KNSCHA®
全球高端电容器制造商

东莞市科尼盛电子有限公司
DONGGUAN KNSCHA ELECTRONICS CO., LTD.

规格承认书
Specification for approval

客户名称: (Customer Name)	
产品名称: (Product Name)	铝电解电容 Aluminum Electrolytic Capacitor
客户料号： (Customer part number)	
科尼盛料号： (KNSCHA number)	SHG47UF160V152EC0109
型号规格: (Specifications)	KNSCHA SHG 160V47μF Φ8*20L T型左弯脚 KNSCHA SHG 160V47μF Φ8*20L T型左弯脚

制 造 (Manufacture)			客 户 (Customer)		
Approval			Approval		
拟 制 (Fiction)	审 核 (Chief)	核 准 (Approval)	检 验 (Inspect)	审 核 (Chief)	核 准 (Approval)
刘淑芬	刘军军	徐贵南			

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SHG Series

Aluminum Electrolytic Capacitors

Item Name	Rating	Case size	KNSCHA Lifetime
SHG47UF160V152EC0109	SHG160V47μF	Φ8*20L	6000 hours

1. Operating Temp. Range

-40℃ ～ +105℃

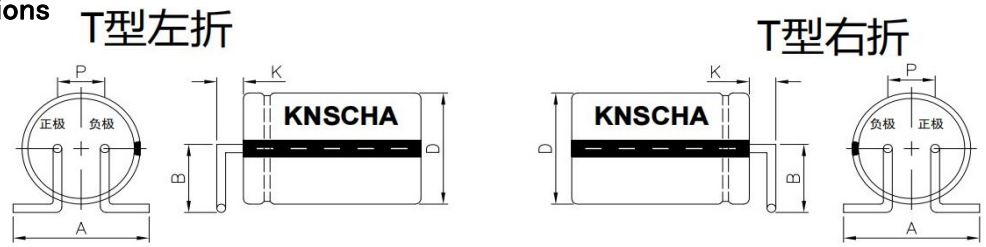
2. Electrical Characteristics

See Table 1.

【Table 1】

Rated Voltage VDC	Surge Voltage VDC	Nominal Static Capacitance (μF)	Tolerance on Capacitance (%) 20℃ 120Hz	Dissipation Factor (tan δ)max 20℃ 120Hz	Leakage Current 2min. 20℃ (μA)max	Permissible Ripple Current (mArms)max 105℃100KHz	Impedance(Ω) 100KHZ 20℃
160	200	47	-20～+20	0.15	150.4	390	2

3. Dimensions

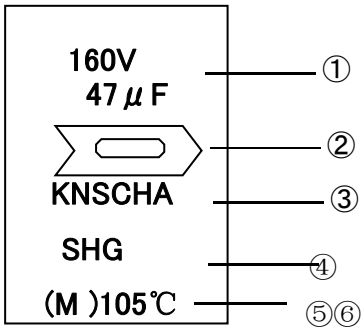


D6.3φ mm	D8φ mm	D10φ mm	D13φ mm
D:6.3±0.5	D:8.0±0.5	D:10±0.5	D:13±0.5
K:1.6±0.5	K:1.6±0.5	K:1.6±0.5	K:1.6±0.5
A:6.3±0.5	A:8.0±0.5	A:10±0.5	A:13±0.5
B:3.6±0.5	B:4.5±0.5	B:5.5±0.5	B:7.0±0.5
P:2.5±0.5	P:3.5±0.5	P:5.0±0.5	P:5.0±0.5

4. Marking

Following items are printed with black color on white color sleeve

Example of Marking



① Rated voltage & Nominal Capacitance
② Polarity (negative)
③ Trade Mark
④ series
⑤ Symbol of Capacitance Tolerance （M）
⑥ Max Operating Temp.

5.MULTIPLIER FOR RIPPLE CURRENT

①. Frequency Coefficient

Freq.(Hz) / Cap(μF)	60 （50）	120	1K	10K	100K
0.1-47	0.75	0.80	0.85	0.90	1.00
68-680	0.80	0.85	0.90	0.95	1.00
1000-22000	0.85	0.87	0.89	0.92	1.00

②. Temperature Coefficient

Ambient Temperature(℃)	40	60	70	85	105
Coefficient	2.40	2.10	1.78	1.65	1.00

6. Characteristics

<table>
<tr><th>No.</th><th>Item</th><th>Performance</th><th>Test Method</th></tr>
<tr><td>1</td><td>Leakage Current</td><td>I= 150.4 μA (I=0.02CV)
I= Max Leakage Current
C=Ctatic Capacitor: V=Rated Voltage</td><td>Protection Resistor : 1000±10Ω
Applied Volt : Rated Voltage
Mesauring time : 3minutes</td></tr>
<tr><td>2</td><td>Static Capacitance</td><td>37.6 ～ 56.4 μF</td><td>Measured Frequency : 120Hz±20%

