

## 规格承认书

Specification for approval

**客户名称:** 深圳市立创电子商务有限公司

( Customer Name )

**产品名称:** 贴片铝电解电容器

( Product Name )

SMD Aluminum Electrolytic Capacitor

**客户料号:**

( Customer part number )

**科尼盛料号:**

RVT220UF35V67RV0024


( KNSCHA number )

**型号规格:**

SMD E/C 220UF/35V 8\*10.2 RVT

( Specifications )

SMD E/C 220UF/35V 8\*10.2 RVT

制 造 (Manufacture)		
Approval		
拟 制 (Fiction)	审 核 (Chief)	核 准 (Approval)
		
刘淑芬	刘军军	徐贵南

客 户 (Customer)		
Approval		
检 验 (Inspect)	审 核 (Chief)	核 准 (Approval)
	0	

**东莞市科尼盛电子有限公司**

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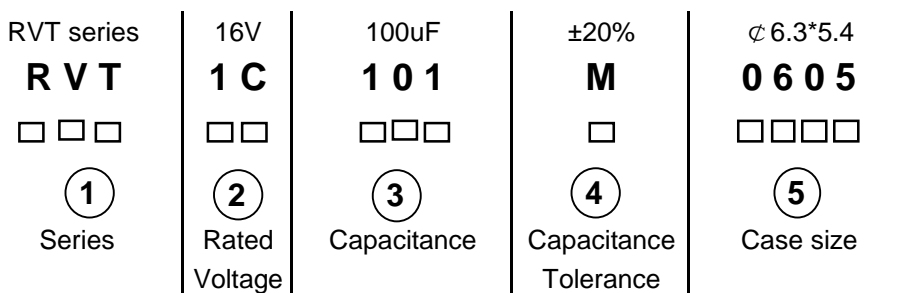
Email : sales@knscha.com Website: <http://www.knscha.com>



## PART NUMBERING REFERENCE

Product Code Guide – SMD Type

Series (RVT) Voltage (16V) Capacitance (100uF) Capacitance Tolerance ( $\pm 20\%$ ) Case Diameter ( $\varnothing 6.3 \times 5.4\text{mm}$ )



### 1. Series

RVS	RVK	RVT	RVE	RVW	RVH	RVN	RVZ	RVL
-----	-----	-----	-----	-----	-----	-----	-----	-----

### 2. Rated Voltage

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

Voltage (WV)	4	6.3	10	16	25	35	50	63	100	400
Code	0G	0J	1A	1C	1E	1V	1H	1J	2A	4G

### 3. Capacitance:

Capacitance in  $\mu\text{F}$  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  $10\mu\text{F}$ .

Example:

Capacitance	1	4.7	10	22	47	100	220	330	470	1000	1500
Part number	1R0	4R7	100	220	470	101	221	331	471	102	152

### 4. Tolerance:

J= -5% ~ +5%	K= -10% ~ +10%	M= -20% ~ +20%	V= -10% ~ +20%
A= 0 ~ +20%	Q= -10% ~ +30%		

### 5. Case size:

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

$\varnothing D \times L$	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*6.5
Code	<b>0405</b>	<b>0505</b>	<b>0605</b>	<b>0607</b>	<b>0806</b>
$\varnothing D \times L$	8*10.2	10*10.2	8*12	10*12	
Code	<b>0810</b>	<b>1010</b>	<b>0812</b>	<b>1012</b>	



