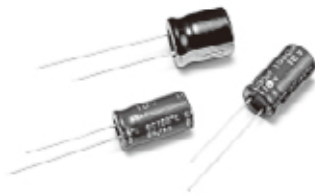




Miniature Size Aluminum Electrolytic Capacitors

SY [For Low Impedance and Low E.S.R Suitable for Output of Mother Board]

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



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 operating temperature (-40°C to +105°C).

High Temperature Load Life at 105°C for 6000 Hours

ELECTRICAL CHARACTERISTICS

Operating Temperature : -40° ~ +105°C

Working Voltage : 6.3 ~ 50V

Rate Capacitance Range : 1 ~ 18000µF

Capacitance Tolerance : -20 ~ +20%

DC Leakage Current (µA) : I = 0.01 CV(µA) or 3µA 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 |
| D.F (%) : | 22 | 19 | 16 | 14 | 12 | 10 |

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

| | | | | | | | |
|-------------|---------------------|-----|----|----|----|----|----|
| WV (V) : | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| Impedance : | Z - 25°C / Z + 20°C | 4 | 3 | 2 | 2 | 2 | 2 |
| Impedance : | Z - 40°C / Z + 20°C | 8 | 6 | 4 | 3 | 3 | 3 |

Load Life

| | | | | |
|------|---------|-----------|---------------|---------|
| Dø : | 5ø~6.3ø | 8ø~10øx12 | 10øx15~10øx30 | 12ø~18ø |
|------|---------|-----------|---------------|---------|

| | | | | |
|--------|---------|---------|---------|---------|
| Life : | 3000hrs | 4000hrs | 5000hrs | 6000hrs |
|--------|---------|---------|---------|---------|

If dimension is down size , Endurance will be less 1000 hrs than standard.

- (a) Capacitance Change : Within 25% of Initial Value
- (b) Dissipation Factor : Not Exceed 200% of Initial Requirement
- (c) Leakage Current : Not Exceed the Initial Requirement

Shelf Life : 500 Hours, No Voltage Applied, at 105°C

- (a) Capacitance Change : Within 25% of Initial Value
- (b) Dissipation Factor : Not more than 200% of specified value
- (c) Leakage Current : Not more than 200% of specified value



RoHS COMPLIANT

Frequency coefficient

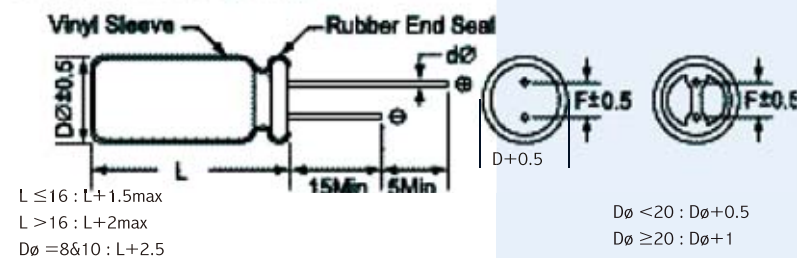
| Frequency(Hz) | 120 | 1K | 10K | 100K |
|---------------|------|------|------|------|
| 22~180µF | 0.40 | 0.75 | 0.90 | 1.00 |
| 220~560µF | 0.50 | 0.85 | 0.94 | 1.00 |
| 680~1800µF | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200~3900µF | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700µF Higher | 0.85 | 0.95 | 0.98 | 1.00 |

Temperature coefficient

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

DIAGRAM OF DIMENSIONS

Dimensions [mm]



