

Data Sheet

Customer : _____

Product : Aluminum Electrolytic Capacitors – EFHSeries _____

Size : 4x7mm ~ 8x7mm _____

Issued Date : 15-Aug.-2016 _____

Edition : Ver. 1 _____

Record of change

Date	Ver.	Description	Page
15-Aug.-2016	1		

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15-Aug.-2016	15-Aug.-2016	15-Aug.-2016	
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Subject : Storage of Aluminium Electrolytic Capacitors

We recommend the following conditions for storage :

1. It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
2. Confirm that the environment does not have any of the following conditions :
 - (1) Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
 - (2) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.)
 - (3) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
 - (4) Being exposed to acidic or alkaline solutions.
3. Keep capacitors in the original package.

4. Storage life & Re-aging :

When Aluminium Electrolytic Capacitors are stored without applied voltage, their L.C.

(Leakage Current) characteristic increases over time. For long-term stored products, the following treatments must be performed before use :

- (1) For Low Voltage Aluminium Electrolytic Capacitors (i.e., Working Voltage W.V. \leq 120V) :

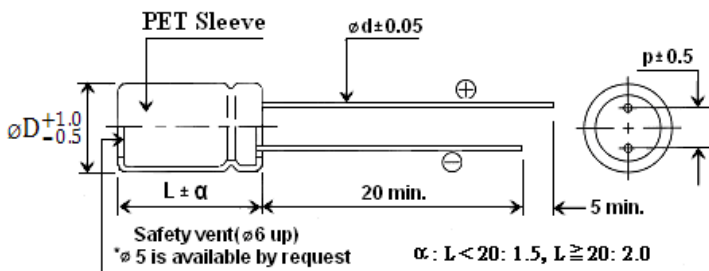
After one year of storage, a test must be performed before use. If the L.C. value exceeds the specified value, it is recommended not to use them, as lifespan and quality cannot be 100% guaranteed.
- (2) For Medium/High Voltage Aluminium Electrolytic Capacitors (i.e., Working Voltage W.V. \geq 160V) :
 - (A) If stored for more than 6 months, a test must be performed before use to ensure lifespan and quality.
 - (B) If stored for 6-24 months and the L.C. value is between 25% and 40% of the specified value, it is recommended to recharge (re-agent) before use. If the L.C. value exceeds 40% of the specified value, do not use.
- (3) Re-aging condition : It is recommended to apply D.C. working voltage to the capacitor for 2 hours through 1K Ω of protective series resistor.

- Used in electronic ballast, switching power supply, industrial measuring instruments.
- Higher ripple current with minimized ESR.
- Load life 4000~10000 Hrs at 105°C
- RoHs compliant, non solvent proof, 6.3-100VDC newly type..

Characteristics

Voltage Range	6.3 ~ 100VDC																						
Capacitance Range	22 ~ 4700uF																						
Temperature Range	-40 ~ +105°C																						
Leakage Current	I = 0.01CV or 3uA (After 2 minutes) with rated working voltage applied.																						
Capacitance Tolerance	±20% at 120Hz , 20°C(10% Tol. is available upon request)																						
Dissipation Factor	Working Voltage (V)	6.3	10	16	25	35	50	63	100														
	tanδ(%) max	22	19	16	14	12	10	9	9														
For capacitance > 1000uF, add 2% per another 1,000uF																							
Low Temperature Characteristic (120Hz)	Working Voltage (V)	6.3	10	16	25	35	50	63	100														
	Z-25°C/Z +20°C	4	3	2	2	2	2	2	2														
	Z-40°C/Z +20°C	8	6	4	3	3	3	3	3														
Load life :	Test conditions			<table border="1"> <tr> <td colspan="2">Size</td> <td>ΦD ≤ 6.3</td> <td>ΦD=8,10</td> <td>ΦD ≥ 13</td> </tr> <tr> <td rowspan="2">Voltage</td> <td>6.3-10V</td> <td>4000hrs</td> <td>6000hrs</td> <td>8000hrs</td> </tr> <tr> <td>16-100V</td> <td>5000hrs</td> <td>7000hrs</td> <td>10000hrs</td> </tr> </table>						Size		ΦD ≤ 6.3	ΦD=8,10	ΦD ≥ 13	Voltage	6.3-10V	4000hrs	6000hrs	8000hrs	16-100V	5000hrs	7000hrs	10000hrs
	Size		ΦD ≤ 6.3	ΦD=8,10	ΦD ≥ 13																		
Voltage	6.3-10V	4000hrs	6000hrs	8000hrs																			
	16-100V	5000hrs	7000hrs	10000hrs																			
Duration time : as right Ambient temperature : +105°C Applied voltage : Rated DC working voltage After test requirement at +20°C Capacitance change: ≤ ±25% of the initial measured Dissipation factor : ≤ 200% of the initial specified Leakage current : ≤ The initial specified value																							
Shelf life (at 105°C)	Test conditions			Duration time : 1000Hrs Ambient temperature : +105°C Applied voltage : None After test requirement at +20°C: Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.																			

