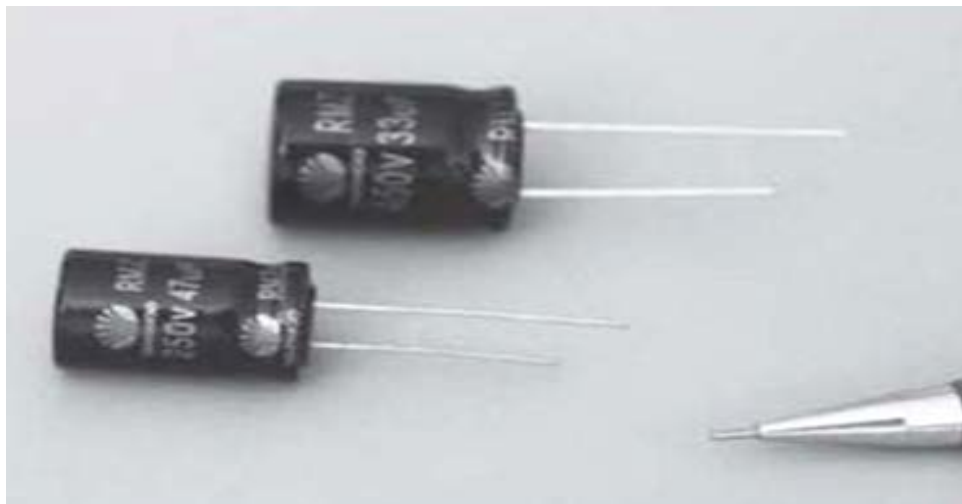


# SPECIFICATION

FOR AL. ELECTROLYTIC CAPACITORS (RMZ SERIES)



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

**MANUFACTURE: DAEWOO ELECTRONIC EQUIPMENT CO., LTD**

SUPPLIER'S DAEWOO

Maker	Checker	Approval

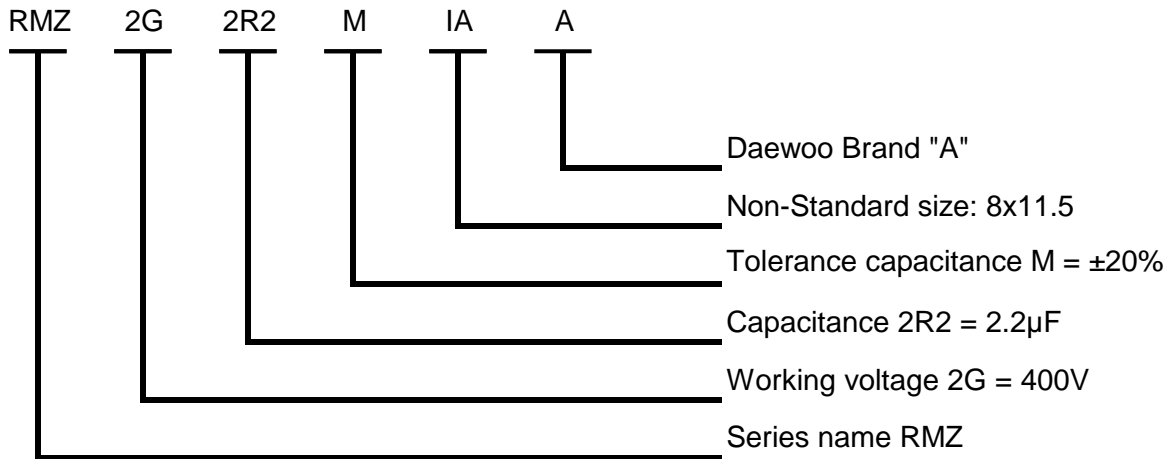
CUSTOMER'S DACHS

Maker	Checker	Approval

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

1. Composition Type: Ex: RMZ2G2R2MIAA "8x11.5"



2. Operating temperature range:

160WV~250WV: -40°C to +105°C (-40°F to +221°F)

350WV~450WV: -25°C to +105°C (-13°F to +221°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)

160~450V	$I \leq 0.03CV + 15\mu A$ (After 5min), 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)	W.V (V)	160~250	350~450
	Tanδ	0,15	0,15

## 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 Max	Within ± 20% of the initial value.
Dissipation factor	Within value specified above.
Leakage current	Within value specified above.

### 4.1 Load life

After applying rated working voltage for 10000 hours(φ10: 8000hours) at +105°C and then being stabilized at +20°C capacitors shall meet following limits.

Capacitance change	Within ± 20% of the initial measured value.
Tanδ	≤ 200% of the initial specified value.
Leakage current	≤ The initial specified value.



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#### 4.3 Shelf life

After storage for 1000 hours at +105°C with no voltage applied and then being stabilized at +20°C capacitors shall meet following limits.