Dimensions : mm

| 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 |



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

| CAP. (μF) | RATED VOLTAGE | | | | | | | | |
|------------------------|---------------|--------|-----------|-----------|--------|-----------|-----------|--------|-----------|
| | 6.3 | | | 10 | | | 16 | | |
| | Size | Ripple | Impedance | Size | Ripple | Impedance | Size | Ripple | Impedance |
| 47 | | | | | | | 5 x 11 | 184 | 0.754 |
| 68 | | | | | | | 5 x 11 | 184 | 0.754 |
| 56 | | | | | | | 5 x 11 | 184 | 0.580 |
| 82 | | | | 5 x 11 | 184 | 0.754 | 5 x 11 | 184 | 0.754 |
| 100 | 5 x 11 | 184 | 0.754 | 5 x 11 | 184 | 0.754 | 6.3 x 11 | 298 | 0.286 |
| 120 | | | | | | | 6.3 x 11 | 298 | 0.286 |
| 150 | 5 x 11 | 210 | 0.754 | 6.3 x 11 | 298 | 0.286 | | | |
| 180 | | | | 6.3 x 11 | 298 | 0.286 | 8 x 11 | 561 | 0.169 |
| 220 | 6.3 x 11 | 298 | 0.286 | 6 x 11 | 298 | 0.286 | 8 x 11 | 561 | 0.169 |
| | | | | 8 x 11 | 561 | 0.169 | | | |
| 330 | 6.3 x 11 | 298 | 0.286 | 8 x 11 | 561 | 0.169 | 8 x 11 | 561 | 0.169 |
| | 8 x 11 | 340 | 0.220 | | | | | | |
| 390 | 8 x 11 | 561 | 0.169 | 8 x 11 | 561 | 0.169 | 10 x 12 | 561 | 0.169 |
| 470 | 8 x 11 | 561 | 0.169 | 8 x 11 | 561 | 0.169 | 8 x 15 | 737 | 0.113 |
| | 8 x 11 | 561 | 0.169 | | | | 10 x 12 | 759 | 0.104 |
| 560 | 8 x 11 | 561 | 0.169 | | | | 10 x 15 | 1061 | 0.078 |
| 680 | 8 x 11 | 640 | 0.130 | 8 x 15 | 737 | 0.113 | 8 x 20 | 921 | 0.090 |
| | | | | 10 x 12 | 759 | 0.104 | 10 x 15 | 1061 | 0.078 |
| 820 | 8 x 15 | 737 | 0.113 | 10 x 12 | 865 | 0.080 | 10 x 19.5 | 1228 | 0.060 |
| | 10 x 12 | 759 | 0.104 | 10 x 15 | 1061 | 0.078 | | | |
| 1000 | 8 x 15 | 840 | 0.087 | 8 x 20 | 921 | 0.090 | 10 x 19.5 | 1228 | 0.006 |
| | 10 x 12 | 759 | 0.104 | 10 x 15 | 1061 | 0.078 | 10 x 25 | 1447 | 0.055 |
| | | | | | | | 13 x 15 | 1450 | 0.049 |
| 1200 | 8 x 20 | 921 | 0.090 | 10 x 19.5 | 1228 | 0.060 | 10 x 25 | 1447 | 0.055 |
| | 10 x 15 | 1061 | 0.078 | | | | | | |
| 1500 | 10 x 19.5 | 1228 | 0.060 | 10 x 25 | 1272 | 0.055 | 10 x 30 | 1675 | 0.040 |
| | | | | 13 x 15 | 1450 | 0.049 | 13 x 20 | 1666 | 0.046 |
| | | | | | | | 16 x 15 | 1570 | 0.072 |
| 1800 | 10 x 25 | 1447 | 0.055 | 10 x 19.5 | 1666 | 0.060 | 13 x 25 | 1863 | 0.039 |
| | 13 x 15 | 1450 | 0.049 | | | | | | |
| 2200 | 10 x 25 | 1447 | 0.055 | 10 x 30 | 1675 | 0.040 | 13 x 25 | 1863 | 0.039 |
| | | | | 13 x 20 | 1666 | 0.046 | 18 x 15 | 2210 | 0.043 |
| | | | | 16 x 15 | 1940 | 0.042 | | | |
| 2700 | 10 x 30 | 1675 | 0.040 | 18 x 15 | 1772 | 0.066 | 13 x 30 | 2214 | 0.034 |
| | 13 x 20 | 1666 | 0.046 | 13 x 25 | 1863 | 0.039 | 16 x 20 | 1938 | 0.046 |
| | 16 x 15 | 1940 | 0.042 | | | | | | |
| 3300 | 13 x 20 | 1900 | 0.035 | 13 x 25 | 2210 | 0.034 | 13 x 35 | 2406 | 0.029 |
| | | | | | | | 18 x 20 | 2157 | 0.044 |
| 3900 | 13 x 25 | 1863 | 0.039 | 13 x 30 | 2406 | 0.029 | 13 x 40 | 3350 | 0.017 |
| | 18 x 15 | 2210 | 0.043 | 16 x 20 | 1938 | 0.046 | 16 x 25 | 2238 | 0.036 |
| | | | | | | | 18 x 20 | 2188 | 0.044 |
| 4700 | 13 x 30 | 2214 | 0.034 | 13 x 25 | 2798 | 0.025 | 16 x 32 | 2657 | 0.029 |
| | | | | 16 x 25 | 2238 | 0.036 | 18 x 25 | 2430 | 0.031 |
| 5600 | 13 x 35 | 2406 | 0.029 | 13 x 40 | 3350 | 0.017 | 16 x 36 | 2740 | 0.026 |
| | 16 x 20 | 1938 | 0.046 | 16 x 25 | 2238 | 0.036 | 18 x 32 | 3157 | 0.026 |
| | | | | 18 x 20 | 2188 | 0.044 | | | |
| 6800 | 13 x 40 | 2798 | 0.025 | 16 x 32 | 2657 | 0.029 | 16 x 40 | 3408 | 0.022 |
| | 16 x 25 | 2238 | 0.036 | 18 x 25 | 2430 | 0.031 | | | |
| | 18 x 20 | 2188 | 0.044 | | | | | | |
| 8200 | 16 x 32 | 2657 | 0.029 | 16 x 36 | 2740 | 0.026 | 18 x 36 | 3191 | 0.025 |
| | | | | 18 x 32 | 3157 | 0.026 | 18 x 40 | 4280 | 0.012 |
| | | | | 18 x 36 | 4170 | 0.015 | | | |
| 10000 | 16 x 36 | 2740 | 0.026 | 16 x 40 | 4080 | 0.013 | 18 x 40 | 3316 | 0.020 |
| | 18 x 25 | 2430 | 0.031 | 18 x 36 | 3191 | 0.025 | | | |
| 12000 | 16 x 40 | 3408 | 0.022 | 18 x 40 | 3316 | 0.020 | | | |
| | 18 x 32 | 3157 | 0.026 | | | | | | |
| 15000 | 18 x 36 | 3191 | 0.025 | | | | | | |
| 18000 | 18 x 40 | 3316 | 0.020 | | | | | | |