Drawing



Dφ	5	6.3	8	10	13	16	18
p	2.0	2.5	3.5	5.0	5.0	7.5	7.5
dφ	0.5	0.5	0.5/0.6	0.6	0.6	0.8	0.8
L < 20/L ≥ 20							

Ripple Current Coefficients

Cap(uF)//Hz	50(60)	120	400	1K	10K	100K
Cap ≤ 10	0.47	0.59	0.76	0.85	0.97	1.00
10 < Cap ≤ 100	0.52	0.62	0.80	0.89	0.97	1.00
100 < Cap ≤ 1000	0.58	0.72	0.84	0.90	0.98	1.00
1000 < Cap	0.63	0.78	0.87	0.91	0.98	1.00

Dimensions, Maximum Permissible Ripple Current & Impedance

WV Cap(uF)	6.3				10			
	Size	Ripple	Impedance		Size	Ripple	Impedance	
			20°C	-10°C			20°C	-10°C
100					5x11	215	0.580	2.300
150	5x11	190	0.550	2.300				
220	6.3x11	290	0.260	0.900	6.3x11	340	0.230	0.870
330	6.3x11	330	0.210	0.870	6.3x11	380	0.220	0.870
470	8x11.5	425	0.140	0.580	8x11.5	600	0.130	0.520
680	8x11.5	520	0.130	0.520	8x16	770	0.096	0.350
					10x12.5	800	0.085	0.310
820	8x16	800	0.090	0.320	10x16	920	0.075	0.280
1000	8x20	850	0.080	0.350	8x20	1050	0.072	0.270
					10x16	1110	0.064	0.240
1200	8x20	1000	0.075	0.260	10x20	1380	0.045	0.180
	10x16	1020	0.064	0.240				
1500	10x20	1340	0.050	0.180	10x25	1550	0.043	0.170
2200	10x25	1550	0.046	0.170	13x20	1800	0.035	0.120
3300	13x20	1720	0.038	0.120	13x25	2120	0.029	0.089
4700	13x30	2400	0.027	0.078				

WV Cap(uF)	16				25			
	Size	Ripple	Impedance		Size	Ripple	Impedance	
			20°C	-10°C			20°C	-10°C
47					5x11	160	0.560	2.300
100	6.3x11	280	0.220	0.820	6.3x11	350	0.250	0.870
120	6.3x11	310	0.215	0.870				
220	8x11.5	480	0.180	0.850	8x11.5	590	0.150	0.520
330	8x11.5	600	0.140	0.520	8x16	810	0.092	0.350
					10x12.5	826	0.082	0.320
470	8x16	780	0.095	0.350	8x20	1020	0.074	0.270
	10x12.5	800	0.085	0.320	10x16	1210	0.068	0.240
680	8x20	1000	0.080	0.270	10x20	1400	0.050	0.180
820	10x20	1280	0.052	0.220	10x25	1580	0.041	0.170
1000	10x20	1380	0.046	0.180	10x30	1820	0.032	0.120
	13x16	1420	0.050	0.160	13x20	1800	0.036	0.120
1200	10x25	1560	0.044	0.170				
1500	13x20	1720	0.037	0.120	13x25	2240	0.028	0.089
1800	13x25	2030	0.030	0.095	13x30	2640	0.024	0.078
2200	13x25	2200	0.026	0.089	13x35	2880	0.023	0.065
2700	13x30	2600	0.023	0.077	16x25	2820	0.022	0.060
3300	13x35	2800	0.022	0.066				
4700	18x25	3000	0.020	0.049				

