



RoHS

MESSRS: 苏州路之遥科技有限公司

APPROVAL NO 030 - 014

DATE 2009.08.9

ALUMINUM ELECTROLYTIC

CAPACITOR**APPROVAL SHEET**

CATALOG TYPE	SRA SERIES
USER PART NO.	
适用机种	
特记事项	Pb-FREE

QINGDAO SAMYOUNG ELECTRONICS CO.,LTD
 MANAGER OF DEVELOPMENT DEPARTMENT

GONG JANG SUG

USER APPROVAL:

APPROVAL NO.: _____

SamYoung(Korea) : 146-1,SANGDAEWON-DONG,JOONGWON-GU,SUNGNAM-CITY,KYUNGKI-DO,KOREA

SamYoung(China) : No.5 CHANGJIANG ROAD,PINGDU-CITY,SHANDONG-PROVINCE,CHINA

样式: H-1001-011

A4 (210×297)

**SamYoung Electronics Co., Ltd.**

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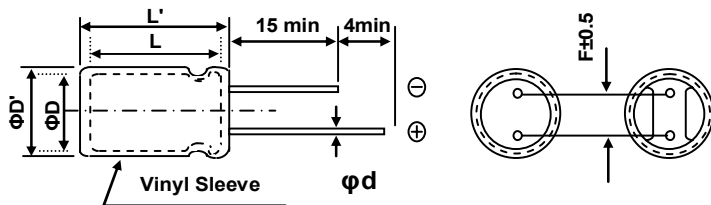
ALUMINUM ELECTROLYTIC CAPACITOR

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Specifications of SRA Series

Item	Characteristics								
Rated Voltage Range	4 ~ 63 V _{DC}								
Operating Temperature Range	- 40 ~ + 85 °C								
Nominal Capacitance Range	0.1 ~ 220 μF								
Capacitance Tolerance	±20% (M) (at 20°C ,120Hz)								
Leakage Current (at 20 °C)	After 2 minutes:0.01C _R V _R (μA) or 3 μA,whichever is greater Where,C _R =Nominal capacitance(μF) V _R =Rated Voltage(V _{DC})								
Dissipation Factor (TANδ) (at 20°C , 120Hz)	Rated voltage(V _{DC})	4	6.3	10	16	25	35	50	63
	TANδ (Max)	0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.08
※ SRA 16 VB 100 (0.19) , SRA 6.3 VB 220 (0.27) (at 20°C ,120Hz)									
Temperature Characteristic (Max. Impedance ratio) (at 120Hz)	Rated voltage(V _{DC})	4	6.3	10	16	25	35	50	63
	Z-25°C/z+20°C	4	4	3	2	2	2	2	2
	Z-40°C/z+20°C	10	10	8	6	4	3	3	3
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 85°C. Capacitance change : ≤± 20% the of initial Value TANδ : ≤200% of the initial specified value Leakage current : ≤The initial specified value								
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours at 85°C without voltage applied. Capacitance change : ≤± 20% of the initial Value TANδ : ≤200% of the initial specified value Leakage current : ≤200% of the initial specified value								
Others	Satisfies characteristic W of KS C 6421								

A. DIAGRAM OF DIMENSION



ΦD	4	5	6.3
Φd	0.45		
F	1.5	2	2.5
ΦD'	ΦD + 0.5Max		
L'	L + 1.0Max		

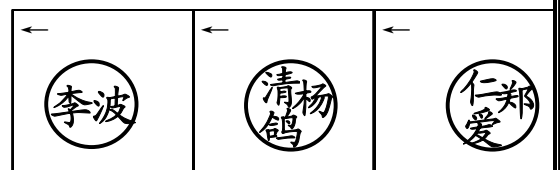
B. MARKING: WITH BLACK SLEEVE, WHITE INK



Lot No. on the top of the case

SRA
(M) 85°C

FRONT VIEW OF CAPACITOR BACK VIEW OF CAPACITOR



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RATINGS OF SRA SERIES

ØDXL(mm)

