

## *Data Sheet*

Customer : \_\_\_\_\_

Product : Aluminum Electrolytic Capacitors – ELU Series \_\_\_\_\_

Size : 22x25mm ~ 40x60mm \_\_\_\_\_

Issued Date : 15-Apr.-2016 \_\_\_\_\_

Edition : Ver. 1 \_\_\_\_\_

### Record of change

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

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15-Apr.-2016	15-Apr.-2016	15-Apr.-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) :

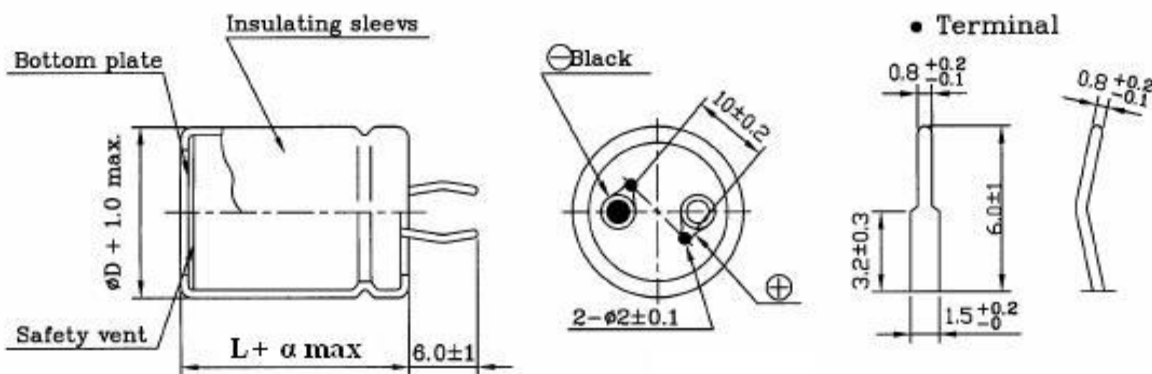
After one year of storage, a test must be performed before use. If the L.C. value exceeds the specified value, it is recommended not to use them, as lifespan and quality cannot be 100% guaranteed.
- (2) For Medium/High Voltage Aluminium Electrolytic Capacitors (i.e., Working Voltage W.V.  $\geq$  160V) :
  - (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 $\Omega$  of protective series resistor.

- 85°C 3000 hours assured load life.
- Directly mountable on printed circuit board without holders.
- Rohs compliant
- Aluminum case designed explosion-proof vent.

**Characteristics**

<b>Voltage Range</b>	16 ~ 100V	160 ~ 450V					
<b>Capacitance Range</b>	220 ~ 82000uF	47 ~ 2700uF					
<b>Temperature Range</b>	-40 ~ +85°C	-25 ~ +85°C					
<b>Capacitance Tolerance</b>	±20% at 120Hz , 20°C( 10% Tol. is available upon request)						
<b>Leakage Current</b>	$I = 3\sqrt{CV}$ (uA) max C: Capacitance, V:W.V. (After 5 minutes)						
<b>Dissipation Factor (tanδ) ( at 20°C, 120Hz )</b>	Less than the value under table (%)						
	uF \\\ W.V.	16	25~35	50~63	80~100	160~250	315~450
	68 ~ 390	-	-	-	-	15	20
	470 ~ 3900	25	20	20	20	15	20
	4700~8200	35	30	30	25	-	-
	10000~22000	40	35	30	25	-	-
27000~47000	45	40	35	-	-	-	
<b>Stability at Low Temperature</b>	Impedance ration at 120Hz between the -25°C or -40°C value and 20°C value shall not exceed :						
	Rated Voltage (V)	16	25~100	160~250	315~450		
	Z-25°C/Z 20°C	5	4	4	8		
	Z-40°C/Z 20°C	20	20	-	-		
<b>Load Life</b>	The following specifications shall satisfied when the capacitors are restored to 20°C after rated working voltage applied for 3,000 hours at max. operating temperature with the rated ripple current.						
	Capacitance change	≤ ±20% of the initial value.					
	Dissipation factor	≤ ±200% of the initial specified value					
	Leakage current	≤ The initial specified value.					
<b>Shelf Life</b>	After storage for 1000 hours at 85°C with no voltage applied, the capacitor shall meet the specified limit in load life. Pre-treatment for measurement shall be conducted after application of DC working voltage for 30 minutes.						

