

NO.: RD20191229003

TO:Ozdisan

APPROVAL SHEET No. : B-7629C

Series No. : KRM

Specification No.:

Halogen-Free RoHS

APPROVAL SHEET FOR AL. ELECTROLYTIC CAPACITORS

No.	(Customer No.)	(Koshin Part No.)	Description	ΦD x L
1		PKRM-035V102MG200-T/A5.0	35V1000μF	10X20

APPROVED BY:

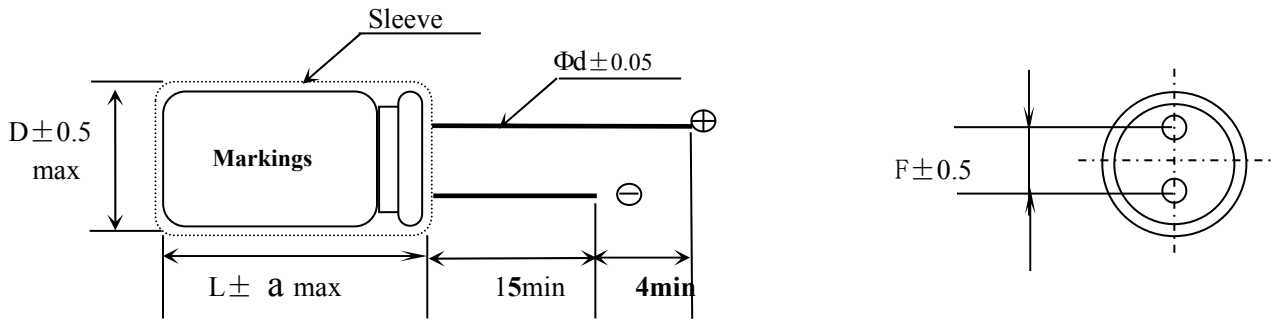
PLEASE SIGN RETURN US ONE COPY OF THE APPROVAL SHEET

DESIGNED BY:MENGXIAOCONG CHECKED BY:JUANGYUANYUAN APPROVED BY: HAUNGXUEHUI
DATE: 2019-12-29

KOSHIN

DJS-DS-0013

Standard Size map:



ΦD	5	6.3	8	10	12.5	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0
Φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8/1.0	1.0
a	1.5		1.5 for L16max 2.0 for L20min						

Coefficient of Frequency for Ripple Current

Rated voltage (v)	Frequency (Hz)		50•60	120	1K	10K	100K
	Capacitance (μF)						
6.3 to 100	CAP ≤ 10		0.80	1.00	1.30	1.65	1.70
	10 < CAP ≤ 100		0.80	1.00	1.23	1.48	1.53
	100 < CAP ≤ 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 (°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>PKRM</u>	<u>035V</u>	<u>102</u>	<u>M</u>	<u>G200</u>
Se rise code	rated voltage	capacitance	tolerance	case size symbol
PKRM	35v	1000 μ F	$\pm 20\%$	$\Phi 10 \times 20$

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	160-500
$\tan \delta$ (max.)	0.24	0.20	0.18	0.16	0.14	0.12	0.10	0.09	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)	6.3-500
Leakage Current (μ A)	Less than 0.01CV or 3 whichever is large (after 1 minutes)

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

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 specified value.</p> <p>Leakage current: Within initial specified value.</p>

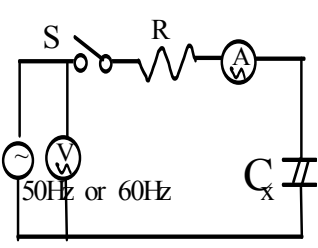
3.Mechanical characteristics :

