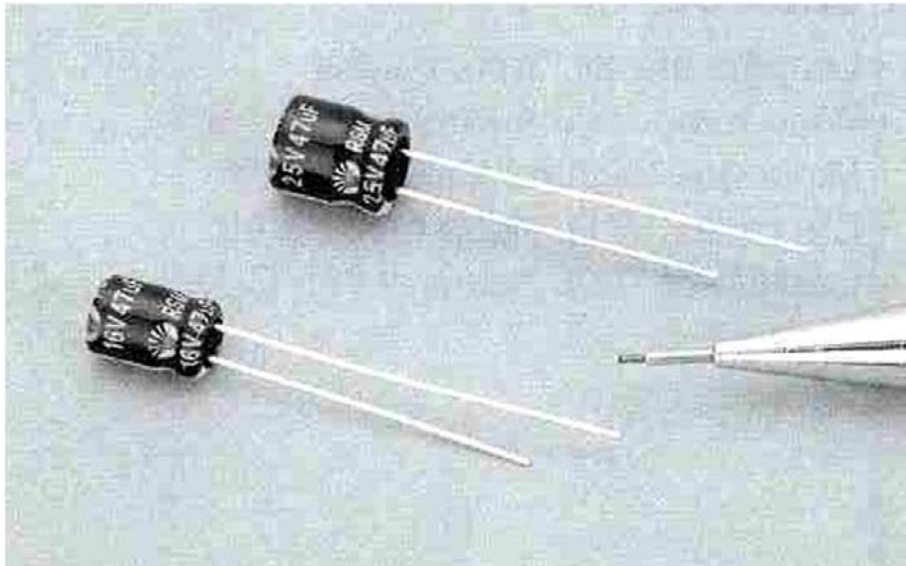


DATE: 2017.11.30  
SPEC. NO SICE - SP - R006

To: PHP

# SPECIFICATION

FOR AL. ELECTROLYTIC CAPACITORS (RSM SERIES)



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Please return us one copy your signed specification after you approved of it

**DAEWOO ELECTRONIC EQUIPMENT VIETNAM CO., LTD**

SUPPLIER'S DAEWOO

Maker	Checker	Approval



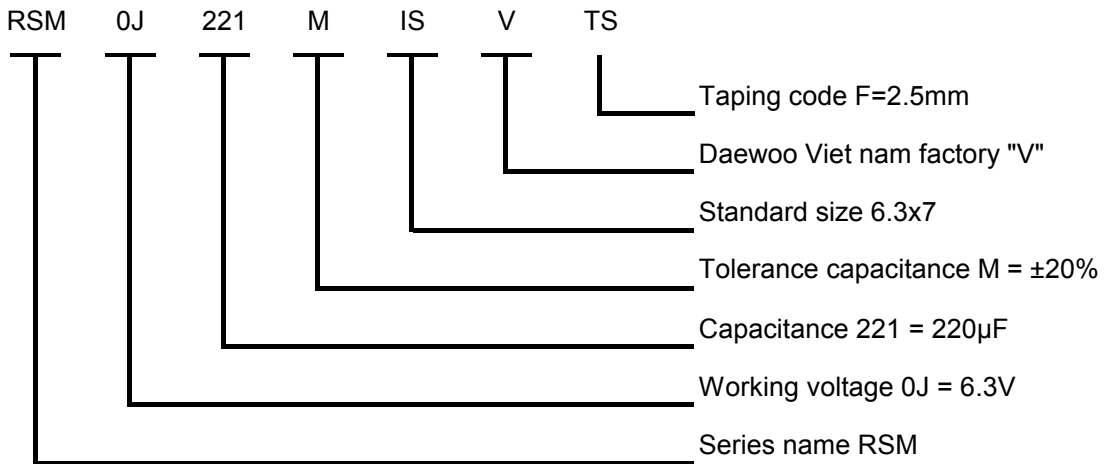
CUSTOMER'S PHP

Maker	Checker	Approval

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We hand in this specification order to be approved of electrolytic capacitor RSM Series that our company is going to deliver your company.

1. Composition Type: Ex: RSM0J221MISVTS "6.3x7"



2. Operating temperature range:

6.3WV~50WV : -40°C to +85°C (-40°F to +185°F)

3. Electrical characteristic:

3.1 Capacitance.

The capacitance is measured at a frequency of 120Hz at a temperature of 20°C ± 2°C (68°F ± 3.6°F) with a maximum of 0.5 Vrms applied.

