CUSTOMER:_____

Guangzhou Shenghe Electronic Technology Co., Ltd.

SPECIFICATION FOR APPROVAL

SHDR®

Product Description: Aluminum Electrolytic Capacitors

Customer No.:

Specification: KMQ 10000μF/100V 35X80 132VF

Date : 4th, Nov, 2022

Environmental Certification: ROHS

Confirmation from Manufacturer **Confirmation from User**

Drafted by	Verified by	Approved by
姚海洋		李艳林

	Verified by	Approved by
		

Manufacturer: Guangzhou Shenghe Electronic Technology Co., Ltd.

Address:No. 232 west Huifu road, Yuexiu district, Guangzhou

Contact: 0086 15920403979

http://www.shdrcap.com/

After signing, please kindly return one copy. Thanks.

SHDR® Application Notes

When you use aluminum electrolytic capacitors ,remember the following:

1. Polarity
   Regular aluminum electrolytic capacitors has polarity
   Reverse voltage causes short circuit breakage of the capacitor or leakage of electrolyte .Where the polarity in a circuit sometimes reversed or unknown ,a bi-polar capacitor should be used.

2. Overvoltage
   Do not apply overvoltage continuously.
   When overvoltage is applied to the capacitor ,leakage current increase drastically.
   Applied working voltage to capacitors should not exceed the rated working voltage of capacitor.

3. Operating temperature and life
   Do not use the capacitor over the max operating temperature.
   Life time of the capacitor depends on the temperature.
   Generally ,life time is doubled by decreasing each temperature 10℃
   Use temperature as low as possible.

4. Vent
   It is recommended at least 3mm of space around the vent.
   If such space is not provided ,the vent will not operate completely.

5. Ripple current
   Do not apply a ripple current exceeding the rated maximum ripple current.
   Applying too much ripple current to the capacitor causes great heat generation ,invites deterioration of properties of causes breakage.
   Please consult factory if ripple current exceeds the specified limit.

6. Charge and discharging
   Frequent and quick charge/discharge generates heat inside the capacitor ,causing increase of leakage current ,decrease of capacitor ,or breakage occasionally.
   Consult us for assistance in this application.

7. Storage
   When the capacitor is stored for a long time without applying voltage ,leakage current tends to increase.
   This returns to normal by applying the rated voltage to the capacitor before use.
   It is recommended to apply D.C .working voltage to the capacitor for 30 minutes through 1kΩ of protective series resistor ,if it is stored for more than 6 mouths .
   The capacitor should be stored at a normal temperature and humidity .

8. Soldering
   Improper soldering may shrink or break the insulating sleeve add/or damage the internal element as terminals and Lead wires conduct heat into the capacitor.
   Avoid too high a soldering temperature and/or too long a soldering time.

9. Mechanical stress on the lead wire and the terminal
   Do not apply excessive force to the lead wire and the terminal.
   Do not move the capacitor after soldering to the PC board ,not carry the PC board by picking up the capacitor .For their strength ,refer to JIS C-5141 and C-5102.

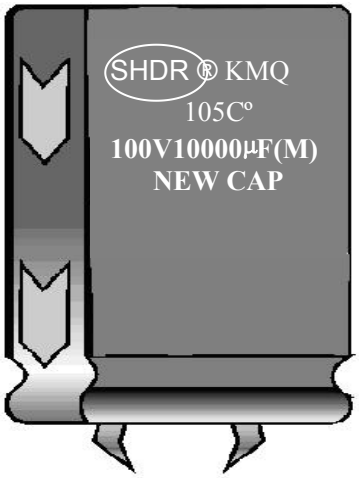
10. Cleaning of boards after soldering
    If the capacitor is cleaned in halogenated solvent for organic removing solder flux solvent ,the solvent may penetrate into inside of capacitor, and may generate corrosion.

11. Sleeve material
    The standard sleeve material is polyvinyl-chloride.
    If exposed to xylene ,toluene ,etc ,and then subjected to high heat ,the sleeve may crack .This sleeve is not insulating material.

12. Micon's Products meet or exceed quality standards specified by JIS-C5141W and with the reliability requirements refer to JIS-C-5102.

13. None of ozone depleting chemicals(ODC) under the Montreal Protocol is manufacturing process of Shen Zhen Moonlight Electronic Industrial CO.,Ltd.

