

No. : RD20210315007

TO: Ozdisan

APPROVAL SHEET No. : B-7569C

Series No. : KRM

Specification No.:

Halogen-Free Rohs2.0

APPROVAL SHEET

FOR AL. ELECTROLYTIC CAPACITORS

No.	(Customer No.)	(Koshin Part No.)	Description	ΦD x L
1		PKRM-100V120ME110	100V12μF	6.3X11

APPROVED BY:

PLEASE SIGN RETURN US ONE COPY OF THE APPROVAL SHEET.

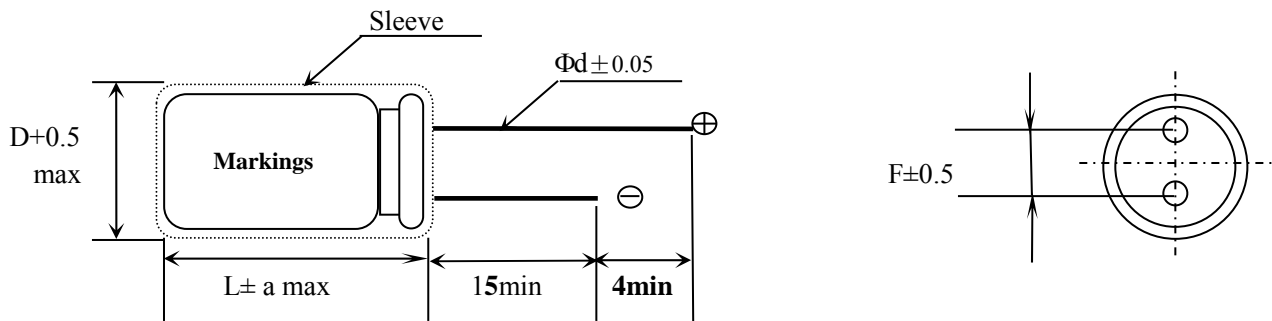
DESIGNED BY:KUANGFEIFEI CHECKED BY:JUANGYUANYUAN APPROVED BY: HAUNGXUEHUI

DATE: 2021-3-15

KOSHIN

DJS-SD-0013

Standard Size map



ΦD	6.3
F	2.5
Φd	0.5
L	11
a	1.5

Coefficient of Frequency for Ripple Current

Rated voltage (v)	Frequency (Hz)					
	CV ($\mu F \times V$)	50•60	120	1K	10K	100K
6.3 to 100	$CAP \leq 10$	0.80	1.00	1.30	1.65	1.70
	$10 < CAP \leq 100$	0.80	1.00	1.23	1.48	1.53
	$100 < CAP \leq 1000$	0.80	1.00	1.16	1.35	1.38
	$1000 < CAP$	0.80	1.00	1.11	1.25	1.28
160 to 500	0.47 to 330	0.80	1.00	1.30	1.40	1.60

Coefficient of Temperature for Ripple Current

Rated voltage (V)	Temperature ($^{\circ}C$)		
	70 or less	85	105
6.3 to 100	2.00	1.70	1.00
160 to 500	1.80	1.40	1.00

Series KRM Capacitor

1. Our part No. :

For example :

<u>P</u>	<u>KRM</u>	<u>100V</u>	<u>120</u>	<u>M</u>	<u>E110</u>
Sleeve	Series code	rated voltage	capacitance	tolerance	case size symbol
PET sleeve	KRM	100 V	12 μ F	\pm 20%	Φ 6. 3X11

2. Your part No.:

3. Marking:

Include company's brand "Koshin", series code, rated voltage, capacitance, rated temperature range, polarity and tolerance of capacitance.

4. Specifications:

4.1 Temperature range : -55~ +105 °C

4.2 Electrical characteristics

4.2.1 Capacitance tolerance : \pm 20%

4.2.2 Tangent of loss angle ($\tan \delta$) :

Rated voltage(V)	6.3	10	16	25	35	50	63	100
$\tan \delta$ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08

Rated voltage(V)	160	200	250	350	400	450	500
Tan δ (max.)	0.15	0.15	0.15	0.15	0.15	0.15	0.15

Note: 0.02 is added to each 1000 μ F increase over 1000 μ F .