Capacitance tolerance	-20% ~ +20% (M)
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3.2 Leakage current (L.C)

6.3 ~ 50V	$I \leq 0.01CV$ or $3\mu A$ (2 min) (whichever is greater)
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I = DC Leakage current (µA)

C = Nominal capacitance (µF)

V = Rated Voltage (WV.DC)

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### 3.3 Tangent of Loss Angle (Tanδ)

The tangent of the loss angle when measured at a frequency of 120Hz at a temperature of (20°C ± 2°C) (68°F ± 3.6°F) shall be less than the values indicated below:

Tanδ (max., at 20°C,120Hz)	6.3	10	16	25	35	50
	0.24	0.20	0.17	0.15	0.12	0.10

### 4. Test.

#### 4.1 Damp heat.

The capacitor shall be stored at a temperature of 40 ± 2°C and relative humidity of 90% to 95% for 240 ± 8hours. And then the capacitor shall be subjected to standard atmospheric conditions for 01 to 02 hours, after which measurements shall be made.

Capacitance change	Within ± 20% of the initial value.
Tanδ	Within value specified above.
Leakage current	Within value specified above.

#### 4.1 Load life.

After applying rated working voltage for 2000 hours at 85°C and then being stabilized at +20°C capacitors shall meet following limits.

Capacitance change	Within ± 25% of the initial measured value.
Tand	≤ 200% of initial specified value.
Leakage current	≤ The initial specified value.

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#### 4.3 Shelf life.

After storage for 1000hours at + 85°C with no voltage applied and then being stabilized at +20°C capacitors shall meet following limits.

Capacitance change	Within $\pm 20\%$ of the initial measured value.
Tan $\delta$	$\leq 150\%$ of initial specified value.
Leakage current	$\leq 200\%$ initial specified value.

#### 4.4 Impedance ratio at low temperature.

When capacitor are stored at the temperature of  $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ,  $-25^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$  respectively the ratio of impedance measured at each test temperature with the frequency of 120Hz shall be less than value.

W.V (V)	6.3	10	16	25	35	50
Z-25°C/Z+20°C	4	3	2	2	2	2
Z-40°C/Z+20°C	8	6	4	4	4	4

#### 4.5 Resistance to soldering heat.

For other procedures than those specified below soldering iron method.

+ Temperature:  $260 \pm 5^{\circ}\text{C}$

+ Application time of soldering iron: 10 sec

Capacitance change	Within $\pm 20\%$ of the initial value.
Tan $\delta$	Within values specified above .
Leakage current	Within values specified above .

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5. Recommended cleaning solvents

Methanol, isopropanol, isobutanol, ethanol, petroleum ether, propanol and or commercial detergents.

Halogenated hydrocarbon cleaning agents such as freon (MF, TF, TMC or TC) trichloroethylene, trichloroethane, or methylchloride are not recommended as they may damage the capacitor.

6. Marking.

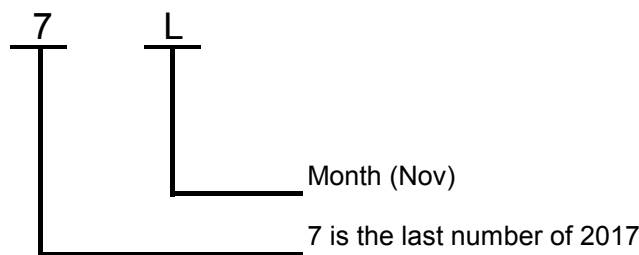
The following items shall be marked indelibly and legibly on the spoci-fled location.

