

Customer : _____
(客 戶)

Part No. : _____
(貴公司料號)

SPECIFICATION FOR APPROVAL

承 認 書

Description : ALUMINUM ELECTROLYTIC CAPACITORS
(零 件 名 稱)

Lelon Series : RXW Series
(立 隆 系 列)

Lelon Part No.: RXW471M1CBU-0811
(立 隆 料 號)

LELON ELECTRONICS CORP.

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Approval Signatures

貴公司承認印

Approval 核 准	Check 確 認	Design 作 成
		

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Part Numbering System

Product Code Guide – Radial Type

REA series	10 μ F	\pm 20%	50V	Lead Forming Tape	Gas Type	5 ϕ x11L	Pb-free Wire + PET Sleeve	
REA	100	M	1H	TA	-	0511		
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/>
①	②	③	④	⑤	⑥	⑦	⑧	⑨
Series	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration & Package	Rubber Type	Case size	Lead Wire and Sleeve Type	Supplement Code

① Series:

Series is represented by a three-letter code. When the series name only has two letters, use a hyphen, "-", to fill the third blank.

② Capacitance:

Capacitance in μ F is represented by a three-digit code. The first two digits are significant and the third digit indicates the number of zeros following the significant figure. "R" represents the decimal point for capacitance under 10 μ F.

Example:

Capacitance	0.1	0.47	1	4.7	10	47	100	470	1,000	4,700	10,000
Part number	0R1	R47	010	4R7	100	470	101	471	102	472	103

③ Tolerance:

J = -5% ~ +5%	K = -10% ~ +10%	M = -20% ~ +20%	V = -10% ~ +20%
---------------	-----------------	-----------------	-----------------

④ Rated voltage:

Rated voltage in volts (V) is represented by a two-digit code

Voltage (WV)	2.5	4	6.3	10	16	20	25	35	50	63	80	100
Code	0E	0G	0J	1A	1C	1D	1E	1V	1H	1J	1K	2A
Voltage (WV)	160	200	250	315	350	400	420	450	500	525		
Code	2C	2D	2E	2F	2V	2G	2P	2W	2H	2Y		

⑤ Lead configuration and package:

BK = Bulk Package	TA = Formed Lead Taping
FC = Formed & Cut Lead	SA = Straight Lead Taping
CC = Cut Lead	SD = Bent Cathode Lead
SF = Snap-in & Formed Cut Lead	BC = Bent & Cut Lead (Leads in Right Direction)
SC = Snap-in & Cut Lead	BU = Bent & Cut Lead (Leads in Left Direction)

⑥ Rubber type:

- = Gas escape type	F = Flat rubber bung
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Note : For case size of 3 ϕ x5L, 12.5 ϕ x16L, 16 ϕ x16L, 16 ϕ x20L, 18 ϕ x16L, 18 ϕ x20L, 18 ϕ x25L of aluminum e-caps, flat rubber bung is the standard design. In these cases, use a hyphen, "-", in this digit.

⑦ Case size:

The first two digits indicate case diameter and the last two digits indicate case length in mm.

ϕ DxL	3x5	4x5	4x7	5x5	5x7	5x11	6.3x5	6.3x7	6.3x11	6.3x15
Code	0305	0405	0407	0505	0507	0511	0605	0607	0611	0615
ϕ DxL	8x5	8x7	8x9	8x11.5	8x15	8x20	10x9	10x12.5	10x16	10x20
Code	0805	0807	0809	0811	0815	0820	1009	1012	1016	1020
ϕ DxL	10x25	10x30	10x35	10x40	10x45	10x50	12.5x16	12.5x20	12.5x25	12.5x30
Code	1025	1030	1035	1040	1045	1050	1316	1320	1325	1330
ϕ DxL	12.5x35	12.5x40	12.5x45	12.5x50	16x16	16x20	16x25	16x31.5	16x35.5	16x40
Code	1335	1340	1345	1350	1616	1620	1625	1632	1636	1640
ϕ DxL	16x45	16x50	18x16	18x20	18x25	18x31.5	18x35.5	18x40	18x45	18x50
Code	1645	1650	1816	1820	1825	1832	1836	1840	1845	1850
ϕ DxL	20x30	20x35	22x35	22x40	22x45	25x40	25x45			
Code	2030	2035	2235	2240	2245	2540	2545			

Note: When a case size is required and not shown in the table, please contact with us for further discussion.