SHDR® KMQ Series



KMQ Series Snap-in Type 105℃

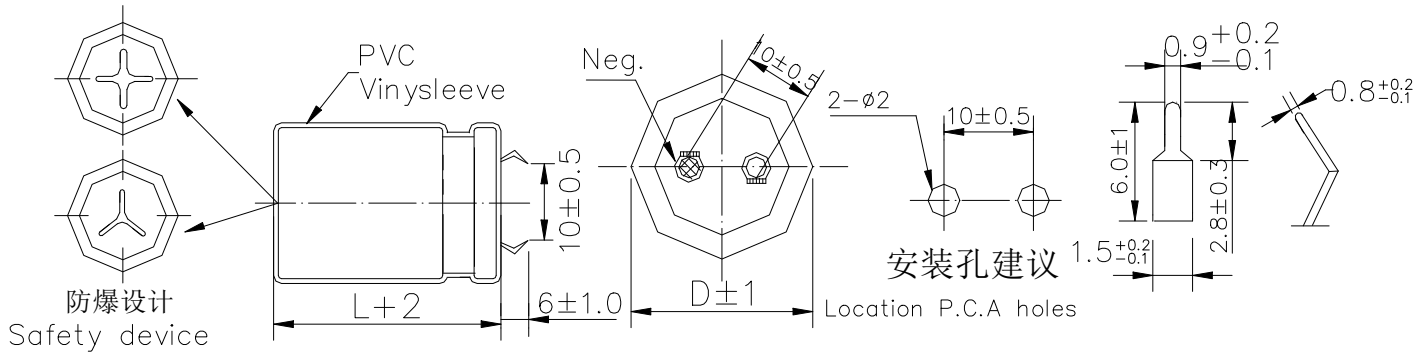
Features

- Highly reliable capacitors that withstand ripple current.
- Terminal spacing fixed at 10 mm for printed circuit board plug in.
- Aluminum case designed explosion-proof vent.
- Best for switching power supplies.

Specifications

<table>
<tr><td>Item</td><td colspan="2">Performance Characteristics</td></tr>
<tr><td>Operating Temperature Range</td><td>-40to+105℃</td><td>-25to+105℃</td></tr>
<tr><td>Rated Voltage Range</td><td>10to100VDC</td><td>160to450VDC</td></tr>
<tr><td>Capacitance Range</td><td>330to68000 μF</td><td>33to2200 μF</td></tr>
<tr><td>Capacitance Tolerance</td><td colspan="2">±20%（100Hzor120Hz，+20℃）</td></tr>
<tr><td>Leakage Current（+20℃）</td><td colspan="2">I≤0.02CV
After 5 minutes,whichever is greater measured with rated working voltage applied</td></tr>
<tr><td>Dissipation Factor（tg δ）</td><td colspan="2">
<table>
<tr><td>μF\ WVDC</td><td>10~16</td><td>25~35</td><td>50~63</td><td>80~100</td><td>160~250</td><td>315~450</td></tr>
<tr><td>47~390</td><td>--</td><td>--</td><td>--</td><td>15</td><td>15</td><td>20</td></tr>
<tr><td>470~3900</td><td>25</td><td>20</td><td>20</td><td>20</td><td>15</td><td>20</td></tr>
<tr><td>4700~8200</td><td>35</td><td>30</td><td>30</td><td>25</td><td>15</td><td></td></tr>
<tr><td>10000~22000</td><td>40</td><td>35</td><td>30</td><td>25</td><td>--</td><td>--</td></tr>
<tr><td>27000~47000</td><td>45</td><td>40</td><td>35</td><td>--</td><td>--</td><td>--</td></tr>
<tr><td>56000~68000</td><td>50</td><td>45</td><td>--</td><td>--</td><td>--</td><td>--</td></tr>
</table>
(100Hzor120Hz，+20℃)</td></tr>
<tr><td>Low Temperature Characteristics（120Hz）</td><td colspan="2">Impedance ratio ，120Hz
<table>
<tr><td>电压(V)</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td><td>160</td><td>200</td><td>250</td><td>400</td><td>450</td></tr>
<tr><td>Z - 25℃／Z+20℃</td><td>5</td><td>5</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td></tr>
<tr><td>Z - 40℃／Z+20℃</td><td>15</td><td>15</td><td>15</td><td>12</td><td>12</td><td>12</td><td>12</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td></tr>
</table></td></tr>
<tr><td>Load Life</td><td colspan="2">Test conditions
Duration time：2000 hours
Ambient temperature：+105℃
Applied voltage：Rated Working Voltage （VDC）
After test requirements：Resumed 16 hours at normal temperature
Capacitance change：≤±20% of the initial measured value
Dissipation Factor：≤200% of the initial specified value
Leakage Current：≤The initial specified value</td></tr>
<tr><td>Shelf Life</td><td colspan="2">Test conditions
Duration time：1000 hours
Ambient temperature：+105℃
Applied voltage：None
After test requirements：Resumed 16 hours at normal temperature
Same limits as Load Life</td></tr>
</table>

Diagram of Dimension (Unit:mm)



SHDR® KMQ Series

Multiplier for Ripple Current vs. Frequency

Cap（μF）\ Hz		50(60)	120	400	1K	10K	100K
	10~100	0.80	1	1.23	1.36	1.48	1.53
	100~1000	0.80	1	1.16	1.25	1.35	1.38
	≥1000	0.80	1	1.11	1.17	1.25	1.28