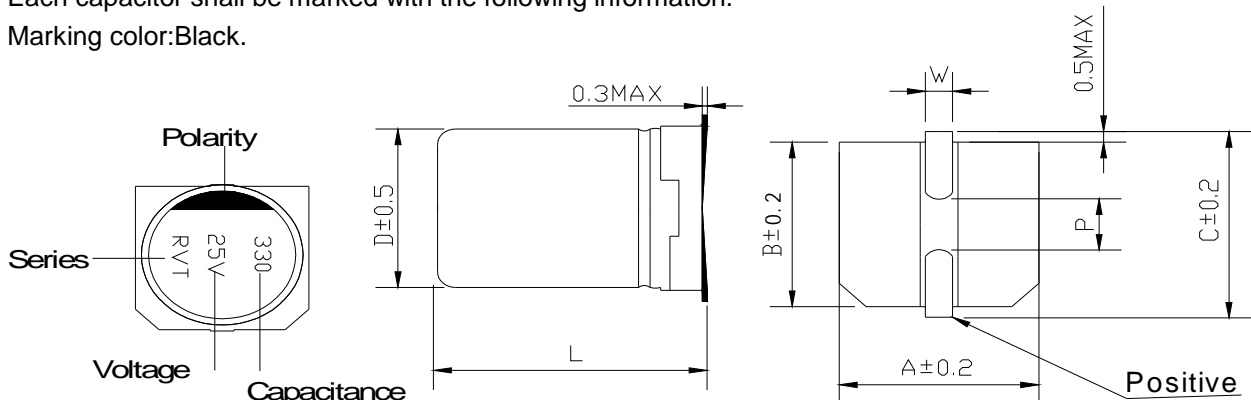
## Specifications

Items	Performance																											
Category Temperature Range	-40°C ~ +105°C																											
Capacitance Tolerance	-20 % ~ +20 % (120 Hz, 20°C)																											
Leakage Current*	$I \leq 0.01CV$ or $3(\mu A)$ After 2 minutes (Whichever is greater)																											
Dissipation Factor (Tan $\delta$ )	$\leq 0.18$ (120 Hz, 20°C)																											
Ripple Current (rms)	228mA (120 Hz, 20°C)																											
Ripple Current & Frequency Multipliers	<table border="1"> <tr> <td>Frequency</td> <td>50/60</td> <td>120</td> <td>1k</td> <td>10k to</td> </tr> <tr> <td>Multiplier</td> <td>0.75</td> <td>1.00</td> <td>1.20</td> <td>1.35</td> </tr> </table>	Frequency	50/60	120	1k	10k to	Multiplier	0.75	1.00	1.20	1.35																	
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Multiplier	0.75	1.00	1.20	1.35																								
Temperature characteristic (Impedance ratio at 120Hz)	<table border="1"> <tr> <td>UR (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>100</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>3</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>4</td> <td>4</td> </tr> </table>	UR (V)	6.3	10	16	25	35	50	63	100	Z-25°C / Z+20°C	4	3	2	2	2	2	3	3	Z-40°C / Z+20°C	10	8	6	4	3	3	4	4
UR (V)	6.3	10	16	25	35	50	63	100																				
Z-25°C / Z+20°C	4	3	2	2	2	2	3	3																				
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Endurance Applied with rated voltage after 1000 hrs at 105°C	<table border="1"> <tr> <td>Capacitance Change</td> <td>Within <math>\pm 30\%</math> of initial value</td> </tr> <tr> <td>Dissipation factor</td> <td>Less than 300% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Capacitance Change	Within $\pm 30\%$ of initial value	Dissipation factor	Less than 300% of specified value	Leakage Current	Within specified value																					
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Leakage Current	Within specified value																											
Shelf life test after 1000 hrs at 105°C with no rated voltage	<table border="1"> <tr> <td>Capacitance Change</td> <td>Within <math>\pm 30\%</math> of initial value</td> </tr> <tr> <td>Dissipation factor</td> <td>Less than 300% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Capacitance Change	Within $\pm 30\%$ of initial value	Dissipation factor	Less than 300% of specified value	Leakage Current	Within specified value																					
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Standards & Remarks	JIS C 5101-1																											

\* For any doubt about measured values, measure the leakage current again after the following voltage treatment. Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105°C.

## Marking and Diagram of Dimensions:

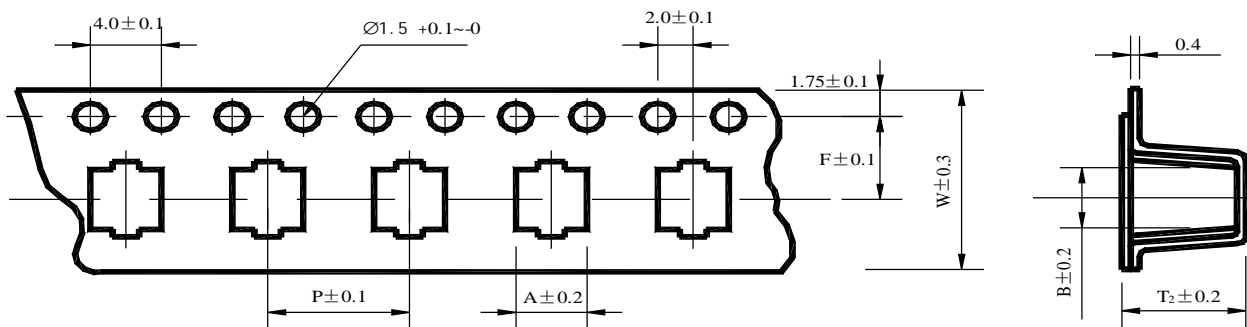
Each capacitor shall be marked with the following information.  
Marking color: Black.