⑧ Lead Wire and Sleeve Type:

None = Standard design Pb-free wire + PET sleeve (aluminum e-cap) Pb-free wire + Coating case (OP-CAP)	T = Sn-Pb wire + PET sleeve
B = Sn-Bi wire + PET sleeve	G = Pb-free wire + Black PET sleeve (for RGA & SG series only)
K / L = Automotive control code	

* When a supplement code following a blank digit code of lead wire and sleeve type (standard design), use a hyphen, "-", to fill the blank digit.

* When the automotive control code is required, please contact with us for further discussion.

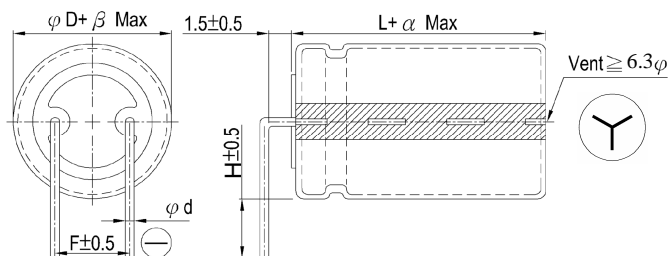
⑨ Supplement code (Optional):

For special control purposes

CUSTOMER :

CUSTOMER P/N:

DIAGRAM OF DIMENSIONS



Unit: mm

ϕD	8
L	11.5
F	3.5
ϕd	0.6
α	1.5
β	0.5
H	3.5

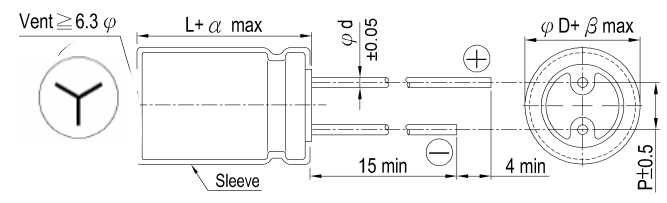
Items	Performance																			
Category Temperature Range	-55℃ ~ +105℃																			
Capacitance Tolerance	-20 % ~ +20 %				(120 Hz, 20℃)															
Surge Voltage	18.4VDC																			
Leakage Current	I ≤ 75.2μA				After 2 minutes															
Tan δ	≤0.16				(120 Hz, 20℃)															
Impedance	<0.117 Ω				(100kHz, 20℃)															
Ripple Current (rms)	650mA				(100kHz, 105℃)															
Low Temperature Characteristics (120 Hz)	<table><tr><td>Rated Voltage</td><td colspan="4">16</td></tr><tr><td>Z(-55℃)/Z(+20℃)</td><td colspan="4">3</td></tr></table>					Rated Voltage	16				Z(-55℃)/Z(+20℃)	3								
Rated Voltage	16																			
Z(-55℃)/Z(+20℃)	3																			
Ripple Current & Frequency Multipliers	<table><tr><td>Frequency (Hz)</td><td>120</td><td>1k</td><td>10k</td><td>100k up</td></tr><tr><td>Multiplier</td><td>0.55</td><td>0.77</td><td>0.94</td><td>1.0</td></tr></table>					Frequency (Hz)	120	1k	10k	100k up	Multiplier	0.55	0.77	0.94	1.0					
Frequency (Hz)	120	1k	10k	100k up																
Multiplier	0.55	0.77	0.94	1.0																
Life Test: Endurance: After 5000 Hrs at 105℃ Shelf Life Test: After 1000 Hrs at 105℃	<table><tr><td>Capacitance Change</td><td colspan="4">Within ±25 % of initial value</td></tr><tr><td>Tan δ</td><td colspan="4">Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="4">Within specified value</td></tr></table>					Capacitance Change	Within ±25 % of initial value				Tan δ	Less than 200% of specified value				Leakage Current	Within specified value			
Capacitance Change	Within ±25 % of initial value																			
Tan δ	Less than 200% of specified value																			
Leakage Current	Within specified value																			
Solder Heat-resistance	Dip of wave soldering capacitors should be less than 260±5℃, 10±1seconds.																			
Standards	JIS C 5101-4																			
Remarks	RoHS Compliance & Halogen-free																			

