.7									
6.8							5 × 11	39	3.100
10				5 × 11	42	3.100	5 × 1	58	2.000
22	5 × 11	66	3.300	5 × 11	101	1.300	6 × 11	129	0.900
33	5 × 11	99	1.300	6 × 11	151	0.870	8 × 11	194	0.720
47	5 × 1	141	1.100	8 × 11	216	0.870	8 × 11	276	0.660
68	8 × 11	204	0.570	8 × 11	312	0.370	10 × 12	400	0.310
100	6 × 11	240	0.530	8 × 11	370	0.390	8 × 15	530	0.240
	8 × 11	300	0.420	10 × 12	460	0.320	10 × 15	635	0.200
120	8 × 11	400	0.380	10 × 12	550	0.260	10 × 15	670	0.170
150	10 × 12	460	0.330	10 × 12	600	0.230	10 × 19	860	0.150
220	10 × 15	630	0.230	10 × 12	690	0.210	10 × 15	780	0.150
				10 × 15	800	0.180	10 × 25	1030	0.110
330	10 × 12	690	0.220	10 × 19	1060	0.130	10 × 30	1070	0.110
	10 × 15	800	0.190				12 × 20	1220	0.092
470							13 × 25	1300	0.086
	10 × 15	890	0.165	10 × 30	990	0.089	12 × 25	1500	0.068
560	10 × 19	1050	0.140	13 × 25	1060	0.086			
	10 × 19	1170	0.120	12 × 20	1500	0.080			
680	12 × 16	1200	0.120						
680	10 × 30	1400	0.090	12 × 25	1650	0.070	12 × 35	1850	0.058
820	12 × 25	1450	0.085	12 × 30	1750	0.066	12 × 40	2020	0.052
1000	12 × 20	1420	0.091	12 × 30	2000	0.061	16 × 25	1800	0.060
	12 × 25	1650	0.078				16 × 32	2120	0.050
1200	12 × 30	1700	0.070	12 × 35	2200	0.049	16 × 36	2260	0.043
1500	12 × 30	1950	0.062	12 × 40	2350	0.046	16 × 40	2420	0.035
2200	12 × 40	2360	0.054	16 × 36	2700	0.044			
3300	16 × 36	2700	0.045	18 × 40	3050	0.035			
3900									
4700	18 × 40	3000	0.036						
6800									
8200									
10000									
15000									

Note : \* 1. D × L : mm

\*2. Ripple Current : ( mA r.m.s 105°C / 100KHz )

\*3. ESR (  $\Omega$  Max20°C / 100KHz )



**CASE SIZE OF STANDARD PRODUCTS**  $D\varnothing \geq 6\text{mm}$  with Safety Vent at Can Bottom

CAP. ( $\mu\text{F}$ )	RATED VOLTAGE								
	SIZE	63 Ripple	ESR	SIZE	80 Ripple	ESR	SIZE	100 Ripple	ESR
4.7	5 x 11	36	4.600	5 x 11	43	4.200	5 x 11	65	4.100
6.8	5 x 11	52	4.300	5 x 11	62	1.900	8 x 11	94	1.300
10	5 x 11	77	2.000	6 x 11	92	1.400	8 x 11	138	1.100
15	6 x 11	116	1.400	8 x 11	138	1.100	8 x 11	207	0.800
22	8 x 11	170	1.200	8 x 11	203	0.640	10 x 12	305	0.530
33	8 x 11	256	0.660	10 x 12	305	0.540	10 x 15	500	0.350
47	10 x 12	365	0.560	10 x 15	410	0.360	10 x 19	600	0.300
68	10 x 15	500	0.360	10 x 19	600	0.260	10 x 25	795	0.190
100	10 x 15	750	0.310	10 x 25	795	0.190	10 x 30	870	0.170
							13 x 20	955	0.150
120	10 x 19	820	0.270	10 x 30	900	0.170	12 x 30	1040	0.130
150	10 x 25	950	0.200	10 x 30	955	0.150	12 x 30	1200	0.110
180							13 x 25	1300	0.100
220	12 x 25	1150	0.160	12 x 30	1200	0.130	16 x 32	1440	0.086
330	12 x 30	1360	0.140	12 x 35	1450	0.088	16 x 32	1610	0.070
	13 x 25	1420	0.130				16 x 36	1790	0.062
470	12 x 35	1780	0.091	16 x 32	1790	0.063	16 x 40	2160	0.048
							18 x 36	2200	0.047
560									
680	16 x 32	2050	0.065	16 x 40	1990	0.058			
820	16 x 36	2200	0.056	18 x 36	2200	0.050			
1000	18 x 36	2330	0.049	18 x 40	2370	0.044			
1200	18 x 40	2520	0.046						
1500									
2200									
3300									
3900									
4700									
6800									
8200									
10000									
15000									

Note : \* 1. D x L : mm

\*2. Ripple Current : ( mA r.m.s 105°C / 100KHz )

\*3. ESR (  $\Omega$  Max25°C / 100KHz )