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

#### 4.4 Impedance ratio at low temperature

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

W.V(V)	160~250	350~450
Z-25°C/+20°C	3	6
Z-40°C/+20°C	6	-

#### 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

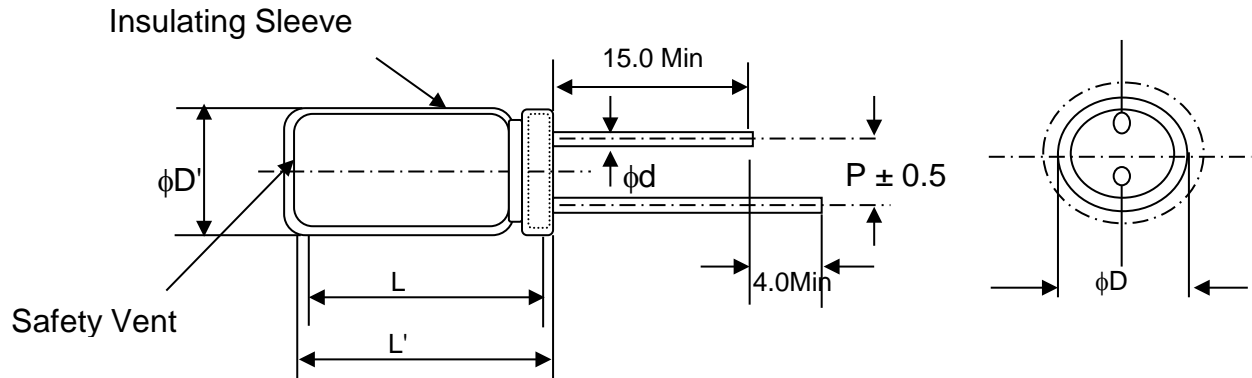
Capacitance change Max	Within $\pm 20\%$ of the initial value.
Dissipation factor	Within values specified above .
Leakage current	Within values specified above .





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### 8. CASE SIZE AND DIMENSION



\* Standard lead style:

$\phi D$	10,0	12,5	16,0	18,0
P	5,0		7,5	
$\phi d$	0,6		0,8	

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

$$L' = [L + 1.5] \text{Max}$$

### 9. RIPPLE CURRENT COEFFICIENT

\* Frequency

Cap( $\mu\text{F}$ ) \diagdown Freq(Hz)	120	400	1K	10K	100K
Cap $\leq 10$	1,0	1,62	1,91	2,5	2,94
10 < Cap $\leq 100$	1,0	1,89	1,94	2,54	2,70
100 < Cap	1,0	1,34	1,25	1,73	1,92

\* Temperature

Temperature	$\leq 70^\circ\text{C}$	$85^\circ\text{C}$	$105^\circ\text{C}$
Factor	1,65	1,37	1,0

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## 10. RMZ SERIES

Dimension & Maximum permissible ripple current[mA(rms)at 105°C, 100KHz]

W.V(V) Cap(μF)	160(2C)		200(2D)		250(2E)	
	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>
10					10x20	280
22	10x20	500	10x20	500	12.5x20	580
33	10x20	550	12.5x20	600	12.5x25	630
47	12.5x20	660	12.5x20	660	12.5x25	720
68	12.5x25	810	12.5x25	810	16x25	910
100	16x25	1120	16x25	1120	16x31.5	1200
150	16x31.5	1350	16x31.5	1350	18x31.5	1480
220	16x35.5	1380	16x35.5	1680		

W.V(V) Cap(μF)	350(2V)		400(2G)		450(2W)	
	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>	SIZE	I <sub>R</sub>
10	10x20	280	10x20	280	12.5x20	340
22	12.5x20	350	12.5x25	430	16x25	560
33	16x20	600	16x25	60	16x31.5	700
47	16x25	660	16x31.5	730	18x31.5	900
68	16x31.5	960				

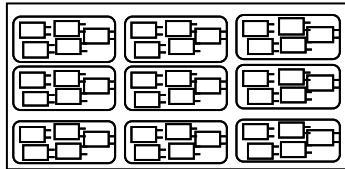
IR : Maxium permissible ripple current [mA(rms) at 105°C,100KHz]

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## 11. Packing methode

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

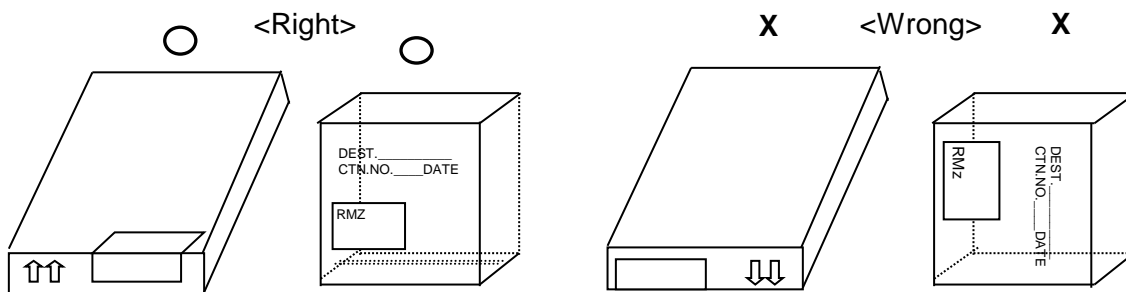
There shall be a single part number in a inner carton.