4.2.3 Leakage current (μ A) :

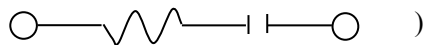
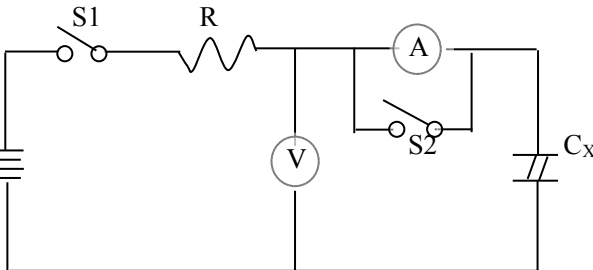
Rated voltage (V)	6.3 ~ 100	160~ 500
Leakage current (μ A)	Less than 0.01CV or 3 μ A Whichever is larger . (after 1 minutes)	Less than 0.03CV (after 1 minutes)

Note: I : Leakage current (μ A) , C : Capacitance (μ F) , V : Rated DC working voltage (V)

1. Scope:

This specification applies to aluminium electrolytic capacitor ,used in electronic equipment.

2. Electrical characteristics:

NO	ITEM	TEST METHOD		SPECIFICATION																
2.1	Rated voltage			Voltage range , capacitance range ,see specification of this series																
2.2	Capacitance	1.Measuring frequency:120Hz±12Hz 2.Measuring voltage:≤0.5Vrms+0.5VDC~2.0VDC 3.Measuring circuit: ()																		
2.3	Dissipation factor																			
2.4	Leakage current	DC leakage current shall be measured after 1~2minutes application of the DC rated working voltage through the 1000 Ω resistor at 20℃  R: 1000 Ω 100 Ω A: DC current meter V: DC voltage meter S1:Switch S2:Switch for protect of current meter C _x : Testing capacitor		Dissipation factor, leakage current, see specification of this series.																
2.5	Temperature characteristics	<table border="1"> <thead> <tr> <th>STEP</th> <th>TEMPERATURE</th> <th>STORAGE TIME</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20℃±2℃</td> <td>30minutes</td> </tr> <tr> <td>2</td> <td>-40℃±3℃、-55℃±3℃</td> <td>2hours</td> </tr> <tr> <td>3</td> <td>20℃±2℃</td> <td>4hours</td> </tr> <tr> <td>4</td> <td>105℃±2℃</td> <td>2hours</td> </tr> </tbody> </table>	STEP	TEMPERATURE	STORAGE TIME	1	20℃±2℃	30minutes	2	-40℃±3℃、-55℃±3℃	2hours	3	20℃±2℃	4hours	4	105℃±2℃	2hours			Step2. Low temperature impedance stability Less than specified value. Step4. Capacitance change: within ± 10% of the initial measured value. Dissipation factor: Less than specified value.
STEP	TEMPERATURE	STORAGE TIME																		
1	20℃±2℃	30minutes																		
2	-40℃±3℃、-55℃±3℃	2hours																		
3	20℃±2℃	4hours																		
4	105℃±2℃	2hours																		

NO	ITEM	TEST METHOD	SPECIFICATION
2.6	Surge test	Rated surge voltage shall be applied (switch on) for 30±5 second and then shall be applied (switch off) with discharge for 5.5min at room temperature. This cycle shall be repeated for 1000 cycles. Duration of one cycle is 6±0.5 minutes	<p>Capacitance change: within±15% of the initial specified value.</p> <p>Dissipation factor: Less than 200% of the initial specified value.</p> <p>Leakage current: Within initial specified value.</p>

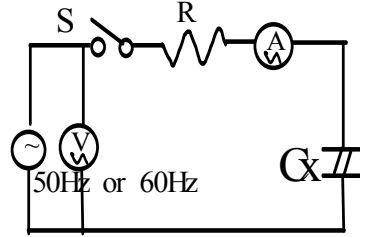
3.Mechanical characteristics

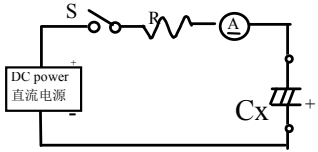

NO	ITEM	TEST METHOD	SPECIFICATION																
3.1	Lead strength	<p>(A)Tensile strength: wire lead terminal:</p> <table border="1"> <tr> <td>d(mm)</td> <td>≤0.5</td> <td>0.5<d≤0.8</td> <td>0.8<d≤1.25</td> </tr> <tr> <td>load(kg)</td> <td>0.5</td> <td>1.0</td> <td>2.0</td> </tr> </table> <p>The capacitor shall withstand the constant tensile force specified between the body and each lead for 10 seconds without damage either mechanical or electrical. :parts must be soldered onto a PC board to perform test.</p> <p>(B) Bending strength: wire lead terminal:</p> <table border="1"> <tr> <td>d(mm)</td> <td>≤0.5</td> <td>0.5<d≤0.8</td> <td>0.8<d≤1.25</td> </tr> <tr> <td>load(kg)</td> <td>0.5</td> <td>0.5</td> <td>1.0</td> </tr> </table> <p>with the capacitor in a vertical position apply the load specified axially to each lead. The capacitor shall be rotated slowly from the vertical to the horizontal position, back to the vertical position. The 90° in the opposite direction and back the original position. Performance of capacitor shall not have change and leads shall be undamaged.</p>	d(mm)	≤0.5	0.5<d≤0.8	0.8<d≤1.25	load(kg)	0.5	1.0	2.0	d(mm)	≤0.5	0.5<d≤0.8	0.8<d≤1.25	load(kg)	0.5	0.5	1.0	<p>When the capacitance is measured, there shall be no intermittent contacts, or open-or short-circuiting.</p> <p>There shall be no such mechanical damage as terminal damage etc.</p>
d(mm)	≤0.5	0.5<d≤0.8	0.8<d≤1.25																
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NO.	ITEM	TEST METHOD	SPECIFICATION
3.2	Vibration resistance	The frequency of the vibration shall vary uniformly within the range 10 to 55 Hz with the amplitude of 1.5mm, completing the cycle in the interval of one minute. The capacitor shall be securely mounted by its leads with hold the body of capacitor. The capacitor shall be vibrated in three mutually perpendicular directions for a period of 2 hours in each direction.	Capacitance: no unsteady. Appearance: no abnormal. Capacitance change: within $\pm 5\%$ of initial measured value.
3.3	Solder ability	The leads are dipped in the solder bath of Sn at $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 2 ± 0.5 seconds. The dipping depth should be set at 1.5~2.0 mm. All samples shall be subjected to steam aging for a period of 8 hours as a precondition to testing.	The solder alloy shall cover the 95% or more of dipped lead's area.

4. Reliability


NO.	ITEM	TEST METHOD	SPECIFICATION
4.1	Soldering heat resistance	The leads immerse in the solder bath of Sn at $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10 ± 1 seconds until a distance of 1.5mm from the case.	No visible damage or leakage of electrolyte. Capacitance change: Within $\pm 5\%$ of the initial measured value Tan δ : Less than specified value. Leakage current: Less than specified value
4.2	Damp heat (steady state)	Subject the capacitor to $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 90% to 95% relative humidity for 500 ± 8 hours.	Capacitance change: Within $\pm 20\%$ of the initial measured value Tan δ : Less than specified value. Leakage current: Less than specified value

NO.	ITEM	TEST METHOD	SPECIFICATION														
4.3	Load life	After 2000 hours continuous application of max allowable ripple current and DC rated voltage at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, Measurements shall be performed after 2 hours exposed at room temperature.	<p>Capacitance change: Within $\pm 20\%$ of the initial value.</p> <p>Tan δ :less than 200% specified value</p>														
4.4	Shelf life	After storage for 1000 hours at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ without voltage application, Measurements shall be performed after exposed for 1 to 2 hrs at room temperature after application of Testing	<p>Leakage current: Less than initial specified value.</p> <p>Appearance :no Abnormal.</p>														
4.5	Storage at low temperature	The capacitor shall be stored at temperature of $-55\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ for 96 ± 4 hours, during which time be subjected to standard atmospheric conditions for 16 hours or more. After which measurements shall be made.	<p>Capacitance change: Within $\pm 10\%$ of the initial value.</p> <p>Tan δ :less than specified value</p> <p>Leakage current: Less than specified value.</p> <p>Appearance :no Abnormal.</p>														
4.6	Pressure relief	<p>AC test: Applied voltage: AC voltage not exceeding 0.7 times of the rated direct voltage or 250V AC whichever is the lower.</p> <p>Frequency: 50Hz or 60Hz. Series resistor :refer to the table below</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Capacitance(C)</th> <th style="width: 50%;">Series resistor</th> </tr> </thead> <tbody> <tr> <td>$C < 1\text{ }\mu\text{F}$</td> <td>1000 Ω</td> </tr> <tr> <td>$1\text{ }\mu\text{F} < C \leq 10\text{ }\mu\text{F}$</td> <td>100 Ω</td> </tr> <tr> <td>$10\text{ }\mu\text{F} < C \leq 100\text{ }\mu\text{F}$</td> <td>10 Ω</td> </tr> <tr> <td>$100\text{ }\mu\text{F} < C \leq 1000\text{ }\mu\text{F}$</td> <td>1 Ω</td> </tr> <tr> <td>$1000\text{ }\mu\text{F} < C \leq 10000\text{ }\mu\text{F}$</td> <td>0.1 Ω</td> </tr> <tr> <td>$10000\text{ }\mu\text{F} < C$</td> <td>*</td> </tr> </tbody> </table> <p>* Resistance is equivalent to a half impedance by test frequency.</p>	Capacitance(C)	Series resistor	$C < 1\text{ }\mu\text{F}$	1000 Ω	$1\text{ }\mu\text{F} < C \leq 10\text{ }\mu\text{F}$	100 Ω	$10\text{ }\mu\text{F} < C \leq 100\text{ }\mu\text{F}$	10 Ω	$100\text{ }\mu\text{F} < C \leq 1000\text{ }\mu\text{F}$	1 Ω	$1000\text{ }\mu\text{F} < C \leq 10000\text{ }\mu\text{F}$	0.1 Ω	$10000\text{ }\mu\text{F} < C$	*	<p>AC test circuit</p>  <p> \sim : AC power S : Switch V : AC voltage meter A : AC current meter R : protection resistor CX : testing capacitor </p>
Capacitance(C)	Series resistor																
$C < 1\text{ }\mu\text{F}$	1000 Ω																
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$10000\text{ }\mu\text{F} < C$	*																