**Diagram of Dimensions: (unit:mm)**



**Multiplier for Ripple Current VS Frequency**

Cap.(uF) \\\ (Hz)	60	120	1K	10K	50K - 100K
10 < Cap. ≤ 100	0.8	1	1.36	1.48	1.53
100 < Cap. ≤ 1000	0.8	1	1.25	1.35	1.38
1000 < Cap.	0.8	1	1.17	1.25	1.28

	(mm)	
Dia	22 ~ 25	30 ~ 40
$\alpha$	2	3

**Standard Products Table**

W.V.	16						25						35					
Dimension	A		B		C		A		B		C		A		B		C	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
3900													22x25	2.71				
4700							22x25	2.39					22x30	3.26	25x25	3.26		
5600							22x25	2.86					22x35	3.36	25x25	3.36		
6800							22x30	3.47	25x25	3.47			22x40	3.68	25x30	3.68	30x25	3.09
8200	22x25	3.10					22x30	3.57	25x25	3.57			22x40	4.00	25x35	4.00	30x30	3.29
10000	22x30	3.78	25x25	3.78			22x35	3.78	25x30	3.78			22x50	4.42	25x40	4.42	30x30	4.42
12000	22x30	4.52	25x25	4.52			22x40	4.10	25x35	4.10	30x30	4.10	25x45	5.05	30x35	5.05	35x30	5.05
15000	22x35	5.26	25x30	5.26	30x25	3.73	22x50	4.63	25x40	4.63	30x30	4.63	25x50	5.57	30x40	5.57	35x30	5.57
18000	22x40	5.57	25x30	5.57			25x45	5.47	30x35	5.47	35x30	4.68	30x45	5.68	35x35	5.68		
22000	22x50	6.10	25x40	6.10	30x30	6.10	25x50	6.10	30x40	6.10	35x35	5.26	30x50	6.10	35x50	6.10		
27000	25x45	6.31	30x35	6.31			30x45	6.21	35x35	6.21			35x45	6.84	40x40	6.84		
33000	25x50	6.84	30x40	6.84	35x30	6.84	30x50	6.84	35x45	6.84			35x50	7.15				
39000	30x45	6.94	35x35	6.94			35x45	7.36					40x50	7.96				
47000	30x50	7.47	35x40	7.47			35x50	8.00	40x45	8.00								
56000	35x45	8.73					40x50	8.96										
68000	35x50	9.05	40x40	9.05														
82000	40x50	10.29																

W.V.	50						63						80					
Dimension	A		B		C		A		B		C		A		B		C	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
1000													22x25	1.51				
1200													22x25	1.81				
1500													22x30	2.26	25x25	2.26		
1800							22x25	2.06					22x35	2.52	25x30	2.52		
2200	22x25	1.82					22x30	2.52	25x25	2.52			22x35	2.73	25x30	2.73	30x25	2.73
2700	22x25	2.23					22x35	3.73	25x30	3.73			22x45	2.78	25x35	2.78	30x30	2.78
3300	22x30	2.73	25x25	2.73			22x35	4.10	25x30	4.10	30x25	4.10	22x45	3.21	25x40	3.21	30x30	3.21
3900	22x30	2.75	25x25	2.75			22x45	4.44	25x35	4.44	30x30	4.44	25x45	3.59	30x35	3.59		
4700	22x40	3.03	25x30	3.03	30x25	3.03	22x50	4.86	25x40	4.86	30x30	4.86	25x50	4.09	30x40	4.09		
5600	22x40	3.42	25x35	3.42	30x30	3.43	25x45	5.36	30x35	5.36	35x30	5.36	30x45	4.55	35x35	4.55		
6800	22x50	3.85	25x40	3.85	30x35	3.85	25x50	5.84	30x40	5.84	35x30	5.84	30x50	5.16	35x40	5.16		
8200	25x45	4.41	30x35	4.41	35x30	4.41	30x45	6.00	35x35	6.00			35x50	5.83	40x40	5.83		
10000	25x50	4.97	30x40	4.97	35x35	4.97	30x50	5.78	35x40	6.52			40x50	6.56				
12000	30x45	5.58	35x35	5.58			35x50	7.15	40x40	7.15								
15000	30x50	6.44	35x40	6.44			40x50	7.53										
18000	35x45	6.94	40x40	6.94														
22000	35x50	7.57																

**Standard Products Table**

W.V.	100						160						200					
Dimension	A		B		C		A		B		C		A		B		C	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
220							22x25	0.91					22x25	1.04				
270							22x25	1.19					22x25	1.41				
330							22x25	1.45					22x25	1.56				
390							22x25	1.62	25x25	1.62			22x30	1.68	25x25	1.68		
470	22x25	1.11					22x30	2.11	25x25	2.11			22x35	1.85	25x30	1.85		
560	22x25	1.32					22x35	2.25	25x30	2.25			22x40	2.43	25x30	2.43	30x25	2.43
680	22x25	1.61					22x35	2.50	25x30	2.50	30x25	2.50	22x45	2.68	25x35	2.68	30x30	2.68
820	22x25	1.86					22x45	2.75	25x35	2.75	30x30	2.75	25x45	2.93	30x35	2.93		
1000	22x30	1.96	25x25	1.96			22x50	3.00	25x40	3.00	30x30	3.00	25x45	3.25	30x35	3.25		
1200	22x35	2.31	25x30	2.31			25x50	3.25	30x35	3.25	35x30	3.25	30x40	3.50	35x35	3.50		
1500	22x35	2.57	25x30	2.57	30x25	1.57	30x45	3.73	35x35	3.73	25x50	3.73	30x45	3.87	35x40	3.87		
1800	22x45	2.84	25x35	2.84	30x30	2.84	30x50	4.20	35x40	4.20			30x50	4.32	35x45	4.32		
2200	22x45	3.14	25x40	3.14	30x30	3.14	35x50	4.78	35x45	4.78			35x50	4.92	40x45	4.92		
2700	25x45	3.71	30x35	3.71	35x30	3.71	35x60	5.45					40x50	5.41				
3300	25x50	4.06	30x40	4.06														
3900	30x45	4.54	35x35	4.54														
4700	30x50	5.13	35x40	5.13														
5600	35x45	5.75	40x40	5.75														
6800	35x50	6.60																
8200	40x50	7.28																

W.V.	250						350						385					
Dimension	A		B		C		A		B		C		A		B		C	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
68													22x25	0.76				
82							22x25	0.83					22x25	0.83				
100							22x30	0.91					22x30	0.92	25x25	0.92		
120							22x30	1.00	25x25	1.00			22x35	1.02	25x25	1.02		
150	22x25	0.71					22x35	1.12	25x25	1.12	30x25	1.12	22x35	1.16	25x30	1.16	30x25	1.16
180	22x25	1.07					22x40	1.22	25x35	1.22	30x25	1.22	22x40	1.44	25x35	1.44	30x30	1.44
220	22x25	1.17					22x45	1.44	25x35	1.44	30x30	1.44	22x45	1.49	25x40	1.49	30x30	1.49
270	22x30	1.31	25x25	1.31			25x40	1.66	30x35	1.66	35x30	1.66	25x45	1.67	30x35	1.67	35x30	1.67
330	22x30	1.75	25x25	1.75			25x50	1.88	30x40	1.88	35x30	1.88	25x50	1.90	30x40	1.90	35x35	1.90
390	22x40	1.91	25x30	1.91	30x25	1.91	25x50	2.06	30x45	2.06	35x35	2.06	30x45	2.13	35x40	2.13		
470	22x45	2.11	25x35	2.11	30x30	2.11	30x50	2.40	35x40	2.40			30x40	2.39	30x45	2.39		
560	25x40	2.25	30x30	2.25	35x25	2.25	30x50	2.60	35x45	2.60			35x45	2.69	35x50	2.69		
680	25x45	2.50	30x40	2.50	35x30	2.50	35x45	2.96	35x50	2.96	40x50	2.96	35x50					
820	30x45	2.77	35x35	2.77			35x60	3.55										
1000	30x45	3.32	35x35	3.32			40x60	3.80										
1200	35x45	3.53																
1500	35x50	4.04																
1800	40x50	4.49																

**Standard Products Table**

W.V.	400						450					
	A		B		C		A		B		C	
Dimension	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
<b>47</b>	22x25	0.47					22x25	0.59				
<b>68</b>	22x25	0.69					22x25	0.71				
<b>82</b>	22x25	0.83					22x30	0.83	25x25	0.83		
<b>100</b>	22x25	0.92	25x25	0.92			22x30	0.93	25x25	0.93		
<b>120</b>	22x35	1.02	25x25	1.02			22x40	1.04	25x30	1.04	30x25	1.04
<b>150</b>	22x35	1.16	25x30	1.16	30x25	1.16	22x40	1.19	25x30	1.19	30x30	1.19
<b>180</b>	22x45	1.44	25x35	1.44			25x45	1.35	30x35	1.35	35x25	1.35
<b>220</b>	22x45	1.49	25x35	1.49	30x30	1.49	25x40	1.55	30x30	1.55	35x30	1.55
<b>270</b>	25x45	1.67	30x35	1.67	35x30	1.67	30x45	1.78	35x35	1.78		
<b>330</b>	25x45	1.90	30x35	1.90			30x40	2.01	35x35	2.01		
<b>390</b>	30x45	2.13	35x40	2.13			35x45	2.24				
<b>470</b>	35x45	2.39	35x35	2.39			35x45	2.53	35x50	2.53	40x40	2.53
<b>560</b>	35x45	2.69	35x50	2.69	40x40	2.69	35x50	2.88				
<b>680</b>	35x50	3.00					40x50	3.15				
<b>820</b>	40x50	3.38	35X50	3.38								

Unit : (mm)

Ripple Current (A, rms) at 85°C, 120Hz

**Part Numbering Designation**

<b>ELU</b>	<b>101</b>	<b>M</b>	<b>2G</b>	<b>B</b>	<b>A</b>
SERIES	CAPACITANCE	TOL.	W.V.	PACKAGE	SIZE
	IN 3DIGITS	M= ± 20%	16= 16V	B= Bulk	A= A Size
	101= 100uF	K= ± 10%	25= 25V		B= B Size
	102= 1000uF		35= 35V		C= C Size
	103= 10,000uF		50= 50V		
			63= 63V		
			80= 80V		
			2A= 100V		
			2C= 160V		
			2D= 200V		
			2E= 250V		
			2V= 350V		
			2T= 385V		
			2G= 400V		
			2W= 450V		