- 1). Brand: 
- 2). Series Designation: RSM
- 3). Rated Voltage (DC): 6.3V
- 4). Capacitance (µF): 220µF
- 5). Capacitance Tolerance: (M): ±20%
- 6). Maximum Operating Temperature: 85°C
- 7). Lot No: 5L
- 8). Sleeve Colour: BLACK

7. Lot Number

The lot number regulates the following formula. But 1, 0, I are exception

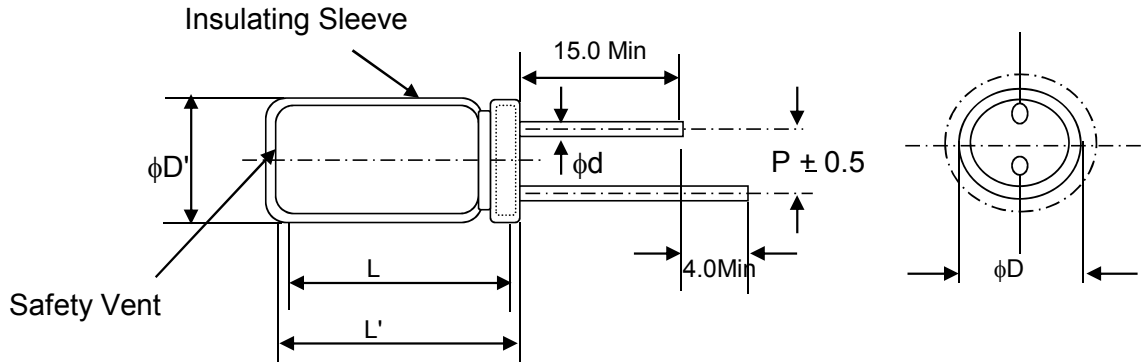
Ex: Nov 2017



MONTH YEAR	1	2	3	4	5	6	7	8	9	10	11	12
2010	A	B	C	D	E	F	G	H	J	K	L	M
2019												

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8. CASE SIZE AND DIMENSION.



\* Standard lead style:

$\phi D$	4.0	5.0	6.3
P	1.5	2.0	2.5
$\phi d$	0.45		

$$D' = [D + 0.5] \text{Max}$$

$$L' = [L + 1.0] \text{Max.}$$

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## 10. RSM SERIES

**Dimension & Maximum permissible ripple current[mA(rms)at 85°C, 120Hz]**

φD x L (mm)

W.V(V) Cap(mF)	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)	
	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>
0.1											4x7	1
0.22											4x7	2
0.33									4X7	2	4x7	3
0.47		1	4X7	2	4X7	3	4X7	4	4X7	5	4x7	5
1.0	4x7	4	4X7	5	4X7	6	4X7	7	4X7	9	4x7	10
2.2	4x7	8	4X7	10	4X7	12	4X7	12	4X7	14	4x7	16
3.3	4x7	10	4X7	12	4X7	13	4X7	16	4X7	16	4x7	18
4.7	4x7	14	4X7	16	4X7	17	4X7	19	4X7	21	4X7	25
6.8	4x7	18	4X7	20	4X7	22	4X7	23	4x7	25	5x7	28
10	4x7	24	4X7	25	4X7	27	4x7	28	4X7	31	5x7	35
22	4x7	30	4X7	35	4x7	40	5x7	50	5x7	55	6.3x7	58
33	4x7	40	4X7	44	5x7	55	5x7	63	6.3x7	66	6.3x7	68
47	4x7	48	5x7	60	5x7	65	6.3x7	78	6.3x7	80	6.3x7	89
100	5x7	78	6.3X7	87	6.3X7	98	6.3x7	89	6.3x7	96		
220	6.3x7	110	6.3x7	96	6.3x7	101						

I<sub>R</sub> : Maximum permissible ripple current [mA(rms) at 85°C,120Hz]

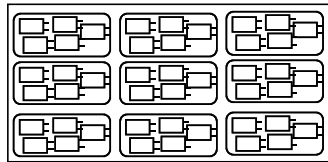


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11. Packing methode

11.1 Cutting products shall be packed in a vinyl bag then put un inner box.

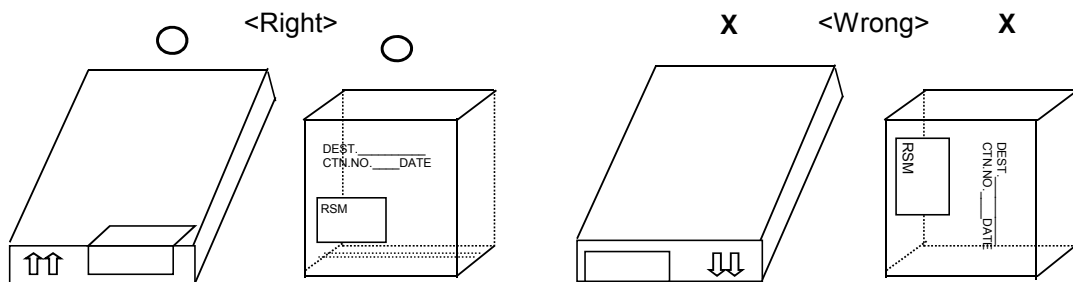
There shall be a single part number in a inner carton.