Multiplier for Ripple Current vs. Temperature

Tmp℃	45	60	85	95	105
Multiplier	2.10	1.90	1.40	1.25	1.00

Case Size & Maximum Ripple Current

Wv / Spec / Cap(μF)	10		16		25		35		50	
	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir (A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)
1000	--	--	--	--	--	--	--	--	22 x 26	0.84
1500	--	--	--	--	--	--	22 x 26	1.26	22 x 31	1.10
1800	--	--	--	--	--	--	--	--	22 x 31	1.54
2200	--	--	--	--	22 x 26	1.03	22 x 31	1.35	22 x 31	1.65
2700	--	--	--	--	--	--	--	--	22 x 36	1.94
3300	--	--	22 x 26	1.17	22 x 26	1.48	22 x 31	1.84	22 x 36	2.24
3900	--	--	--	--	--	--	22 x 31	2.23	22 x 41	2.54
4700	22 x 26	1.24	22 x 31	1.53	22 x 31	1.92	22 x 36	2.42	25 x 25	2.95
5600	--	--	--	--	22 x 31	2.25	22 x 36	2.89	22 x 51	3.10
6800	22 x 26	1.56	22 x 31	2.02	22 x 31	2.60	22 x 41	3.24	25 x 51	3.26
8200	22 x 26	2.04	22 x 31	2.20	22 x 36	3.04	22 x 51	3.57	30 x 46	3.58
10000	22 x 31	2.20	22 x 36	2.79	22 x 41	3.50	25 x 46	3.96	30 x 51	4.11
12000	22 x 36	2.34	22 x 36	3.06	22 x 46	4.02	25 x 51	4.21	35 x 47	4.62
15000	22 x 36	2.76	22 x 51	3.24	25 x 46	4.58	30 x 46	4.69	35 x 50	5.05
18000	22 x 36	2.94	22 x 51	3.51	25 x 51	4.82	35 x 42	5.07	35 x 60	5.89
22000	22 x 41	3.12	25 x 51	4.08	30 x 46	5.12	35 x 52	5.50	35 x 70	6.25
27000	22 x 46	3.48	25 x 51	4.30	35 x 47	5.47	35 x 60	5.78	35 x 80	6.59
33000	25 x 46	3.72	30 x 46	4.83	35 x 52	6.09	35 x 70	6.35	35 x 90	7.01
39000	25 x 51	4.10	30 x 51	5.78	35 x 52	--	--	--	--	--
47000	30 x 46	4.38	35 x 47	6.32	--	--	--	--	--	--

56000	30 x 51	4.64	35 x 52	7.05	--	--	--	--	--	--
68000	35 x 52	4.80	--	--	--	--	--	--	--	--

SHDR® KMQ Series

Wv / Spec / Cap(μF)	63		80		100		125		160	
	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir (A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)
100	--	--	--	--	--	--	--	--	--	--
150	--	--	--	--	--	--	---	--	---	--
180	--	--	--	--	--	--	--	--	--	--
220	--	--	--	--	--	--	22 x 26	0.54	22 x 26	0.65
270	--	--	--	--	--	--	22 x 26	0.62	22 x 26	0.74
330	--	--	--	--	22 x 26	0.54	22 x 31	0.85	22 x 31	0.98
390	--	--	--	--	22 x 26	0.72	22 x 36	0.92	22 x 36	1.10
470	--	--	22 x 26	0.63	22 x 31-	0.79	22 x 36	1.01	22 x 36	1.21
560	--	--	22 x 26	0.68	25 x 26	0.96	22 x 41	1.12	22 x 41	1.40
680	22 x 26	0.70	22 x 31	0.84	22 x 31	1.02	22 x 46	1.21	22 x 46	1.64
820	22 x 26	0.73	22 x 31	1.02	22 x 31	1.24	25 x 46	1.62	25 x 46	1.85
1000	22 x 26	0.85	22 x 36	1.16	22 x 36	1.38	25 x 50	1.92	25 x 51	2.15
1200	22 x 26	0.98	22 x 36	1.46	22 x 41	1.65	25 x 50	2.12	25 x 56	2.46
1500	22 x 31	1.10	22 x 41	1.74	22 x 46	1.83	30 x 50	2.32	30 x 51	2.80
1800	22 x 31	1.40	22 x 46	1.95	25 x 41	2.52	30 x 50	2.75	30 x 51	3.13
2200	22 x 36	1.65	22 x 51	2.25	25 x 51	3.03	30 x 50	3.02	35 x 52	3.39
2700	22 x 41	2.07	25 x 51	2.68	30 x 46	4.10	35 x 50	3.72	35 x 60	3.82
3300	22 x 51	2.48	25 x 56	3.30	30 x 56	4.59	35 x 60	3.95	35 x 70	4.62
3900	25 x 46	3.05	30 x 51	3.85	35 x 47	4.98	35 x 70	4.65	35 x 80	5.23
4700	25 x 51	3.43	30 x 51	4.29	35 x 50	5.43	35 x 70	5.21	35 x 80	5.43
5600	30 x 46	3.86	30 x 50	5.10	35 x 60	5.75	35 x 80	6.15		
6800	30 x 50	4.64	30 x 50	5.66	35 x 70	5.96	35 x 80	6.32		
8200	35 x 50	5.05	35 x 60	5.84	35 x 70	6.22	35 x 90	6.57		