$\phi D$	L	A	B	C	W	P
4	5.4 $\pm$ 0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.4 $\pm$ 0.3	5.3	5.3	6.0	0.5~0.8	1.5
6.3	5.4 $\pm$ 0.5	6.6	6.6	7.2	0.5~0.8	2.1
6.3	7.7 $\pm$ 0.3	6.6	6.6	7.2	0.5~0.8	2.1
8	6.5 $\pm$ 0.5	8.3	8.3	9.1	0.7~1.1	3.1
8	10.2 $\pm$ 0.5	8.3	8.3	9.1	0.7~1.1	3.1
10	10.2 $\pm$ 0.5	10.3	10.3	11.1	0.7~1.1	4.5

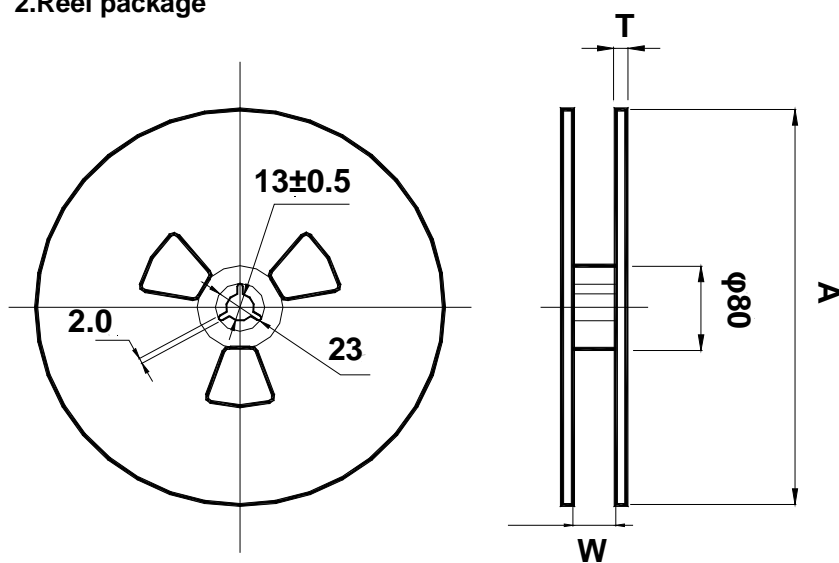
## Taping Specification for SMD Type

### 1. Carrier Tape



$\varphi D * L$	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*6.5	8*10.2	10*10.2
W	12.0	12.0	16.0	16.0	16.0	24.0	24.0
P	8.0	12.0	12.0	12.0	16.0	16.0	16.0
F	5.5	5.5	7.5	7.5	7.5	11.5	11.5
A	4.7	6.0	7.0	7.0	8.7	8.7	10.7
B	4.7	6.0	7.0	7.0	8.7	8.7	10.7
T2	5.8	5.8	5.8	8.2	7.0	11.0	11.0

### 2. Reel package



$\varphi D * L$	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*6.5	8*10.2	10*10.2
W	13	13	17	17	17	25	25
A	380	380	380	380	380	380	380
T	2.0	2.0	2.0	2.0	2.0	2.0	2.0

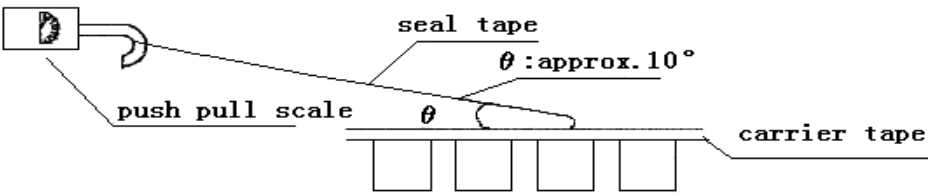
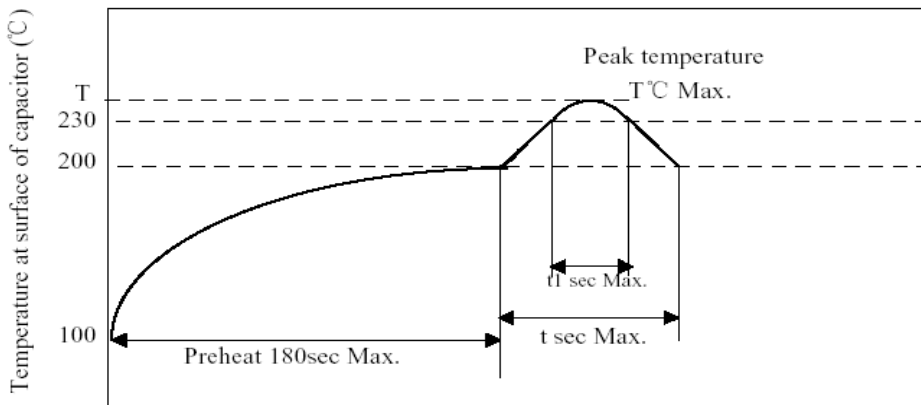
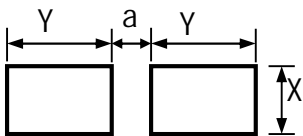
### 3. Package quantity