WV CAP	4	6.3	10	16	25	35	50	63
0.1							4×7 1.3	4×7 1.3
0.15							4×7 2.0	4×7 2.5
0.22							4×7 2.9	4×7 2.9
0.33							4×7 3.5	4×7 4.4
0.47							4×7 5.0	4×7 7.9
0.68							4×7 7.1	4×7 9.0
1							4×7 10	4×7 11
1.5							4×7 12	4×7 13
2.2							4×7 15	4×7 17
3.3						4×7 17	4×7 18	5×7 21
4.7					4×7 19	4×7 20	5×7 23	6.3×7 26
6.8					5×7 23	5×7 24	6.3×7 28	6.3×7 29
10				4×7 25	5×7 28	5×7 30	6.3×7 34	6.3×7 40
15				5×7 31	5×7 35	6.3×7 41	6.3×7 48	
22		4×7 31	5×7 35	5×7 39	6.3×7 43	6.3×7 47	6.3×7 50	
33	4×7 26	5×7 39	5×7 43	6.3×7 49	6.3×7 53	6.3×7 64		
47	4×7 34	5×7 47	6.3×7 53	6.3×7 59	6.3×7 65			
68	5×7 48	6.3×7 65	6.3×7 72	6.3×7 83				
100	5×7 61	6.3×7 71	6.3×7 80	6.3×7 95	← Case Size ØD X L (mm)			
150	6.3×7 88	6.3×7 90			← Permissible Ripple Current (mArms) at 85°C, 120Hz			
220	6.3×7 95	6.3×7 120	6.3×7 128					
330								



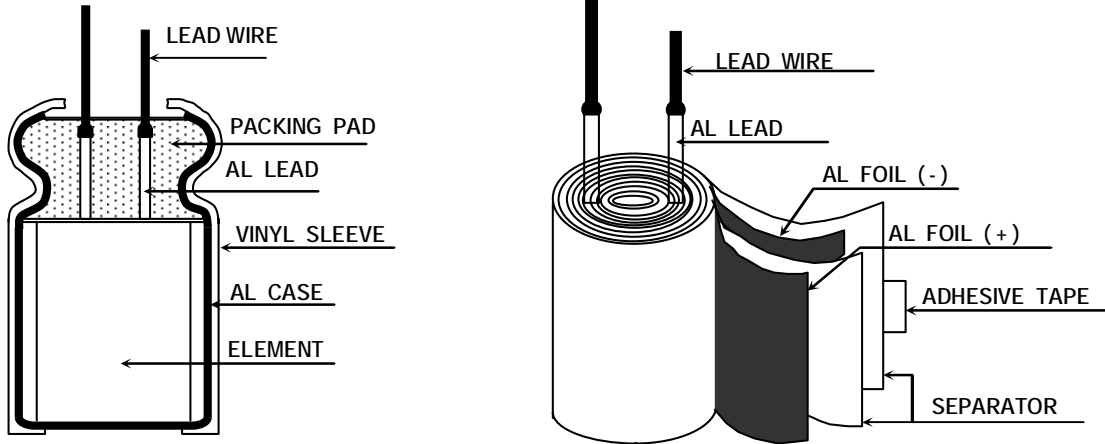
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STRUCTURE AND MATERIALS