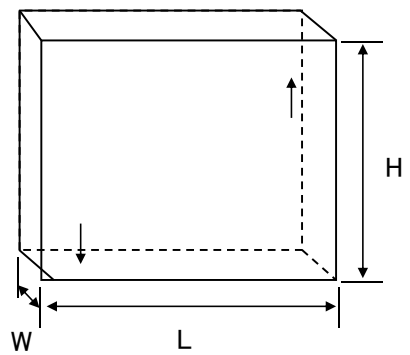
Measured Voltage
≤ 0.5Vrms, 1.5 ～ 2.0VDC</td></tr>
<tr><td>3</td><td>Dissiption Factor (tanδ)</td><td>0.15 and Under</td><td>Same as condition of Capacitors</td></tr>
<tr><td>4</td><td>High Temp. Load Charac- teristics</td><td><table><tr><td>Leakage Current</td><td>≦the value specified in Table 1</td></tr><tr><td>Cap. Change</td><td>≦±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td>≦200% of value specified in Table</td></tr><tr><td>Appearance</td><td>No remarkable abnormality</td></tr></table></td><td>Test Temp. : 105±2℃
Applied voltage: Rated voltage
Test Time :6,000 hours
+72, −0 hours</td></tr>
<tr><td>5</td><td>High Temp. no load Charac- teristics</td><td><table><tr><td>Leakage Current</td><td>≦the value specified in Table 1</td></tr><tr><td>Cap. Change</td><td>≦±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td>≦200% of value specified in Table</td></tr><tr><td>Appearance</td><td>No remarkable abnormality</td></tr></table></td><td>Test Temp. : 105±2℃
No voltage applied
Test Time :1000 hours
+24, −0 hurs</td></tr>
<tr><td>6</td><td>Terminal Strength</td><td><table><tr><td>Tensile Strength</td><td>45N {4.5kg}</td></tr><tr><td>Bending Strength</td><td>25N {2.5kg}</td></tr></table></td><td>Keeping time
Tensile 1～5sec
Bending 30±5sec</td></tr>
<tr><td>7</td><td>Impedance Ratio</td><td colspan="2"><table><tr><td>W V</td><td>160</td></tr><tr><td>Z−25℃/Z+20℃</td><td>3</td></tr><tr><td>Z−40℃/Z+20℃</td><td>6</td></tr></table></td></tr>
<tr><td>8</td><td>Temperature Charac − teristics</td><td colspan="2"><table><tr><th>Stage</th><th>Item</th><th>Performance</th></tr><tr><td>2,3</td><td>Impedance Ratio</td><td>less than the value mentioned in 5−7,</td></tr><tr><td>5</td><td>Cap, Change</td><td>≦±25% against value in stage 4</td></tr></table>After the capacitor is held at tempereture of each stage and reaches temperature stability, measure performance.<table><tr><th>Stage</th><th>Test Temp(℃)</th></tr><tr><td>1</td><td>20±2</td></tr><tr><td>2</td><td>−25±3;</td></tr><tr><td>3</td><td>−25±3;</td></tr><tr><td>4</td><td>20±2</td></tr><tr><td>5</td><td>105±2</td></tr><tr><td>6</td><td>20±2</td></tr></table></td></tr>
<tr><td>9</td><td>Surge Voltage</td><td colspan="2"><table><tr><td>Item</td><td>Perforemance</td></tr><tr><td>Leakage Current</td><td>≤ the initial specified value</td></tr><tr><td>Cap, Change</td><td>≤ ±15% against value before test</td></tr><tr><td>Dissipation Factor</td><td>≤ the initial specified value</td></tr><tr><td>Appearance</td><td>No remakable abnormality</td></tr></table>Test Temp. 15～35℃ Test volt. Surge Volt.Specified in 2
Voltage apply. 1,000times of chage for 30±5sec, under frequency of 6±0.5sec, and discharge for 5min30sec.</td></tr>
</table>

6-2. Characteristics

<table>
<tr><th>No.</th><th>Item</th><th>Performance</th><th>Test Method</th></tr>
<tr><td>10</td><td>Vibration Resistance</td><td colspan="2">
<table>
<tr><td>Capacitance</td><td>Stability required</td></tr>
<tr><td>Cap. Change</td><td>≤±5% of the initial specified value</td></tr>
<tr><td>Appearance</td><td>No remarkable abnormality</td></tr>
</table>
Frequency : 10～55Hz/1min. Width of vibration, 1.5mm Direction and duration X, Y and Z directions, each for 2 hours (Total 9 hours)
</td></tr>
<tr><td>11</td><td>Solderbility</td><td>3/4 area of surrounding directions of surface should be covered with new solder.</td><td>Solder: Sn-Ag, Sn-Cu Type
Soldering Temp : 240±5℃
Dipping degree : 2～2.5mm
Flux : Ethanol solution (JIS K8101) or Isopropylalchol (JIS K8839) solution of Rosin (JIS K5902)</td></tr>
<tr><td>12</td><td>Resistance to Soldering</td><td>
<table>
<tr><td>Leakage Current</td><td>≦ Initial specified value</td></tr>
<tr><td>Cap. Change</td><td>≦±10% of initial value</td></tr>
<tr><td>Dissipation Factor</td><td>≦ Initial specified in value</td></tr>
<tr><td>Appearance</td><td>No remarkable abnormality</td></tr>
</table>
</td><td>Soldering Temp. 280±5℃
Soldering Time . 10±1sec.</td></tr>
<tr><td>13</td><td>Resistance to Humidity</td><td>
<table>
<tr><td>Leakage Current</td><td>≦ Initial specified value</td></tr>
<tr><td>Cap. Change</td><td>≦±15% of initial value</td></tr>
<tr><td>Dissipation Factor</td><td>≦ Initial spesified value</td></tr>
<tr><td>Appearance</td><td>No remarkable abnormality</td></tr>
</table>
</td><td>Test Temp. : 40±2℃
Humidity 90～95%
Test Time : 500 ± 8 hours
After the above condition,restored to normal temp, and then measured.</td></tr>
<tr><td>14</td><td>Perssure valve moment charact-erstics</td><td>There must not be thing ignition, scattering the resolution that that case works safely</td><td>Dcmethod: impress the reverse voltage and of 1A, I cancel an electric current.</td></tr>
</table>