Dimensions, Maximum Permissible Ripple Current & Impedance

WV Cap(uF)	35				50			
	Size	Ripple	Impedance		Size	Ripple	Impedance	
			20°C	-10°C			20°C	-10°C
22					5x11	220	0.650	2.800
33	5x11	230	0.550	2.300				
47	5x11	280	0.450	1.800	6.3x11	260	0.370	1.500
100	6.3x11	450	0.180	0.720	8x11.5	680	0.160	0.670
120					8x16	760	0.120	0.480
150	8x11.5	680	0.140	0.520	10x12.5	800	0.120	0.480
180					8x20	1000	0.090	0.360
220	8x16	1000	0.090	0.350	10x16	1300	0.082	0.340
	10x12.5	1060	0.080	0.320				
270	8x20	1180	0.070	0.260	10x20	1350	0.060	0.240
330	10x16	1380	0.062	0.240	10x25	1600	0.057	0.220
470	10x20	1800	0.048	0.180	10x30	1800	0.048	0.170
560	10x25	1900	0.042	0.160	13x25	1950	0.042	0.110
680	10x30	2000	0.035	0.120				
	13x20	2100	0.034	0.120				
1000	13x25	2400	0.028	0.088	16x25	2600	0.033	0.100
1200	16x21	2800	0.028	0.078	16x31.5	2870	0.030	0.066
1500	13x35	3000	0.022	0.065	16x35.5	3020	0.025	0.050
1800	16x25	2850	0.020	0.060				
2200	18x25	2880	0.019	0.057				
2700	18x31.5	3850	0.016	0.040				

Dimensions, Maximum Permissible Ripple Current & Impedance

WV Cap(uF)	63				100			
	Size	Ripple	Impedance		Size	Ripple	Impedance	
			20°C	-10°C			20°C	-10°C
33	6.3x11	260	1.200	5.00				
47	8x11.5	360	0.660	3.10	10x12.5	400	0.42	1.80
68					10x16	460	0.300	1.50
82	8x16	460	0.440	2.10	10x20	600	0.210	0.94
	10x12.5	500	0.430	1.80				
100	10x12.5	640	0.340	1.80	10x25	800	0.200	0.84
120	8x20	700	0.320	1.60	13x20	900	0.160	0.64
	10x16	760	0.300	1.50				
180	10x20	880	0.190	0.94				
220	10x25	1100	0.185	0.84	13x25	1430	0.080	0.32
270	13x20	1200	0.160	0.64	16x25	1480	0.073	0.27
330	13x25	1600	0.120	0.45	13x40	1600	0.071	0.30
390					16x31.5	1700	0.055	0.20
					18x25	1740	0.054	0.21
470	13x30	1800	0.100	0.42	16x35.5	1880	0.047	0.17
					18x31.5	1600	0.047	0.17
560	16x25	2000	0.073	0.27				
680	13x40	2200	0.070	0.30	18x35.5	1720	0.042	0.15
820	16x31.5	2400	0.054	0.20	18x41	2340	0.040	0.15
1000	16x35.5	2500	0.048	0.17				
	18x31.5	2800	0.047	0.17				
1200	16x41	2920	0.040	0.15				
	18x35.5	3000	0.039	0.15				
1500	18x41	3200	0.036	0.13				

Ripple Current (mA, rms) at 105°C, 100KHz
Part Numbering System

EFH	101	M	25	A	-	T1
SERIES	CAPACITANCE	TOL.	W.V.	PACKAGE	SIZE	LEAD SPACE
	IN 3DIGITS	K= ± 10%	0G= 4V	B= Bulk	Omit if only	Omit if Bulk
	010= 1.0uF	M= ± 20%	0J= 6.3V	C5= Cut 5mm	one size	T1= L/S 2.5mm Taped
	4R7= 4.7 uF		10= 10V	A= Ammo Pack	A=Smaller	TA= Lead forming space
	101= 100uF		25= 25V	R= Tape&Reel	size	5mm Taped
	331=330uF		63= 63V			T35= L/S 3.5mm Taped
				F5= Lead formed & cut 5mm		T2=L/S 5mm Taped