CE04 TYPE

*MINIATURE SIZED TYPE CAPACITORS COMPONENT

PART NAME	MATERIALS	VENDER
LEAD WIRE	TINNED COPPER - PLY WIRE(Pb-FREE)	SAMATRON IL KWANG (KOREA/CHINA)
AL LEAD	ALUMINUM 99.92 % OVER	IL KWANG SAM ATRON (KOREA/CHINA)
PACKING PAD	SYNTHETIC RUBBER OR BAKE PAD(Pb-FREE)	SUNG NAM (KOREA/CHINA) TIAN TAI (CHINA)
SLEEVE	P.V.C (POLY VINYL CHLORIDE)	SUNG NAM (KOREA/CHINA) MOO DEUNG
AL CASE	ALUMINUM 99.0 % OVER	D.N TECH (KOREA/CHINA) HA NAM (KOREA/CHINA) AO XING (CHINA)
AL FOIL ⊕	FORMED ALUMINUM 99.9 % OVER	K.D.K / JCC / MATSUSHITA (JAPAN) BECROMAL (ITALY) ALUKO / SAM YOUNG (KOREA) ECHO / INTERTEC SATMA (FRANCE) HUAFENG / HISTAR / RAOIO (CHINA) INCALCU / HUARONG / HEC LUXON / LITON (TAIWAN)
AL FOIL ⊖	ETCHED ALUMINUM 98.0 % OVER	K.D.K (JAPAN) ALUKO / K-JCC (KOREA) AFT / INCULCU / SHENGHONG (CHINA)
SEPARATOR	INSULATION PAPER	N.K.K / M.F.G / DAIFUKU (JAPAN) SPO (GERMANY) MHD (AMERICA) KAN (CHINA)
ADHESIVE TAPE	POLY PROPYLENE FILM	DAI IL (KOREA) NITTO (JAPAN)

**SamYoung Electronics Co., Ltd.**

When using aluminum electrolytic capacitors, pay strict attention to the following:

1. Electrolytic capacitors for DC application require polarization.

Confirm the polarity. If used in reversed polarity, the circuit life may be shortened or the capacitor may be damaged. For use on circuits whose polarity is occasionally reversed, or whose polarity is unknown, use bi-polarized capacitors (BP-series). Also, note that the electrolytic capacitor cannot be used for AC application.

2. Do not apply a voltage exceeding the capacitor's voltage rating.

If a voltage exceeding the capacitor's voltage rating is applied, the capacitor may be damaged as leakage current increases. When using the capacitor with AC voltage superimposed on DC voltage, care must be exercised that the peak value of AC voltage does not exceed the rated voltage.

3. Do not allow excessive ripple current to pass.

Use the electrolytic capacitor at current values within the permissible ripple range. If the ripple current exceeds the specified value, request capacitors for high ripple current applications.

4. Ascertain the operating temperature range.

Use the electrolytic capacitors according to the specified operating temperature range. Usage at room temperature will ensure longer life.

5. The electrolytic capacitor is not suitable for circuits in which charge and discharge are frequently repeated.

If used in circuits in which charge and discharge are frequently repeated, the capacitance value may drop, or the capacitor may be damaged. Please consult our engineering department for assistance in these applications.

6. Apply voltage treatment to the electrolytic capacitor which has been allowed to stand for a long time.

If the electrolytic capacitor is allowed to stand for a long time, its withstand voltage is liable to drop, resulting in increased leakage current. If the rated voltage is applied to such a product, a large leakage current occurs and this generates internal heat, which damages the capacitor. If the electrolytic capacitor is allowed to stand for a long time, therefore, use it after giving voltage treatment (Note 1). (However, no voltage treatment is required if the electrolytic capacitor is allowed to stand for less than 2 or 3 years at normal temperature.)

7. Be careful of temperature and time when soldering.

When soldering a printed circuit board with various components, care must be taken that the soldering temperature is not too high and that the dipping time is not too long. Otherwise, there will be adverse effects on the electrical characteristics and insulation sleeve of electrolytic capacitors. In the case of small-sized electrolytic capacitors, nothing abnormal will occur if dipping is performed at less than 260°C for less than 10 seconds.

8. Do not place a soldering iron on the body of the capacitor.

The electrolytic capacitor is covered with a vinyl sleeve. If the soldering iron comes in contact with the electrolytic capacitor body during wiring, damage to the vinyl sleeve and/or case may result in defective insulation, or improper protection of the capacitor element.

9. Cleaning circuit boards after soldering.

Some solvents have adverse effects on capacitors.

Please refer to the next page.

10. Do not apply excessive force to the lead wires or terminals.

If excessive force is applied to the lead wires and terminals, they may be broken or their connections with the internal elements may be affected. (For strength of terminals, refer to KS C6035, KS C6421 (JIS C5102, JIS C5141))

11. Care should be used in selecting a storage area.

If electrolytic capacitors are exposed to high temperatures caused by such things as direct sunlight, the life of the capacitor may be adversely affected. Storage in a high humidity atmosphere may affect the solderability of lead wires and terminals.