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

11.3 Inner carton box shall be handled as follows.

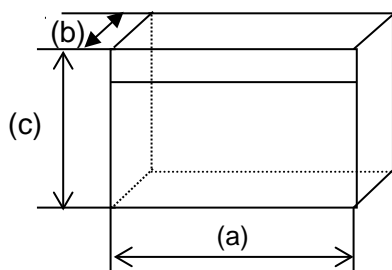
- \* No more than 10 inner carton boxes shall be piled.
- \* In case of putting the boxes lengthways, the indication of porarity shall face up.
- \* The products shall be handled with care.



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			
$\phi 10$	16~20	350	260	310
$\phi 12.5$	20~25	350	260	310
$\phi 16$	25~35.5	350	260	310
$\phi 18$	20~40	350	260	310

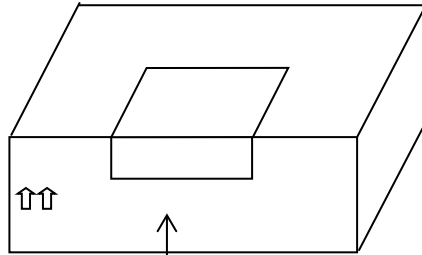


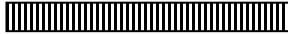

\* Note: The dimensions listed above may be changed without notice. The carton shall be suitable for the auto-insert machines after change.



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\* Inner box packing standard:



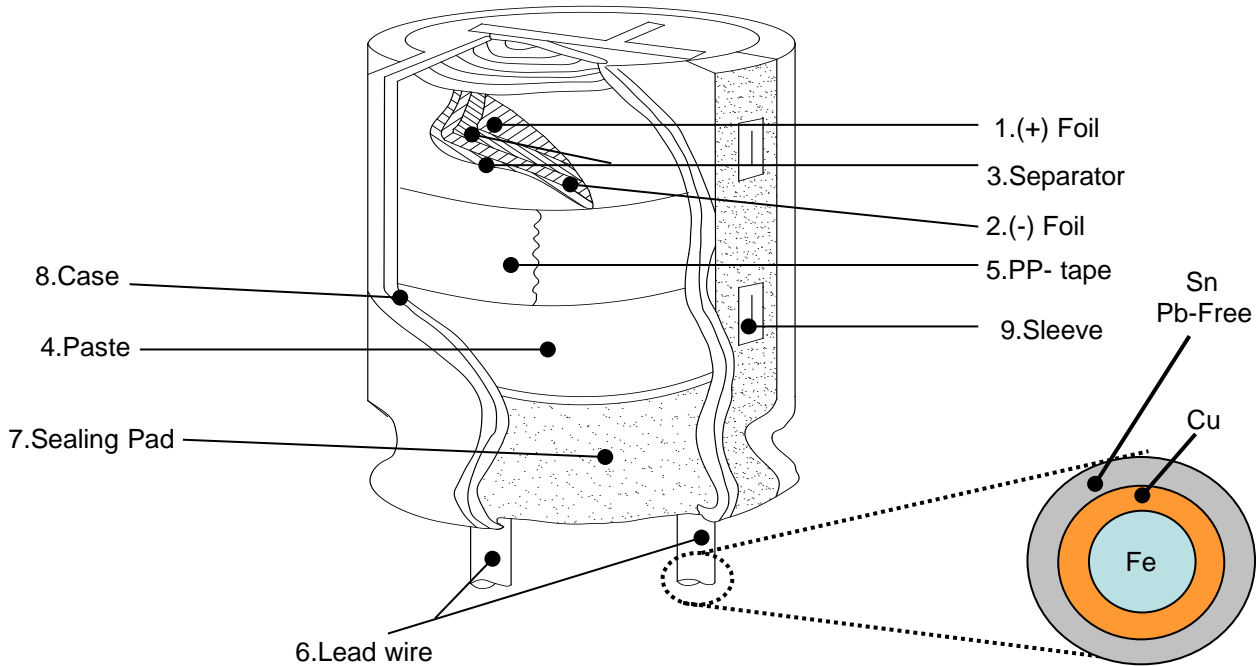
Caps name/Packing		**	WV	**	uF
case size **x**					
Type **/**	Rating ** WV ** uF	Qty	****	PCS	
Case size * x *	Lot No *****	Cap Tol M	P/N		
Company name					
					

11.6 Packing standard quantity:

Product diameter [mm]	Inner carton quantity min. Packing quantity [Pcs]	Outer carton quantity [Pcs]
φ10	2400	4800
φ12.5	1200	2400
φ16	500	1000
φ18	400	800

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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	Polyethylene terephthalate (PET)		X	
13	Organic bromine compound except PBB and PBDE	X		
14	Manufacturing Process : Ozone Depleting Substances	X		
15	Manufacturing Process : Chlorined organic solvent	X		