* Please refer to " Precautions and Guidelines for Aluminum Electrolytic Capacitors " of Lelon's catalog.

Publish Date	August 29, 2016	Approval Signatures:	Approved	Checked	Designed
Revise Date			研發部 ALG 29 2016 蕭正浩	研發部 ALG 29 2016 陳 筱	研發部 ALG 29 2016 李 娟
Edition No.	1				

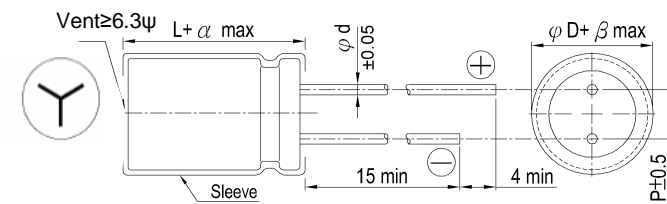
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Diagram of Dimensions:



Lead Spacing & Diameter						Unit: mm	
φD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5		0.6			0.8	
α	L < 20: 1.5, L ≥ 20: 2.0						
β	0.5						

The case size of 16×20, 18×20 and 18×25 are suitable for below diagram:




Marking:


Each capacitor shall be marked with the following information.

(The Front)

120 μ F 50V → Rated capacitance and rated DC working voltage

 → Polarity

(The Back)

 → Brand name

RXW 105°C → Series & maximum operating temperature

H 6 01 (M) → Date code

→ Tolerance of capacitance

→ Week of manufacture

→ The last digit of A. D.

→ Place of manufacture

T: Taiwan

H: Huizhou

A: Suzhou

Appearance:

- Marking color: Golden
- Sleeve color: Black ----- RXW Series
- Sleeve material: PET

Packaging Quantity:

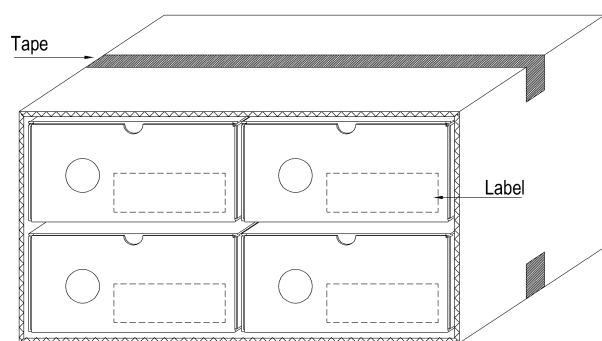
3. Radial Type in CC/FC/SC/SF/BC/BU Pack:

Case Size	pcs / Bag	Inner Box / Carton	Pcs / Carton	Case Size	pcs / Bag	Inner Box / Carton	Pcs / Carton
3φ × 5	1,000	8	80,000	*10φ × 8 ~ 10L	*500	8	*8,000
4φ × 5 ~ 7L	1,000	8	80,000	10φ × 12.5 ~ 16L	500	8	8,000
5φ × 5 ~ 7L	1,000	8	56,000	10φ × 20L	400	8	6,400
5φ × 11L	1,000	8	40,000	10φ × 25L	300	8	4,800
*5φ × 8L	*1000	8	*40,000	10φ × 30 ~ 40L	250	8	4,000
6.3φ × 5 ~ 7L	1,000	8	40,000	10φ × 45 ~ 50L	200	8	3,200
*6.3φ × 5.5 ~ 8L	*1000	8	*40,000	12.5φ × 16 ~ 25L	200	8	3,200
6.3φ × 11L	1,000	8	24,000	12.5φ × 30 ~ 40L	150	8	2,400
	*1000	8	*24,000	12.5φ × 45 ~ 50L	100	8	1,600
6.3φ × 15L	500	8	12,000	16φ × 16 ~ 31.5L	100	8	1,600
8φ × 5 ~ 9L	1,000	8	24,000	16φ × 35.5 ~ 40L	75	8	1,200
8φ × 11.5L	1,000	8	16,000	16φ × 45 ~ 50L	50	8	800
*8φ × 8 ~ 12L	*1000	8	*16,000	18φ × 16 ~ 25L	100	8	1,600
8φ × 15L	800	8	12,800	18φ × 31.5 ~ 35.5L	75	8	1,200
8φ × 20L	500	8	8,000	18 ~ 40L	50	8	800
8φ × 25 ~ 30L	500	8	8,000	18 ~ 45φ × 50L	50	8	400
8φ × 35 ~ 50L	250	8	4,000	20 ~ 25φ	---	---	400
10φ × 9L	500	8	12,000				

Remark: “*” Suitable for CA04 type (OP-CAP).

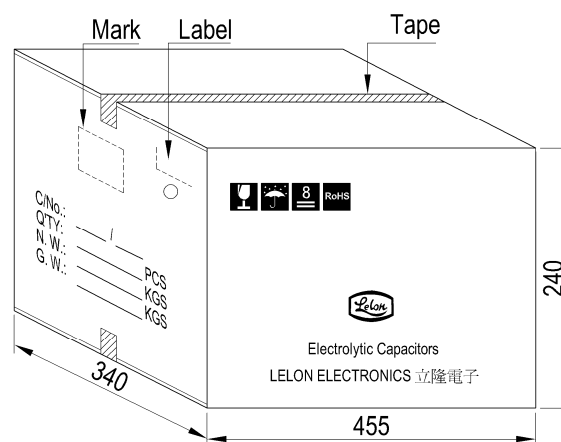
Packing Figure:

a) Inner Box

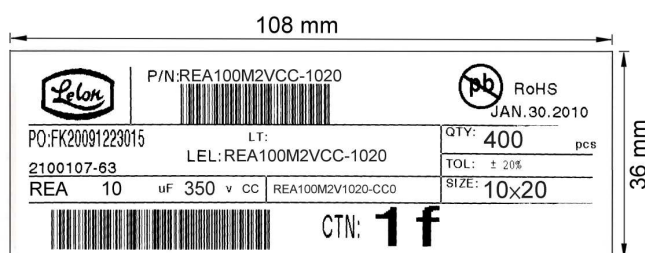


b) Outer Box:

Unit: mm



c) Label:



Endurance Characteristic:

No.	Item	Conditions	Specification	
1	Rotational Temperature Test	Capacitor is placed in an oven whose temperature follow specific regulation to “+25℃ (3 min.) → -55 / -40℃ (30 min.) → +25℃ (3 min.) → +105℃ (30 min.) → +25℃ (3 min.)”, and it is called a cycle. The test totals 10 cycles. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made. 1. 6.3 ~ 63V for -55℃ 2. 80V~ 100V for -40℃	Capacitance change	Within ± 10% of initial value.
			Tanδ	Within specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
2	High Temperature Endurance Life Test	1. Capacitors shall be placed in oven with application of ripple current and rated voltage 4000 +72 / -0 hours for $\phi D \leq 6.3$ mm, 5000 +72 / -0 hours for $\phi D = 8$ mm, 6000 +72 / -0 hours for $\phi D = 10$ mm, 7000 +72 / -0 hours for $\phi D \geq 12.5$ mm at 105℃ 2. The capacitor should be used within specified permissible ripple current in each standard products table (the sum of DC voltage and AC peak voltage shall be equal to the rated DC working voltage). 3. The specified maximum permissible ripple current in defined at 105℃ and 100K Hz (unless otherwise specified). 4. Then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	Capacitance change	Within ± 25% of initial value.
			Tanδ	Less than 200% of specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
3	High Temperature Unload Life Test	After 1000 +48 / -0 hours test at 105℃ without rated working voltage. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	Capacitance change	Within ± 25% of initial value.
			Tanδ	Less than 200% of specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
4	Humidity Test	Capacitors shall be exposed for 1000 +48 / -0 hours in an atmosphere of 90 ~ 95% R. H. at 60 ± 3℃ And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	Capacitance change	Within ± 10% of initial value.
			Tanδ	Less than 120% of specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
5	Low Temperature Test	Capacitors are placed at -55 / -40 ± 3℃ for 96 ± 4 hours. And then the capacitor shall be subjected to atmospheric conditions for 4 hours, after which measurements shall be made. 1. 6.3 ~ 63V for -55℃ 2. 80V~ 100V for -40℃	Capacitance change	Within ± 10% of initial value.
			Tanδ	Within specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
6	Vibration Test	1. Fix it at the point 4mm or less form body. For ones of 12.5mm or more in diameter or 25mm or more length, use separate fixture. 2. Direction and during of vibration: 3 orthogonal directions mutually each for 2 hours (total of 6 hours). 3. Frequency: 10 to 55 Hz reciprocation for 1min. 4. Total amplitude : 1.5mm	Capacitance change	Within ± 10% of initial value.
			Tanδ	Within specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged
7	Solder Heat-Resistance Test	The section of lead below 4mm form the body of capacitor must be immersed in 260 ± 5℃ liquid tin 10 ± 1 seconds, than, after removing the following specifications shall be satisfied when capacitor terminal is restored to 20℃ over 4 hours.	Capacitance Change	Within ± 10% of initial value.
			Tanδ	Within specified value
			Leakage Current	Within specified value
			Physical	No broken and undamaged

No.	Item	Conditions	Specification																			
8	Surge Voltage Test	The capacitor shall be subjected to 1000 cycles at 15 ~ 35℃ . Protective series resistor a 1KΩ each consisting of a charge period of 30 ± 5 seconds, followed by discharge period of approximately 5.5 minutes. Applying voltage: <table><tr><td>Rated Voltage(V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td></tr><tr><td>Surge Voltage(V)</td><td>7.2</td><td>11.5</td><td>18.4</td><td>28.8</td><td>40.3</td><td>57.5</td><td>72.5</td><td>92</td></tr></table>	Rated Voltage(V)	6.3	10	16	25	35	50	63	80	Surge Voltage(V)	7.2	11.5	18.4	28.8	40.3	57.5	72.5	92	Capacitance change	Within ± 20% of initial value.
			Rated Voltage(V)	6.3	10	16	25	35	50	63	80											
			Surge Voltage(V)	7.2	11.5	18.4	28.8	40.3	57.5	72.5	92											
			Tanδ	Less than 175% of specified value																		
			Leakage Current	Within specified value																		
Physical	No broken and undamaged																					
9	Mechanical Characteristics Test	1. The test is about lead tabs strength. 2. Tension Test: The lead tabs shall not be broken or any malformed condition after fixing capacitor vertically and pressing the following weight on the lead tabs of capacitor for 10 ± 1 secs. <table><tr><td>Lead tabs diameter (mm)</td><td>Weight (Kg)</td></tr><tr><td>≤ 0.5</td><td>0.5</td></tr><tr><td>0.6 ~ 0.8</td><td>1.0</td></tr><tr><td>> 0.8</td><td>2.0</td></tr></table> 3. Bending Test: The capacitor is held in vertical position. Attach a weight to the lead tabs, slowly rotate the capacitor 90°to a same way in the opposite direction. Repeat it again (5 secs / cycle). The lead tabs shall not be broken or cracked. <table><tr><td>Lead tabs diameter (mm)</td><td>Weight (Kg)</td></tr><tr><td>≤ 0.5</td><td>0.25</td></tr><tr><td>0.6 ~ 0.8</td><td>0.50</td></tr><tr><td>> 0.8</td><td>1.00</td></tr></table>				Lead tabs diameter (mm)	Weight (Kg)	≤ 0.5	0.5	0.6 ~ 0.8	1.0	> 0.8	2.0	Lead tabs diameter (mm)	Weight (Kg)	≤ 0.5	0.25	0.6 ~ 0.8	0.50	> 0.8	1.00	
Lead tabs diameter (mm)	Weight (Kg)																					
≤ 0.5	0.5																					
0.6 ~ 0.8	1.0																					
> 0.8	2.0																					
Lead tabs diameter (mm)	Weight (Kg)																					
≤ 0.5	0.25																					
0.6 ~ 0.8	0.50																					
> 0.8	1.00																					
10	Solderability Test	After the lead wire fully immersed in the solder for 2 ± 0.5 secs at a temperature of 245 ± 5℃ , the solder coating must be more than 95%.																				
11	Venting Test	1. Applicable to the capacitors with case diameter is 6.3 mm and larger. 2. Test condition: (1) AC test The capacitor shall be connected across a applying 50 or 60 Hz AC which is 0.7 times of rated voltage or 250Vrms AC whichever is the lower. (2) DC test: Applying inverse DC rated voltage with current to the capacitor. Where case diameter: φD ≤ 22.4mm: 1 A DC max φD > 22.4mm: 10 A DC max Note: (1) When the pressure relief vent operated, the capacitor shall avoid any danger of fire or explosion of capacitor element (terminal and metal foil etc.) or cover. (2) When the pressure relief device does not open with the voltage applied over 30 minutes, the test is considered to be passed.																				
12	Standards	Satisfies Characteristic JIS C 5101-4																				

Precautions and Guidelines for Aluminum Electrolytic Capacitors

1. Guidelines for Circuit Design

Selecting the capacitors to suit installation and operating conditions, and using the capacitors to meet the performance limits prescribed in this catalogue or the product specifications.

(1) Polarity

Aluminum electrolytic capacitors are polarized. Make sure of the polarity, if used in reverse polarity, the circuit life may be shortened or the capacitor may be damaged. When the polarity in a circuit sometimes can be reversed or unknown, a bi-polar capacitor shall be used. Also, note that DC capacitors cannot be used for AC application. Reverse voltage 1 voltage acceptable within specified temperature and working voltage.

(2) Operating Voltage

Do not apply DC voltage, which exceeds the rated voltage of the capacitor and not be reverse voltage. If a voltage exceeding the capacitor's voltage rating is applied, the capacitor may be damaged as leakage current increase. Using capacitors at recommended working voltage prolongs capacitor life. The surge voltage rating is the maximum DC over-voltage to which the capacitors may be subjected of short periods.

(3) Ripple Current

- The combined value of DC voltage and the peak AC voltage shall not exceed the rated voltage. When an excessive ripple current passes, the capacitor may be damaged with the vent operating, etc. Use the electrolytic capacitor within the permissible ripple range current at specified frequency and temperature.
- The temperature coefficient shows the limit of ripple current exceeding the rated ripple current that can be applied to the capacitor at the temperature. The expected life of a capacitor is nearly equal to the lifetime at the upper category temperature.

(4) Operating Temperature

Use the capacitors according to the specified operating temperature range. If used the capacitor outside the maximum rated temperature will considerably shorten the life or cause the capacitor to vent. Usage at room ambient will ensure longer life.

(5) Leakage Current

The leakage current shall be within specified levels. When capacitors are applied at a lower voltage, the actual leakage current will be reduced proportionately.

(6) Charge and Discharge

The capacitor is not suitable for a circuit in which charge and discharge are frequently repeated. The capacitance value may drop by forming oxide layer on the cathode foil, or the capacitor may be damaged by generating heat due to continuous rapid charge and discharge.

(7) Condition of Use

- The capacitors shall not be exposed to water, saltwater spray, oil or fumes, high humidity or humidity condensation and direct sunlight.
- Ambient conditions that include hazardous gases / fumes such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or bromine gas, ammonia, etc.
- Exposed to ozone, ultraviolet rays and radiation.
- Severe vibration or physical shock that exceeds the condition in specification sheets.

(8) Consideration to Circuit Design

- Please make sure the application and mounting conditions that the capacitor will be used are within the conditions specified in the catalog. If the conditions are beyond the conditions specified in the catalog, please contact Lelon.
- Do not design a circuit board so that heat-generating components are placed near an aluminum electrolytic capacitor or reverse side of PCB. A cooling system is recommended.
- Operating temperature, applied voltage and ripple current shall be within specification. The ambient temperature shall not exceed the operating temperature and applied ripple current shall not exceed the allowable ripple current specified in the specification.
- Performances of electrical characteristics of aluminum electrolytic capacitors are affected by variation of operating

temperature and frequency. Consider this variation designing the circuit.

- When two or more aluminum capacitors are connected in parallel, consider the current balance that flow through the capacitors.
- If more than two capacitors are connected in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each equally using a balancing resistor in parallel with each capacitor.
- For appropriate choice of capacitors for circuit that repeat rapid charge and discharge, please consult Lelon.
- Outer sleeve of the capacitor is not guaranteed as an electrical insulator. Do not use a standard sleeve on a capacitor that requires the electrical insulation. When the application requires special electrical insulation, please contact Lelon.
- Do not tilt lay down or twist the capacitor's body after the capacitor is soldered to the PCB.

2. Caution for Assembling Capacitors

(1) Mounting

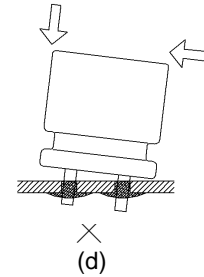
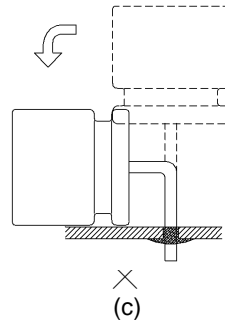
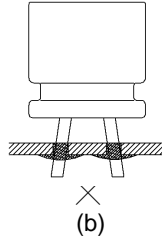
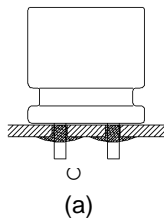
- Aluminum electrolytic capacitors cannot be re-used once the capacitor has assembled in the set and power applied.
- Aluminum electrolytic capacitors may have electrical potential between positive and negative terminal, please discharge through a 1K Ω resistor before use.
- Leakage current of Aluminum electrolytic capacitors may be increased after storage a long period of time. When leakage current has increased, please perform a voltage treatment before use.
Voltage treatment:
The capacitors shall be applied with DC rated voltage through a resistor of 1K Ω in series for one hour, and then discharge through a resistor of 1K Ω . When the capacitors have been assembled in the board, use a volt regulator to input voltage gradually to the rated voltage of the board.
- Please confirm the rated voltage before mounting.
- Please confirm the polarity before mounting.
- Do not use the capacitor that once dropped on the hard floor.
- Do not damage the capacitor while mounting.
- Capacitors shall be mounted that hold spacing on PCB matches the lead pitch of the capacitors.
- During the auto-insertion process and parts inspection, capacitors shall avoid the excessive force and shock.
- Do not design to locate any wiring or circuit around the capacitor's pressure relief vent. The following clearance should be made above the pressure relief vent. The pressure relief vent will not open without the appropriate free space.

Case Diameter	$\phi 6.3 \sim \phi 16$	$\phi 18 \sim \phi 35$	$\phi 40$ or more
Clearance (min)	2 mm	3 mm	5 mm

(2) Soldering

- Be careful of temperature and time when soldering. Dip of flow soldering of the capacitors should be limited at less than $260 \pm 5^\circ\text{C}$ and 10 ± 1 seconds or soldering iron with $350 \pm 10^\circ\text{C}$ for $3+1/-0$ seconds. Do not dip capacitor's body into melted solder.
- High humidity will affect the solder ability of lead wire and terminals. High temperature will reduce long-term operating life.
- Except SMD type, reflow soldering can not be used for any types of aluminum electrolytic capacitors. When using SMD type capacitor, please check the reflow profile. The temperature and duration shall not exceed the specified temperature and duration in the specification. If the temperature or duration is higher than the value specified, please consult Lelon before usage.
- Standard aluminum electrolytic capacitors cannot withstand more than one reflow process. Please consult our engineering department when needed.

- (e) Defective mounting on PCB and improper external strength applied on the lead wires or case body after soldering (see below drawings) may damage inside structure of the capacitor and may cause short circuit, high leakage current or leakage problems.
- (i) Good soldering.



- (ii) Hole-to-hole space on board differs from the lead space of lead wires.
- (iii) Lead wires are bent after soldering.
- (iv) Case body doesn't stand vertical on board after soldering. Do not bend or twist the capacitor's body after soldering.

(3) Cleaning Circuit Boards After Soldering

Halogenated solvent cleaning is not available for aluminum electrolytic capacitors. IPA (Isopropyl Alcohol) is one of the most acceptable cleaning agents; it is necessary to maintain a flux content in the cleaning liquid at a maximum limit of 2 Wt. %. If you use other cleaning agents, please consult Lelon.

3. Maintenance Inspection

Periodical inspection is necessary for using the aluminum capacitors with industrial equipment. The following items should be checked:

- (1) Appearance: Vent operation, leaking electrolyte, etc.
- (2) Electrical characteristic: Capacitance, dissipation factor, leakage current, and other specified items listed in specification.

Lelon recommend replacing the capacitors if the parts are out of specification.

4. Storage

- (1) Aluminum electrolytic capacitor should not be stored in high temperature or high humidity condition. The suitable condition is 5°C ~ 35°C and less than 75% in relative humidity indoor.

- (2) Do not store the capacitors in damp conditions such as water, brine or oil.

- (3) Do not store the capacitors that exposed to hazardous gas such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonium, etc.

- (4) Do not store the capacitors that exposed to ozone, ultraviolet rays or radiation.

- (5) Do not expose the capacitors to acidic or alkaline solutions.

- (6) It is not applied to a regulation of JEDEC J-STD-020 (Rev. C).

5. Disposal

Please consult with a local industrial waste disposal specialist when disposing of aluminum electrolytic capacitors.

6. Environmental Consideration

Lelon already have received ISO 14000 certificate. Cadmium (Cd), Lead (Pb), Mercury (Hg), Hexavalent Chromium (Cr+6), PBB and PBDE have never been used in capacitor. If you need "Halogen-free" products, please consult with us.

For further details, please refer to

IEC 60384-4- Fixed capacitors for use in electronic equipment – Part 4: Sectional specification – Aluminium electrolytic capacitors with solid (MnO₂) and non-solid electrolyte (Established in January 1995, Revised in March 2007), and

EIAJ RCR-2367B- Guideline of notabilia for fixed aluminium electrolytic capacitors for use in electronic equipment [Technical Standardization Committee on Passive Components (Established in March 1995, Revised in March 2002)].