10000	35 x 60	5.75	35 x 70	6.15	35 x 80	6.35	35 x 90	6.89		
15000	35 x 70	6.29	35 x 80	6.47	35 x 90	6.72				
22000	35 x 70	6.91	35 x 80	7.12						

SHDR® KMQ Series

Wv / Spec / Cap(μF)	200		250		400		450	
	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)	ΦD x L (mm)	Ir(A rms 120Hz 105℃)
33			--	--	22 x 26	0.39	22 x 26	0.40
47			--	--	22 x 26	0.56	22 x 31	0.60
56			--	--	22 x 31	0.68	22 x 31	0.70
68			22 x 26	0.27	22 x 31	0.72	22 x 36	0.80
82			--	--	22 x 36	0.82	22 x 36	0.88
100	22 x 26	0.38	22 x 26	0.44	22 x 36	0.82	22 x 41	0.90
120	22 x 26	0.54	--	--	22 x 36	0.90	22 x 46	1.00
150	---	--	22 x 31	0.60	22 x 46	0.98	22x 51	1.05
180	22 x 31	0.92	22 x 31	0.69	25 x 46	1.14	25 x 30	1.14
220	22 x 31	1.03	22 x 36	1.00	30 x 25	1.21	30 x 40	1.24
270	22 x 36	1.21	22 x 41	1.16	30 x 46	1.40	30x 40	1.48
330	22 x 41	1.39	22 x 46	1.28	30 x 40	1.57	30 x 45	1.64
390	22 x 46	1.62	25 x 46	1.48	35 x 47	1.74	35 x 50	1.86
470	22 x 51	1.85	25 x 46	1.76	30 x 50	1.98	35 x 50	2.05
560	22 x 56	2.04	25 x 51	1.93	35 x 50	2.23	35 x 50	2.58
680	25 x 56	2.34	30 x 46	2.22	35 x 50	2.47	35 x 50	2.62
820	30 x 51	2.70	30 x 51	2.48	35 x 60	2.64	--	--
1000	30 x 51	3.00	35 x 47	2.80	35 x 80	3.12	--	--
1200	35 x 52	3.43	35 x 52	3.17	35 x 90	3.65	--	--
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Guangzhou Shenghe Electronic Technology Co., Ltd

Aluminum Electrolytic Capacitors Sample Test Report

Test Date：2022-11-04

Customer		Series	KMQ	Sleeve Color	Black & Silver
Sample Qty	10 pcs	Specification	10000μF/100V	Part Number	
Test Qty	10 pcs	Size	35×80	PO No.	
ROHS Report			REACH Report		

Items	Test Standard	AQL		Failed Qty	Failure Reason	Conclusion
		Ac	Re			
Out-looking Check	Normal outlooking,Clear marks, No noticeable damage, Size compliant to diagram	0	1	0	/	OK
Capacitance（C）	8000～12000 μF	0	1	0	/	OK
Dissipation Factor(（DF）	≤ 25 %	0	1	0	/	OK
Leakage Current(charge for 5 minutes)	≤ 20000 uA	0	1	0	/	OK
Impedance	6.35 A	0	1	0	/	OK
Weldability	Lead well coated	0	1	0	/	OK
Leas tensile	Normal outlooking, Clear marks, No noticeable damage, Stable Features	0	1	0	/	OK
Welding Heat Resistance	No noticeable damage, Capacitance Fluctuation≤5%	0	1	0	/	OK
Stress Release	Safety Vent Open, no explosion nor burning	0	1	0	/	OK

Electrolytic Features Test

Data / No.	Capacitance （μF） （120HZ）	Dissipation （tanδ）% （120HZ）	Leakage Current （μA） ((charge for5 minutes))
1	9243	7.8	3926
2	9222	7.4	3544
3	9277	7.7	3875
4	9264	7.5	3768
5	9246	7.2	3622
6	9292	7.9	3987
7	9231	7.6	3899

8	9257	7.8	3756
9	9246	7.7	3943
10	9278	7.8	3574

Inspected by：李晓庆　　Approved ed by：曾观红