NO.	ITEM	TEST METHOD	SPECIFICATION
4.6	Pressure relief	<p>DC test Send the following electricity while applying the inverse voltage.</p> <p>Where case size $D \leq 22.4\text{mm}$: 1 A D.C.fixed $D > 22.4\text{mm}$: 10 A D.C.fixed</p> <p>Note 1. When the pressure relief device does not open even 30 minutes after commencement of test, the test may be ended.</p>	<p>DC test circuit</p>  <p>S : Switch  : DC current meter Cx: testing capacitor</p> <p>The pressure relief device shall open in such a way as to avoid any damage of fire or explosion of capacitor elements (terminal and metal foil etc.) or cover.</p>
4.7	Temp cycle	<p>LSL temperature(°C):-55 ± 3 time(H): 0.5H/timeX5 times USL temperature(°C):105 ± 2 time(H): 0.5H/timeX5 times Judgment: CAP: $\Delta C/C \leq \pm 10\%$, Appearance no Abnormal. No electrolyte leakage.</p>	
4.8	Thermal shock	<p>dry heat temperature (°C): 105 ± 2 time(H): 16 cold temperature(°C): -55 ± 2 time(H): 2/ Judgment: CAP, $\Delta C/C \leq \pm 10\%$, Tan δ :Less than 1.2 specified value, Leakage current: Less than specified value. Appearance no Abnormal. No electrolyte leakage.</p>	<p>moist heat temperature(°C): 55 time(H): 24/ moist heat temperature(°C): 55 time(H): 24 :</p>

5. Marking For example:

5.1. Marking on capacitors includes:

- a. Manufacture's name or trade mark Koshin
- b. Rated voltage and capacity --V--uF
- c. Sleeve material-Series ⓅKRM
- d. Capacitance tolerance code-Rated temperature (M) 105°C
- e. Polarity of the terminals 

5.2 Marking color:

- Sleeve color: Black PET
- Marking color: White

Detergent needing attention

Hydrogen carbide liquid and halogen liquid can cause Aluminium Electrolytic Capacitor to corrode. Some of Safe and Unsafe detergent are as follows

Safe	Unsafe
Dimethylbenzene	1,1,2-trichloroethane
Ethanol	1,2,2- trichloroethane
Butanol	Tetrachloroethylene
Methanol	Chloroform(colorless volatilizable liquid)
Propanol	Dichloromethane
Detergent	Trichloroethylene

Aluminum Electrolytic Capacitor Specification

Series	PKRM	100 V 12 uF	Part No.	PKRM-100V120ME110
Customer No.	/		Case size	ΦD6.3 X L11
Specification	Items		Standard	
	Operating temperature range		- 55 ~ + 105 °C	
	Capacitance tolerance		±20% (20°C , 120Hz)	
	Dissipation factor (MAX)		(Less than) 8% (20°C , 120Hz)	
	Leakage current (MAX)		(Less than) 12 uA(20°C 100 V 1 min)	
	E S R (MAX)		/	
	Ripple current (MAX)		55mArms (120Hz, 105°C)	
	Load life		2000 hrs	
Outline	Sleeve color		Black (PET)	
	Marking color		White	
	(Dimensions)			
	<p>The drawing shows a side view of the capacitor with a sleeve, a vent, and markings. Dimensions include a height of 6.3±0.5 MAX, a length of 11 ± 1.5 max, a lead length of 15min, and a lead diameter of 4min. Labels include 'Sleeve', 'Vent', 'Markings', 'Copper clad steel wire(tinned) Φ0.5±0.05', and 'Flat Rubber'. The end view shows a circular capacitor with a lead space of 2.5±0.5 and a unit of mm.</p>			
Recorder	(The first edition) :2021-3-15			
Wrote by: Kuangfeifei		Checked by: JiangYuanYuan		Approved by: HuangXueHui