Note : * I. D x L : mm

*2. Ripple Current : (mA r.m.s 105°C / 100KHz), Impedance (Ω Max25°C / 100KHz)



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

| CAP. (μF) | RATED VOLTAGE | | | | | | | | |
|------------------------|---------------|--------|-----------|---------|--------|-----------|---------|--------|-----------|
| | 25 | | | 35 | | | 50 | | |
| | Size | Ripple | Impedance | Size | Ripple | Impedance | Size | Ripple | Impedance |
| 1 | | | | | | | 5 x 11 | 30 | 4.0 |
| 2.2 | | | | | | | 5 x 11 | 43 | 2.5 |
| 3.3 | | | | | | | 5 x 11 | 53 | 2.2 |
| 4.7 | | | | | | | 5 x 11 | 88 | 1.9 |
| 10 | | | | | | | 5 x 11 | 100 | 1.5 |
| 12 | | | | | | | 5 x 11 | 100 | 1.5 |
| 15 | | | | | | | 5 x 11 | 158 | 0.910 |
| 18 | | | | | | | 5 x 11 | 158 | 0.910 |
| 22 | | | | 5 x 11 | 184 | 0.754 | 5 x 11 | 158 | 0.910 |
| 27 | | | | 5 x 11 | 184 | 0.754 | 5 x 11 | 158 | 0.910 |
| 33 | | | | 5 x 11 | 184 | 0.754 | 6 x 11 | 259 | 0.390 |
| 39 | 5 x 11 | 184 | 0.754 | 5 x 11 | 184 | 0.754 | 6 x 11 | 259 | 0.390 |
| 47 | 5 x 11 | 184 | 0.754 | 6 x 11 | 298 | 0.286 | 6 x 11 | 259 | 0.390 |
| 56 | 5 x 11 | 184 | 0.754 | 6 x 11 | 298 | 0.286 | 6 x 11 | 295 | 0.300 |
| | | | | | | | 8 x 11 | 487 | 0.221 |
| 68 | | | | 6 x 11 | 298 | 0.286 | 8 x 11 | 487 | 0.221 |
| 82 | 6 x 11 | 298 | 0.286 | 8 x 11 | 561 | 0.169 | 8 x 11 | 481 | 0.221 |
| 100 | 6 x 11 | 298 | 0.286 | 8 x 11 | 561 | 0.169 | 8 x 11 | 555 | 0.170 |
| | | | | | | | 10 x 12 | 667 | 0.156 |
| 120 | 8 x 11 | 561 | 0.169 | 8 x 11 | 561 | 0.169 | 8 x 15 | 640 | 0.156 |
| | | | | | | | 10 x 12 | 667 | 0.156 |
| 150 | | | | 8 x 11 | 759 | 0.169 | 10 x 12 | 760 | 0.120 |
| | | | | | | | 10 x 15 | 921 | 0.1096 |
| 180 | 8 x 11 | 561 | 0.169 | 10 x 12 | 759 | 0.104 | 8 x 20 | 798 | 0.1183 |
| | | | | | | | 10 x 15 | 921 | 0.1092 |
| 220 | 8 x 11 | 561 | 0.169 | 8 x 15 | 737 | 0.113 | 10 x 15 | 1050 | 0.084 |
| | | | | 10 x 12 | 759 | 0.104 | 10 x 19 | 1070 | 0.780 |
| 270 | 10 x 12 | 759 | 0.104 | 8 x 20 | 1050 | 0.069 | 10 x 19 | 1220 | 0.060 |
| | | | | 10 x 15 | 1061 | 0.078 | 10 x 25 | 1263 | 0.715 |
| | | | | | | | 13 x 15 | 1260 | 0.061 |
| 330 | 8 x 15 | 737 | 0.113 | 10 x 15 | 1061 | 0.078 | 10 x 25 | 1440 | 0.055 |
| | 10 x 12 | 759 | 0.104 | 8 x 20 | 921 | 0.090 | 10 x 30 | 1482 | 0.0559 |
| | | | | | | | 13 x 20 | 1456 | 0.0585 |