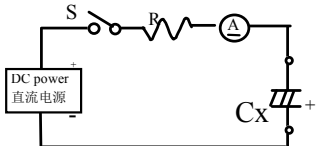
NO	ITEM 项目	TEST METHOD	SPECIFICATION																
3.1	Lead strength	<p>(A)Tensile strength :</p> <p>wire lead terminal :</p> <table border="1" style="margin-left: 20px;"> <tr> <td>d(mm)</td> <td>≤0.5</td> <td>0.5<d≤0.8</td> <td>0.8<d≤1.25</td> </tr> <tr> <td>load(kg)</td> <td>0.5</td> <td>1.0</td> <td>2.0</td> </tr> </table> <p>The capacitor shall withstand the constant tensile force specified between the body and each lead for 10seconds without damage either mechanical or electrical.</p> <p>(B) Bending strength :</p> <p>wire lead terminal :</p> <table border="1" style="margin-left: 20px;"> <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	<p>The frequency of the vibration shall vary uniformly within the range 10 to 55 Hz with the amplitude of 0.75mm, completing the cycle in the interval of one minute.</p> <p>The capacitor shall be securely mounted by its leads with hold the body of capacitor.</p> <p>The capacitor shall be vibrated in three mutually perpendicular directions for a period of 2 hours in each direction.</p>	<p>Appearance : no abnormal.</p> <p>Capacitance change: within $\pm 5\%$ of initial measured value.</p>
3.3	Solder ability	<p>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.</p>	<p>The solder alloy shall cover the 95% or more of dipped lead's area.</p>

4. Reliability :

NO	ITEM	TEST METHOD	SPECIFICATION
4.1	Soldering heat resistance	<p>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 1.5~2.0mm from the case.</p>	<p>No visible damage or leakage of electrolyte.</p> <p>Capacitance change: Within $\pm 5\%$ of the initial measured value</p> <p>Tan δ : Less than specified value.</p> <p>Leakage current: Less than specified value</p>
4.2	Damp head steady (state)	<p>Subject the capacitor to $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 90% to 95% relative humidity for 504 hours.</p>	<p>Capacitance change: Within $\pm 20\%$ of the initial measured value</p> <p>Tan δ : Less than 1.2 specified value.</p> <p>Leakage current: Less than specified value</p> <p>Impedance: Less than 1.2 specified value.</p>

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 16 hours exposed at room temperature.	Capacitance change: Within $\pm 20\%$ of the initial value. Tan δ : less than 200% specified value Leakage current: Less than initial specified value.														
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 16 hrs at room temperature after application of Testing	Appearance :no Abnormal														
4.5	Storage at low temperature	The capacitor shall be stored at temperature of $-40\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ for 16 hours, during which time be subjected to standard atmospheric conditions for 16 hours or more. After which measurements shall be made.	Capacitance change: Within $\pm 10\%$ of the initial value. Tan δ : less than specified value Leakage current: Less than specified value. Appearance :no Abnormal														
4.6	Pressure relief	AC test Applied voltage: AC voltage not exceeding 0.7 times of the rated direct voltage or 250V AC whichever is the lower. Frequency : 50Hz or 60Hz. Series resistor :refer to the table below s* Resistance is equivalent to a half impedance by test frequency.	AC test circuit  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Capacitance(C) 容量</th> <th style="text-align: center;">Series resistor</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$C < 1\text{ }\mu\text{F}$</td> <td style="text-align: center;">1000 Ω</td> </tr> <tr> <td style="text-align: center;">$1\text{ }\mu\text{F} < C \leq 10\text{ }\mu\text{F}$</td> <td style="text-align: center;">100 Ω</td> </tr> <tr> <td style="text-align: center;">$10\text{ }\mu\text{F} < C \leq 100\text{ }\mu\text{F}$</td> <td style="text-align: center;">10 Ω</td> </tr> <tr> <td style="text-align: center;">$100\text{ }\mu\text{F} < C \leq 1000\text{ }\mu\text{F}$</td> <td style="text-align: center;">1 Ω</td> </tr> <tr> <td style="text-align: center;">$1000\text{ }\mu\text{F} < C \leq 10000\text{ }\mu\text{F}$</td> <td style="text-align: center;">0.1 Ω</td> </tr> <tr> <td style="text-align: center;">$10000\text{ }\mu\text{F} < C$</td> <td style="text-align: center;">*</td> </tr> </tbody> </table> ~ : AC power S : Switch V : AC voltage meter A : AC current meter R : protection resistor C _x : testing capacitor	Capacitance(C) 容量	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	$10000\text{ }\mu\text{F} < C$	*
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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): -40 ± 3 time(H): 0.5H/timeX5 times USL temperature(°C): 105 ± 2 time(H): 0.5H/timeX5 times Judgement: 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 moist heat temperature(°C): 55 time(H): 24/ cold temperature(°C): -40 ± 2 time(H): 2/ moist heat temperature(°C): 55 time(H): 24 : Judgement: 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>	

5. Marking

Marking on capacitors include:

Koshin trade-mark

Koshin
Working voltage

Normal capacitance

Tolerance

Polarity

Operating temperature range

Sleeving pipe basic: Black PET

Printing color: White

Required space above the valve (mm): 2.0mm



Detergent needing attention

Hydrogen carbide liquid and halogen liquid can cause Aluminum 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

Taping size $\Phi 10$

TP5.0mm pitch tape packing

Taping code number: T/A5.0

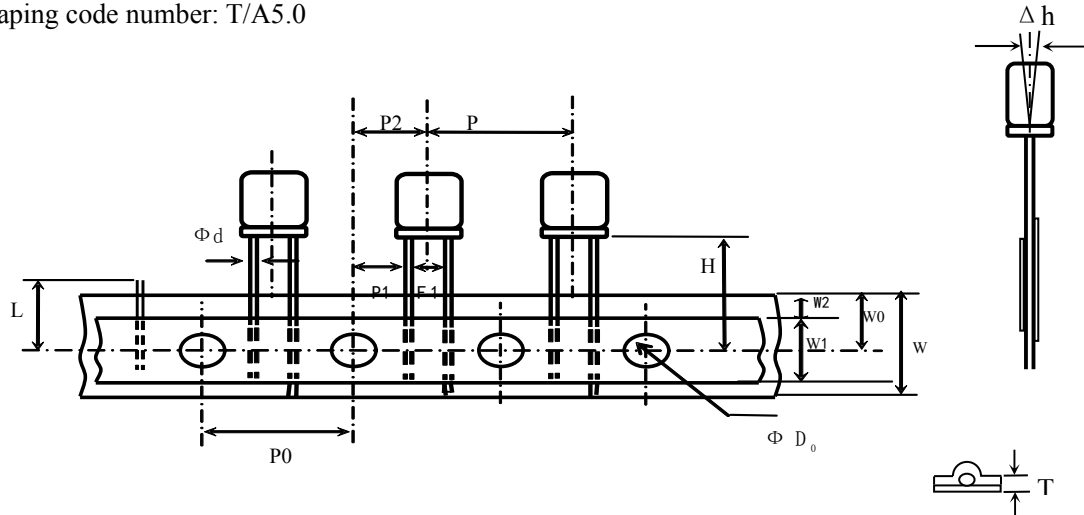


Table of dimensions

Item	Symbol	Dimension	Tolerance	Reference
Lead-wire diameter	Φd	0.6	± 0.05	
Distance between centers of leads	F1	5.0	± 0.5	
Height of component form tape center	H	18.5	+0.75 -0.5	
Component spacing	P	12.7	± 1.0	
Perforation pitch	P0	12.7	± 0.3	
Hole center to lead distance	P1	3.85	± 0.7	
Hole center to component center	P2	6.35	± 1.0	
Carrier tape width	W	18.0	± 0.5	
Hole down tape width	W0	9.0	± 0.5	
Feed hole position	W1	10.0	± 0.5	
Hole down tape width	W2	0.5-1.5	-----	
Diameter of sprocket holes	ΦD_0	4.0	± 0.2	
Body inclination forward or backward	Δh	0	± 1.0	
Tape base thickness	t0	0.38	± 0.05	
Total thickness of the combined carrier tape and hold down tape	T	0.7	± 0.2	
Cut off position of defectives	L	11.0	or less	

Aluminum Electrolytic Capacitor Specification

Series	PKRM	35 V 1000 μ F	Part No.	PKRM-035V102MG200-T/A5.0
Customer No.	/		Case size	Φ D10 X L20
Specification	Items		Standard	
	Operating temperature range		- 55 ~ + 105 $^{\circ}$ C	
	Capacitance tolerance		\pm 20% (20 $^{\circ}$ C , 120Hz)	
	Dissipation factor (MAX)		(Less than) 12% (20 $^{\circ}$ C , 120Hz)	
	Leakage current (MAX)		(Less than) 350 μ A (20 $^{\circ}$ C 35 V 2 min)	
	Impedance (MAX)		/	
	Ripple current (MAX)		710mA _{rms} (120Hz , 105 $^{\circ}$ C)	
	Load life		2000hrs	
Outline	Sleeving pipe basic		Black PET	
	Marking color		White	
	(Dimensions)			
	Copper clad steel wire(tinned)			
(unit):mm				
Recorder	(The first edition) :2019-12-29			
Wrote by: MengXiaoCong		Checked by: Jianguanyuan		Approved by: Huangxuehui