$\varphi D * L$	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*6.5	8*10.2	10*10.2
Q'ty/Reel	2000	1000	1000	1000	1000	500	500
Q'ty/Box	20000	10000	10000	10000	10000	5000	5000

Unit: pcs

#### 4 .Endurance characteristic

NO.	Item	Test Conditions	Specification																			
1	Surge Voltage Test	At 15~35℃, 1000 cycles of 30s on and 330s off.  Applying voltage <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Surge Voltage</td> <td>7.3</td> <td>11</td> <td>18.4</td> <td>29</td> <td>40</td> <td>58</td> <td>73</td> <td>115</td> </tr> </table>	Rated Voltage	6.3	10	16	25	35	50	63	100	Surge Voltage	7.3	11	18.4	29	40	58	73	115	$\Delta C/C$	$\pm 15\%$ Initial measured value
			Rated Voltage	6.3	10	16	25	35	50	63	100											
			Surge Voltage	7.3	11	18.4	29	40	58	73	115											
			tg $\delta$	$\leq$ Initial specified value																		
			l	$\leq$ Initial specified value																		
Physicac	No visible damage																					
2	Damp Heat Test	capacitor shall be exposed for 500 $\pm$ 8 hours in an atmosphere of 90~95%RH .at 40 $\pm$ 2℃, And then the Capacitor shall be subjected to standard atmospheric conditions for 1-2hours, after which measurements shall be made.	$\Delta C/C$	$\pm 10\%$ Initial measured value																		
			tg $\delta$	$\leq$ Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		
3	Rotational Temperature Test	Capacitor is placed in an oven whose temperature follow specific regulation to change. The specific regulation is "+20℃ (3 min.)~-40℃ (30 min.)~+20℃ (3min.)~+105℃ (30 min.) ~+20℃ (3 min.)and it is called a cycle.And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	$\Delta C/C$	$\pm 25\%$ Initial measured value																		
			tg $\delta$	$\leq$ Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		
4	Load Life Test	1.Capacitors shall be placed in oven with application of rated voltage for 2000 +48/-0 hrs at 105℃. 2.Then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	$\Delta C/C$	$\pm 30\%$ of Initial measured value																		
			tg $\delta$	$\leq 300\%$ of Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		
5	Shelf Life Test	1.The capacitors are then stored with no voltage applied at a temperature of 105 $\pm$ 2℃ for 1000+48/0 hours. 2.Then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.	$\Delta C/C$	$\pm 30\%$ of Initial measured value																		
			tg $\delta$	$\leq 300\%$ of Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		
6	Vibration test	The following conditions shall be applied for 2 hours in each (X,Y,Z) 3 mutually perpendicular directions,with a total of 6 hours . Vibration frequency range: 10Hz ~ 55Hz Peak to peak amplitude: 1.5mm	$\Delta C/C$	$\pm 15\%$ Initial measured value																		
			tg $\delta$	$\leq$ Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		
7	Solder Heat Resistance Test	After reflow soldering according to Reflow Soldering Condition and restored at room temperature, they meet the characteristics listed.	$\Delta C/C$	$\pm 10\%$ Initial measured value																		
			tg $\delta$	$\leq$ Initial specified value																		
			l	$\leq$ Initial specified value																		
			Physicac	No visible damage																		