| 390 | 10 x 15 | 1061 | 0.078 | 10 x 19 | 1228 | 0.060 | 13 x 20 | 1456 | 0.0585 |
| 470 | 8 x 20 | 921 | 0.090 | 10 x 19 | 1228 | 0.006 | 10 x 30 | 1482 | 0.0559 |
| | 10 x 15 | 1210 | 0.060 | 13 x 15 | 1450 | 0.049 | 13 x 20 | 1660 | 0.045 |
| | | | | | | | 13 x 25 | 1710 | 0.0442 |
| | | | | | | | 16 x 15 | 1690 | 0.055 |
| 560 | 10 x 19 | 1228 | 0.060 | 10 x 25 | 1447 | 0.55 | 13 x 25 | 1710 | 0.0442 |
| | | | | 13 x 20 | 1666 | 0.046 | 18 x 15 | 1693 | 0.0702 |
| 680 | 10 x 19 | 1228 | 0.060 | 10 x 30 | 1650 | 0.042 | 13 x 30 | 2026 | 0.039 |
| | 13 x 15 | 1450 | 0.049 | 13 x 20 | 1910 | 0.031 | | | |
| | | | | 13 x 25 | 1666 | 0.046 | | | |
| | | | | 16 x 15 | 1814 | 0.072 | | | |
| 820 | 10 x 25 | 1447 | 0.055 | 13 x 20 | 1940 | 0.042 | 13 x 35 | 2201 | 0.0325 |
| | 13 x 20 | 1666 | 0.046 | 13 x 25 | 2151 | 0.039 | 16 x 20 | 2210 | 0.034 |
| | | | | | | | 18 x 20 | 2184 | 0.0468 |
| 1000 | 10 x 30 | 1675 | 0.040 | 13 x 25 | 2151 | 0.039 | 13 x 40 | 2920 | 0.021 |
| | 13 x 20 | 1666 | 0.046 | 18 x 15 | 2210 | 0.043 | 16 x 25 | 2241 | 0.0325 |
| | 16 x 15 | 1570 | 0.072 | | | | 18 x 20 | 2490 | 0.036 |
| 1200 | 18 x 15 | 1687 | 0.073 | 13 x 30 | 2557 | 0.034 | 16 x 32 | 2640 | 0.0286 |
| | 13 x 25 | 1863 | 0.039 | 16 x 20 | 2238 | 0.046 | 18 x 25 | 2403 | 0.0338 |
| 1500 | 13 x 25 | 1863 | 0.039 | 13 x 35 | 2779 | 0.029 | 16 x 36 | 2763 | 0.0247 |
| | | | | 16 x 25 | 2586 | 0.036 | | | |
| 1800 | 13 x 30 | 2214 | 0.034 | 13 x 40 | 2355 | 0.025 | 16 x 40 | 3254 | 0.0208 |
| | 16 x 20 | 1938 | 0.046 | 16 x 25 | 2586 | 0.036 | 18 x 32 | 2635 | 0.0273 |
| | | | | 18 x 20 | 2528 | 0.044 | | | |
| 2200 | 13 x 35 | 2406 | 0.029 | 16 x 32 | 3068 | 0.029 | 18 x 36 | 3228 | 0.0221 |
| | 18 x 20 | 2188 | 0.044 | 18 x 25 | 2807 | 0.031 | | | |
| 2700 | 13 x 40 | 3350 | 0.017 | 16 x 36 | 2610 | 0.026 | 18 x 40 | 3333 | 0.0182 |
| | 16 x 25 | 2238 | 0.036 | 18 x 32 | 3647 | 0.026 | | | |
| 3300 | 16 x 32 | 2657 | 0.029 | 16 x 40 | 4080 | 0.013 | | | |
| | 18 x 25 | 2430 | 0.029 | 18 x 36 | 3685 | 0.025 | | | |
| 3900 | 18 x 32 | 3157 | 0.026 | 18 x 36 | 3830 | 0.020 | | | |
| | 16 x 36 | 2740 | 0.031 | | | | | | |
| 4700 | 18 x 36 | 3191 | 0.025 | | | | | | |
| 5600 | 18 x 40 | 3316 | 0.020 | | | | | | |

Note : * I. D x L : mm

* 2. Ripple Current : (A r.m.s 105°C / 100KHz), Impedance (Ω Max25°C / 100KHz)