11.2 Polarity identifications on a cardboard box shall match the polarity of products.

11.3 Inner carton box shall be handled as follows.

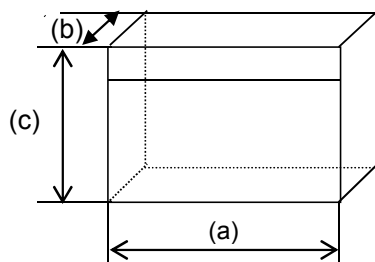
- \* No more than 10 inner carton boxes shall be piled.
- \* In case of putting the boxes lengthways, the indication of porarity shall face up.
- \* The products shall be handled with care.



11.4 The inner cartons shall be packed in a cardboard box for transportation.

Various part number can be packed in a outer carton.

11.5 Shape & dimensions of inner carton shall be as follows.



Case size		(a)	(b)	(c)
$\phi D$	L			
$\phi 4$	7	350	260	310
$\phi 5$	7	350	260	310
$\phi 6.3$	7	350	260	310

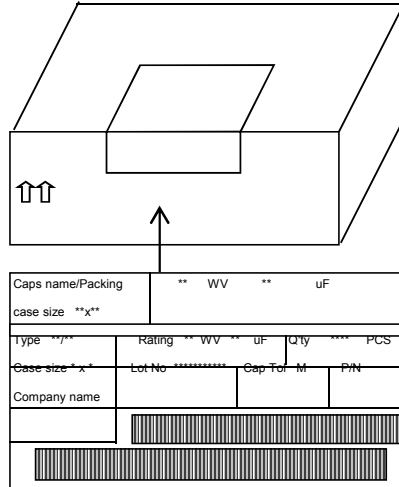


\* Note: The dimensions listed above may be changed without notice. The carton shall be suitable for the auto-insert machines after change.



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\* Inner box packing standard:

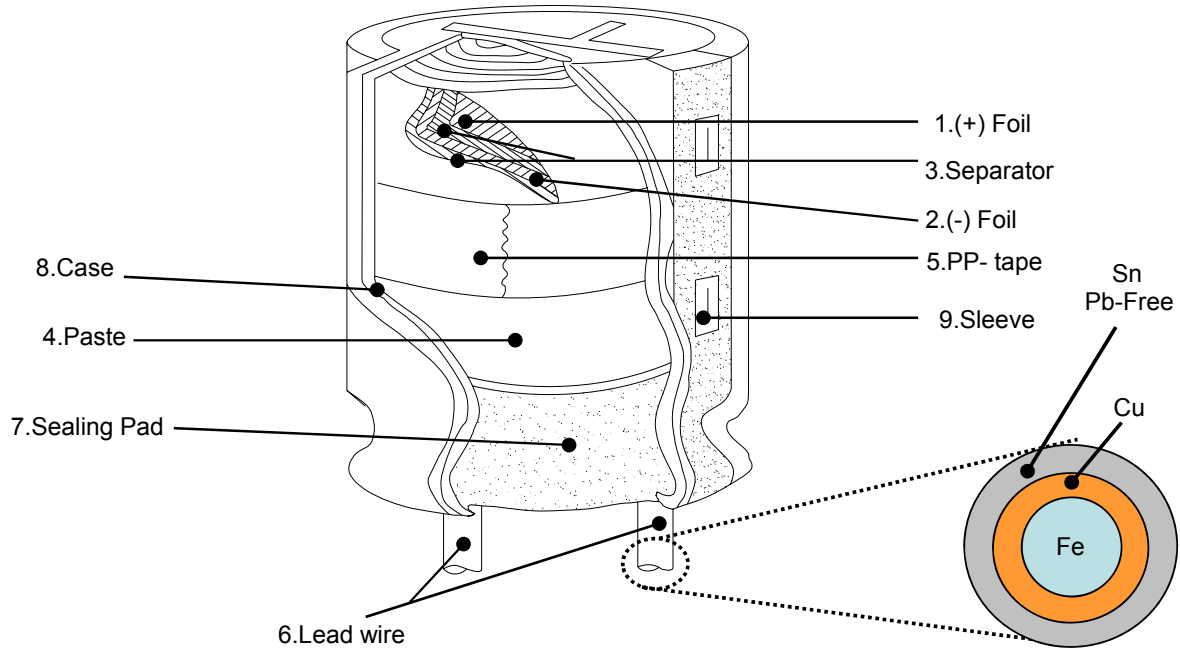


11.6 Packing standard quantity:

Product diameter [mm]	Inner carton quantity min. Packing quantity [Pcs]	Outer carton quantity [Pcs]
φ4	12000	24000
φ5	9000	18000
φ6.3	6000	12000

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12.CONSTRUCTION RADIAL TYPE CAPACITORS.



No	Raw Materials			Contents(ppm=mg/kg)						ICP Data
	Part Name	Vendor	Material	cd	pb	Hg	Cr6+	PBB	PBDE	
1	FOIL(+)	HAIXING, HFCC	Aluminium	0	0	0	0	0	0	#1
2	FOIL(-)	ELE-CON	Aluminium	0	0	0	0	0	0	#2
3	Paper	KAN	Pulp	0	0	0	0	0	0	#3
4	PASTE	CAPCHEM	MEG	0	0	0	0	0	0	#4
5	Adhesive Tape	TAPEX	Polypropylene	0	0	0	0	0	0	#5
6	Lead wire	LITON	Al,Fe+Sn	0	0	0	0	0	0	#6
7	Rubber	LIEN EKI	Rubber	0	0	0	0	0	0	#7
8	Case	OAKLEY	Aluminium	0	0	0	0	0	0	#8
9	Sleeve	MOODEUNG	PVC	0	0	0	0	0	0	#9
10	Sleeve Ink	MOODEUNG	INK	0	0	0	0	0	0	#10
11	Box Packing	TRUONG HUNG	Kraft	0	0	0	0	0	0	#11
TOL				0	0	0	0	0	0	
SAMSUNG Eco-Partner Standard				5	100	800	800	100	100	

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## RAW MATERIAL SUPPLIERS LIST

Items	Company name	Country	Contents	Using of CE	Remark
Anode Foil	- HFCC	- CHINA	* Low and high gain Anode Foil	* All series of CE	* Forming(+)
	- HAIXING	- CHINA	* High voltage (160Fv up) Foil		
Cathode Foil	- ELE-CON	- CHINA	* Cathode Foil (20, 40, 50 $\mu$ m)	* All series of CE	* Etching(-) * PURITY : 98.4%
Lead wire	- LITON	- CHINA	* Lead-wire welding and press	* 04 type only	* Sn 100% coated
Case	- OAKLEY	- CHINA	- 04 ~ 18 Al-case press	* All series of CE	
Sleeve	- MOODEUNG	- KOREA	* PVC tube	* 04, Snap-in all	
Paper	- KAN	- CHINA	* 100% from CHINA	* All series of CE	
Rubber	- LIEN EKI	- MALAYSIA	* Normal and butyl Rubber	* All series of CE	
Paste	- CAPCHEM	- CHINA	* Adipic Acid, Boric Acid	* All series CE	
Adhesive Tapex	- TAPEX	- KOREA	* Element winding film	* 04, Snap-in all	

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**CONFIRMATION AND ACTION PLAN TABLE**

No	Banned Substances and total abolish	PART OR RAW MATERIAL MANUFACTURER		ACTION PLAN TO ELIMINATE IF STILL USING
		NOT USE	USE	
1	Cadmium and cadmium compounds	X		
2	PBB and PBDE	X		
3	Chlorinated paraffins (chlorine flame retarding materials/plasticizers)	X		
4	Polychlorinated biphenyl (PCB) category	X		
5	Polychlorinated naphthalene category	X		
6	Organic tin compounds(Tributyl tin category/Triphenyl tin category)	X		
7	Asbestos	X		
8	Azo compounds	X		
9	Lead and its compounds	X		
10	Mercury and its inorganic compounds	X		
11	Hexavalent chromium compounds	X		
12	Polyvinylchloride ( PVC )		X	
13	Organic bromine compound except PBB and PBDE	X		
14	Manufacturing Process : Ozone Depleting Substances	X		
15	Manufacturing Process : Chlorined organic solvent	X		