NO.	Item	Test Conditions	Specification																								
8	Solderability Test	After the lead wire fully immersed in the solder for $2 \pm 0.5$ secs at a temperature of $245 \pm 5$ , the solder coating must be more than 95%.																									
9	Adhesion test	Reasonable pulling strength: 0.1~0.7N Pulling speed: 200~300mm/min 																									
10	Reflow soldering temperature profile	Reflow soldering 	<ol style="list-style-type: none"> <li>1) Temperature at surface of capacitor shall not exceed T(°C).</li> <li>2) Period that temperature at surface of capacitor becomes more than 200°C and 230°C shall not exceed t and t1 seconds, respectively.</li> </ol> Preheat shall be made at 100°C~200°C and for maximum 180 seconds; <table border="1" data-bbox="507 1400 1372 1579"> <thead> <tr> <th>Size</th> <th>T(°C)</th> <th>t (second)</th> <th>t1 (second)</th> </tr> </thead> <tbody> <tr> <td><math>\phi 4 \sim \phi 6.3</math></td> <td>260</td> <td>90</td> <td>40</td> </tr> <tr> <td><math>\phi 8</math></td> <td>250</td> <td>90</td> <td>40</td> </tr> <tr> <td><math>\phi 10</math></td> <td>240</td> <td>60</td> <td>40</td> </tr> </tbody> </table>	Size	T(°C)	t (second)	t1 (second)	$\phi 4 \sim \phi 6.3$	260	90	40	$\phi 8$	250	90	40	$\phi 10$	240	60	40								
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$\phi 10$	240	60	40																								
11	Land pattern	Recommended pad pattern and size (Unit: mm) 	<table border="1" data-bbox="885 1646 1417 1921"> <thead> <tr> <th>Case size</th> <th>X</th> <th>Y</th> <th>a</th> </tr> </thead> <tbody> <tr> <td><math>\Phi 4</math></td> <td>1.6</td> <td>2.6</td> <td>1.0</td> </tr> <tr> <td><math>\Phi 5</math></td> <td>1.6</td> <td>3.0</td> <td>1.4</td> </tr> <tr> <td><math>\Phi 6.3</math></td> <td>1.6</td> <td>3.5</td> <td>2.1</td> </tr> <tr> <td><math>\Phi 8</math></td> <td>2.5</td> <td>3.5</td> <td>3.0</td> </tr> <tr> <td><math>\Phi 10</math></td> <td>2.5</td> <td>4.0</td> <td>4.0</td> </tr> </tbody> </table>	Case size	X	Y	a	$\Phi 4$	1.6	2.6	1.0	$\Phi 5$	1.6	3.0	1.4	$\Phi 6.3$	1.6	3.5	2.1	$\Phi 8$	2.5	3.5	3.0	$\Phi 10$	2.5	4.0	4.0
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12	Standards	Satisfies Characteristic W of JIS C 5101-1																									

## Caution for proper use of Aluminum Electrolytic Capacitors

Upon using Aluminum Electrolytic Capacitors, please pay attention to points listed below

When the following types of electrical loads indicated below are applied to Aluminum Electrolytic Capacitors, rapid deterioration of electrical property occurs:

- \* reverse voltage
- \* voltage exceeds rated voltage
- \* rated ripple current is exceeded
- \* severe charging/discharging

At such times, severe heat is generated, gas is emitted, then electrolyte leaks from the sealing area, and pressure relief vent operates due to internal pressure

## Device circuits design considerations

1) Confirm installation and operating requirements for capacitors, then use them within the performance limits prescribed in this catalog or product specifications

2) Polarity

Aluminum electrolytic capacitors are polarized. Never apply a reverse voltage or AC voltage. Connecting with wrong polarity will short-circuit or damage the capacitor with the pressure relief vent opening early on. To identify the polarity of a capacitor, see the relevant diagram in the catalogs or product specifications, or the polarity marking on the body of the capacitor. For circuits where the polarity is occasionally reversed, use a bi-polar type of aluminum electrolytic capacitor. However, note that even bi-polar type capacitors must not be used for AC circuits.

3) Operating voltage

Do not apply an over-voltage that exceeds a rated voltage specified for the capacitors. Although capacitors specify a surge voltage that exceeds the full rated voltage, it does not assure long-term use but limited use under specific conditions

4) Ripple current

Do not apply an overcurrent that exceeds the rated ripple current specified for the capacitors. Excessive ripple current will increase heat production within the capacitors, causing the capacitors to be damaged as follows:

- \* Shorten lifetime
- \* Open pressure relief vent
- \* Short circuit

The rated ripple current is specified along with a specific ripple frequency.