12. Surge voltage.

The surge voltage rating is the maximum DC over-voltage to which the capacitor may be subjected for short periods not exceeding approximately 30 seconds at infrequent intervals of not more than six minutes. According to KS C6421, the test shall be conducted 1000 cycles at room temperature for the capacitors of characteristic W of KS C6421 or at the maximum operating temperature for the capacitors of characteristics B and C of KS C6421 with voltage applied through a series resistance of 1000 ohms without discharge. The electrical characteristics of the capacitor after the test are specified in KS C6421. Unless otherwise specified, the rated surge voltage are as follows:

Rated Voltage(V)	2	4	6.3	10	16	25	35	50	63	80	100	160	200	250	315	350	400	450	500
Rated Surge Voltage(V)	2.5	5	8	13	20	32	44	63	79	100	125	200	250	300	365	400	450	500	550

Note 1 Voltage treatment ... Voltage treatment shall be performed by increasing voltage up to the capacitor's voltage rating gradually while lowering the leakage current. In this case, the impressed voltage shall be in the range where the leakage current of the electrolytic capacitor is less than specified value. Meanwhile, the voltage treatment time may be effectively shortened if the ambient temperature is increased (within the operating temperature range).

Note 2 For methods of testing, refer to KS C 6035, KS C 6421, (JIS C 5102, JIS C 5141)



CLEANING CONDITIONS

Aluminum electrolytic capacitors that have been exposed to halogenated hydrocarbon cleaning and defluxing solvents are susceptible to attack by these solvents. This exposure can result in solvent penetration into the capacitors, leading to internal corrosion and potential failure. Therefore, for ordinary capacitors, the cleaning materials of alcohol system had to be used. However, the solvent proof type capacitors of Samyoung Elec. Can withstand cleaning by some halogenated solvents shown:

(rated voltage \leq 100 Vdc only)

* FREON TE[®] OR TES[®]

Cleaning method: One of immersion, ultrasonic or vap or cleaning.

Maximum cleaning time: 5 minutes (where, KRE, SRM is 2 minutes)

* 1,1,1-Trichlorethane

Cleaning method: immersion cleaning at the normal temperature

Maximum cleaning time: 5 minutes (where, KRE, SRM is not assured)

— Caution —

* When the lead space of the capacitor is different from the hole space of the PC board to be mounted, use the lead forming type capacitor to prevent stress on seal.

* Consult for flux to be used and other cleaning conditions.

(Freon TE and TES are registered trademarks of Dupont, Inc.)

* Influence of cleaning solvent for aluminum electrolytic capacitor.

Aluminum electrolytic capacitors are easily affected by halogen ions, particularly by chloride ions.

Excessive amounts of halogen ions, if happened to enter the inside of the capacitors, will give corrosion accidents-rapid capacitance drop and vent open. The extent of corrosion accidents varies with kinds of electrolytes and seal-materials. Therefore, the prevention of halogen ion contamination is the most important check point for quality control in our production lines. At present, halogenated hydrocarbon-contained organic solvents such as Trichloroethylene, 1,1,1-Trichloroethane, and Freon are used to remove flux from circuit boards. However, if general types of aluminum electrolytic capacitors, whose seal constructions are not solvent-proof, are cleaned with such solvents, the solvents may gradually penetrate the seal portion and erode. The inside of the capacitors.

The mechanism of corrosion of aluminum electrolytic capacitors by halogen ions can be explained as follows:

Halides (RX) are absorbed and diffused into the seal portion. The halides then enter the inside of the capacitors and contact with the electrolyte of the capacitors. Where by halogen ions are made free by a hydrolysis with water in the electrolyte:



The halogen ions (X^-) react with the dielectric substance (Al_2O_3) of aluminum electrolytic capacitors:



ALX_3 is dissociated with water:

