

Data Sheet

Customer : _____

Product : Aluminum Electrolytic Capacitors – ECR Series _____

Size : 5x11mm ~ 25x41mm _____

Issued Date : 13-Aug.-2020 _____

Edition : Ver. 3 _____

Record of change

Date	Ver.	Description	Page
15-Jun.-2016	1		
13-Aug.-2020	2	Add 680/63 13x26, 68/400 16x31.5	2,3

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13-Aug.-2020	13-Aug.-2020	13-Aug.-2020	
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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 :

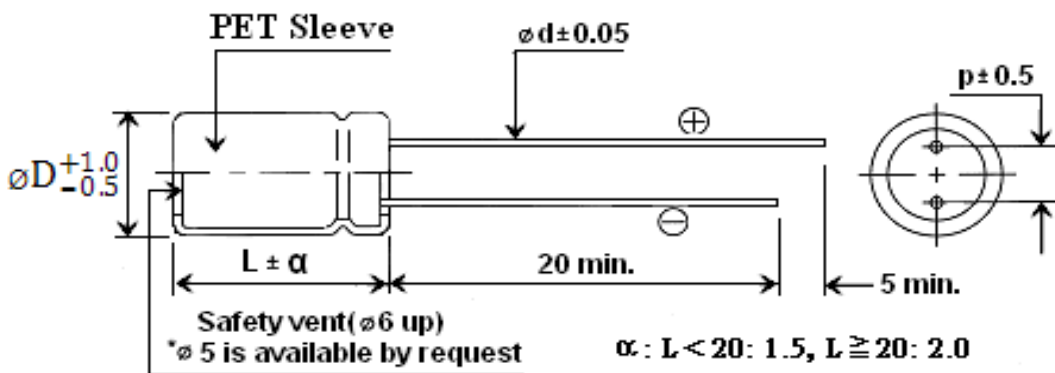
- (1) For Low Voltage Aluminium Electrolytic Capacitors (i.e., Working Voltage W.V. \leq 120V) :

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.

- Life 2000 hours at 85°C
- Small size allows wider choice of capacitance and voltage for automatic insertion.

Characteristics

Voltage Range	6.3 to 100 VDC				160 to 450 VDC				
Capacitance Range	0.47 to 10000uF				0.47 to 470uF				
Temperature Range	-40 to +85°C				-25 to +85°C				
Capacitance Tolerance	±20% at 120Hz , 20°C(10% Tol. is available upon request)								
Leakage Current	I≤0.01CV or 3uA, whichever is greater 2 minutes after Rated Voltage applied				I≤0.03CV or 3uA, whichever is greater 3 minutes after Rated Voltage applied				
Dissipation Factor (tanδ)	Rated Voltage (V)	6.3	10	16	25	35	50	63	
	Dissipation Factor(tanδ)max	0.22	0.19	0.16	0.14	0.12	0.10	0.09	
	Rated Voltage (V)	100	160	200	250	350	400	450	
	Dissipation Factor(tanδ)max	0.08	0.16	0.18	0.18	0.20	0.20	0.20	
	For capacitance > 1000uF, add 0.02 for every 1000uF, (at 20°C, 120Hz)								
Stability at Low Temperature (For Cap. > 1000uF, add 0.5 per 1000uF(-25°C/+20°C) add 1.0 per 1000uF(-40°C/+20°C)	Impedance ration at 120Hz								
	Rated 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	4	3	3	3	3
	Rated Voltage (V)	160	200	250	350	400	450		
	Z-25°C/Z 20°C	2	2	3	5	15	15		
Load Life	After the rated voltage has been applied for 2000 hours at 85°C	Capacitance change	Within ±20% of initial value						
		D.F. tanδ	200% or less of initial specified value						
		Leakage current	Less than Initial specified value						
Shelf Life	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.								



Drawing

Dφ	5	6.3	8	10	13	16	18	22
p	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
dφ	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8

Ripple Current Coefficients

Frequency (Hz)	50(60)	120	400	1K	10K	100K
Cap.(uF) / Hz	Multiplier					
Cap. ≤ 10	0.8	1	1.30	1.45	1.65	1.70
10 < Cap. ≤ 100	0.8	1	1.23	1.36	1.48	1.53
100 < Cap. ≤ 1000	0.8	1	1.16	1.25	1.35	1.38
1000 < Cap.	0.8	1	1.11	1.17	1.25	1.28

Case Size & Maximum Ripple Current (mA rms 85°C, 120Hz)

Cap. WV	6.3V		10V		16V		25V		35V		50V		63V		
	uF	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.
0.47										→	5x11	10	5x11	10	
1		ALL BLANK VOLTAGE ON SLEEVE MARKING IS SAME VOLTAGE “→” POINT TO									→	5x11	17	5x11	17
2.2											→	5x11	25	5x11	28
3.3											→	5x11	35	5x11	35
4.7											→	5x11	42	5x11	45
10				→	5x11	60	5x11	60	5x11	60	5x11	65	5x11	70	
22				→	5x11	75	5x11	90	5x11	95	5x11	100	6.3x11	115	
33				→	5x11	85	5x11	95	5x11	121	5x11 6.3x11	120 125	6.3x11	140	
47				→	5x11	130	5x11	130	5x11 6.3x11	143 154	6.3x11	150	6.3x11 8x12	180 190	
68				→	5x11	149	6.3x11	176	6.3x11	198	8x12	220	8x12	253	
100	5x11	143	5x11	198	5x11	176	6.3x11	209	6.3x11 8x12	231 253	8x12	275	10x13	300	
150	5x11	198	5x11	231	6.3x11	253	6.3x11	275	8x12	308	10x13	363	10x16	462	
220	5x11	242	6.3x11	294	6.3x11	308	6.3x11 8x12	310 363	8x14 10x13	385 407	10x13 10x16	425 440	10x16 10x21	490 500	
330	6.3x11	330	6.3x11	363	8x12	407	8x12	451	10x13	528	10x16	649	10x21	690	
470	6.3x11	385	6.3x11 8x12	418 440	8x12	517	8x14 10x13	561 594	10x16	693	10x21 13x21	750 780	13x21 13x26	930 968	
680	8x12	539	8x12	572	8x16	640	10x16	792	10x21	891	13x21	1056	13x26	1265	
1000	8x12	649	8x14 8x12	730	10x16	869	10x21	1050	13x21	1265	13x26 16x26	1350 1400	16x26	1550	
1500	10x16	935	10x16	1001	10x21	1100	13x21	1353	13x26	1570	16x31.5	1848	16x36	2090	
2200	10x16	1135	10x16	1100	13x21	1485	13x21 13x26	1300 1705	16x26	1870	16x36	2100	18x36	2200	
3300	10x21	1430	13x21	1540	13x26	1870	16x26	1870	16x31.5	2365	18x36	2400	22x41	2550	
4700	13x21	1672	13x26	1980	16x26	2310	16x31.5	2640	18x36	2860	22x41	2981	25x41	2950	
6800	13x26	2002	16x26	2475	16x31.5	2805	18x36	2970	18x41	2915	25x41	3250			
10000	13x35 16x26	2180 2332	16x36	2640	18x36	2970	18x41 22x36	2981 3212	22x41	3960	25x50	3600			

Case Size & Maximum Ripple Current (mA rms 85°C, 120Hz)

Cap. ^{WV}	100V(2A)		160V(2C)		200V(2D)		250V(2E)		350V(2V)		400V(2G)		450V(2W)		
	uF	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.
0.47	5x11		12	5x11		12	5x11		12	6.3x11		15	6.3x11		12
1	5x11		22	5x11		17	6.3x11		17	6.3x11		22	6.3x11 8x12		22
2.2	5x11		33	6.3x11		30	6.3x11		30	6.3x11		20	8x12 10x13		32 35
3.3	5x11		40	6.3x11		36	6.3x11		36	8x12		43	8x12 10x13		45 53
4.7	5x11		48	6.3x11 8x12		40 48	8x12		51	8x12 10x13		48 51	8x12 10x13		66 70
10	5x11 6.3x11		85 92	8x12 10x13		80 83	10x13 10x16		83 88	10x13 10x16		88 90	10x16 10x21		115 125
22	6.3x11 8x12		130 135	10x13 10x16		135 170	10x21		135	10x21 13x21		135 142	13x21 13x21		180 180
33	8x12		170	10x16 10x21		180 198	13x21		205	13x21		210	13x26 16x26		230 250
47	10x13		230	10x21 13x21		230 253	13x21		250	13x21 13x26		240 260	16x26 16x31.5		290 310
68	10x16		348	13x21		360	13x26		370	13x26 16x26		340 390	16x31.5		400
100	10x21		390	13x26 16x26		430 450	16x26		460	16x26 16x31.5		410 450	18x31.5 18x41		430 460
150	13x21		629	16x26		560	16x31.5		580	18x31.5		600	18x41		570
220	13x26		720	16x31.5 16x36		850 890	16x36		750	18x41 22x30		800 870			
330	13x26 16x26		880 920	18x36 18x41		890 920	18x36 18x41		940 1000						
470	16x26		1150	18x36 18x41		1180 1250	18x41		1330						
680	16x36		1634												
1000	18x41		1600												

Part Numbering System

ECR	101	M	25	A	-	T1
SERIES	CAPACITANCE	TOL.	W.V.	PACKAGE	SIZE	LEAD SPACE
	IN 3DIGITS	M= ± 20%	0J= 6.3V	B= Bulk	Omit if only	Omit if Bulk
	010= 1.0uF		10= 10V	C5= Cut 5mm	one size	T1= L/S 2.5mm Taped
	4R7= 4.7 uF		25= 25V	AC5= Smaller Size cut 5mm	A= Smaller Size	TA= Lead forming space 5mm Taped
	101= 100uF		63= 63V			
	102= 1000uF		2A= 100V	A= Ammo Pack		T35= L/S 3.5mm Taped
	103= 10000uF		(Refer to	R= Tape&Reel		T2=L/S 5mm Taped
			voltage code	F5= Lead formed & cut 5mm		T3= L/S 7.5mm Taped
			in table)			