5) Operating temperature (Category temperature)

Do not apply high temperatures that exceed the upper limit of the category temperature range specified for the capacitors. Using the capacitor at temperatures higher than the upper limit will considerably shorten the lifetime of the capacitor and make the pressure relief vent open. In other words, lowering ambient temperatures will extend the expected lifetime of the capacitors

6) Charging and discharging

Do not use capacitors in circuits intended for rapid charge and discharge cycle operations.



If capacitors are used in the circuits that repeat a charge and discharge with a large voltage drop or a rapid charge and discharge at a short interval cycle, capacitance will decrease and/or the capacitors will be generation. damaged by internal heat

#### 7) Operating conditions

Do not use/expose capacitors to the following conditions:

- ① Direct contact with water, salt water or oil, or high condensation environment.
- ② Direct sunlight.
- ③ Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.
- ④ Ozone, ultraviolet rays or radiation.
- ⑤ Extreme vibration or mechanical shock that exceeds limits in the catalogs or product specifications.

#### 8) Mounting

- ① Aluminum electrolytic capacitors contain paper separators and electric-conductive electrolyte that contains and burn organic solvent as main solvent material, both of which are flammable. If the electrolyte leaks onto a printed circuit board, it can erode the device circuit pattern, may short-circuit the copper traces, smoke and burn.
- ② For a chip type capacitor, design the land patterns of the PC board in accordance with the recommended footprint dimensions described in the catalogs or product specifications.

### **Installation**

#### 1) Assembling

- ① Do not try to reuse the capacitors once assembled and electrified, except only capacitors that are taken from a device for periodic inspection to measure their electrical characteristics.
- ② Capacitors may have been spontaneously recharged with time by a recovery voltage phenomenon. In this case, discharge the capacitors through a resistor of approximately 1kΩ before use.
- ③ Leakage current of Aluminum Electrolytic Capacitors may be increased during long storage time. In this case, the capacitors shall be applied with a DC voltage which is equal to the Rated Voltage of the capacitor through a resistor of 1kΩ in series for 1 hour.
- ④ Confirm the rated capacitance and voltage of capacitors before installation.
- ⑤ Confirm the polarity of capacitors before installation.
- ⑥ Do not try to use the capacitors that were dropped to the floor and so forth.
- ⑦ Do not deform the can case of a capacitor.
- ⑧ Make sure that the terminal spacing of a capacitor equals the holes spacing on the PC board before installing the capacitor. For radial lead type capacitors, some standard pre-formed lead types are also available.
- ⑨ Do not apply excessive mechanical force to capacitors more than the limits prescribed in the catalogs or product specifications. Avoid excessive mechanical force while the capacitors are in the process of vacuum-picking, placing and positioning by automatic mounting machines or cutting the lead wires by autor insertion machines

#### 2) Cleaning assembly boards

- ① Do not clean capacitors with the following cleaning agents:
  - \* Halogenated solvents: cause capacitor failures due to corrosion.

- \* Alkali system solvents: corrode (dissolve) the aluminum can case.
- \* Terpene and petroleum system solvents: deteriorate the rubber seal materials.
- \* Xylene: deteriorates the rubber seal materials as well.
- \* Acetone: erases the markings printed on a capacitor.

### 3) Maintenance inspections

- 1) For industrial use capacitors, make periodic inspections of the capacitors.
- 2) Characteristics to be inspected
  - ① Significant damage in appearance: vent opening, electrolyte leakage, etc.
  - ② Electrical characteristics: leakage current, capacitance,  $\tan\delta$  and other characteristics prescribed in the catalogs or product specifications. If finding anything abnormal on the characteristics above, check the specifications of the capacitor and take appropriate actions such as replacement.

### 4) Storage

Do not store capacitors at high temperature or high humidity. Store the capacitors indoors at temperatures of 5 to 35°C and humidities of less than 75%RH. In principle, aluminum electrolytic capacitors should be used within three years after production.

### 5) Capacitor disposal

Please consult with a local organization for the proper disposal of industrial waste. For incinerating capacitors, apply a high temperature incineration (over 800°C). Incinerating them at temperatures lower than that may produce toxic gases such as chlorine. To prevent capacitors from explosion, punch holes in or sufficiently crush the can cases of the capacitors, then incinerate.

### 6) Environmental Consideration

- ① In accordance with the EU RoHS 2.0 Directive 2015/863 related to limits of hazardous substances requirements / EU regulations, the giant container products comply with the relevant provisions.
- ② RONGJU each year in accordance with EU directives RoHS latest test, while the products inside and outside packaging are marked RoHS.

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)].