7 Packing method

Packaging shape, size, quantity



Component size	Quanity per
8*20	10000pcs.

8 Related Standards JIS C 5141

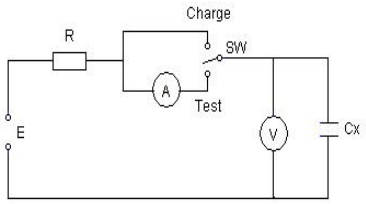
9 Marking on packing box

① Item name
② Series name
③ Rated Voltage
④ Nominal Static Capacitance
⑤ Case size
⑥ Lot No.
⑦ Quantity

10 Leakage current

<Condition>

Connecting the capacitor with a protective resistor (1kΩ±10Ω) in series for 2 minutes, and then, measure leakage curre



<Criteria

I : Leakage current (μA)

I (μA)≤0.01CVor 3 (μA) whichever is greater,

measurement circuit refer to right drawing.

C: Capacitance (μF)

11 Soldeing

11-1 Soldering by soldering iron

Temperature of iron top : 270～350℃

Operating time : within 3 sec.

11-2 Flow soldering.

Preheat : PCB surface temperature 120℃±5℃

Solder Temp : 260℃±5℃

Solder Dipping Temp. : 2～4sec.

12 Cleaning of PC boad after soldering

Using follwing solvents is possible but make sure followingcondition

Solvent

IPA or Alcoholic agent like Pinealpha ST-100S, Cleanthrough 750H, 750L, 710M, 750K, or Technocare FRW-14～17

① Cleaning should be made by ultrasonic within 5min, at the temperature less then 60℃.

② Control of pollution is necessary (conductivity,pH, specific gravity, water volume)

③ Please do not keep near cleaning agent. Please do not store in air-tight container. Please let it dry by hot air at the temperature less than maximum operating temp.

13 The situation of using

Please do not use a condenser in the next use environment.

① One circumference environment(weatherability) condition.

(a) Direct water,salt water and environment oil works or become a dew condensation state.

(b) Environment full of harmful gas (a hydrogen chloride, sulfurous acid. nitrous acid hydrochloric acid, ammonia).

(c) Ozone, infrared rays and the environment where radioactive rays are done collation of

② Vibration shock condition is extreme environment more than rule ranges of delivery specifications.

14 A country of origin

A country of origin of an KNSCHA SHG series alminum electrolysis condenser of specifications: China

15 Effective life for storage

Storage conditions:

① Temperature range must be between 5-35℃

② Relative humidity must be less than 75%

③ Must be stored indoor

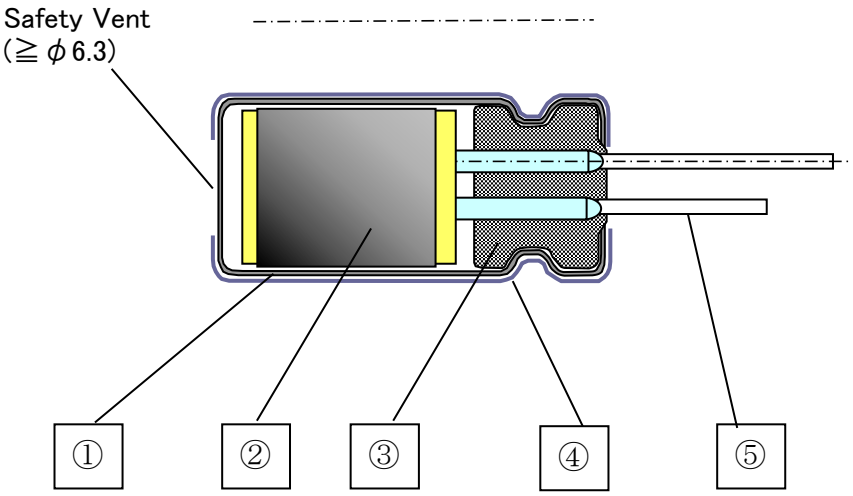
④ Must be free from water, oil or salt water

⑤ Must be free from toxic gasses (hydrogen sulfide, sulfurous acid, chlorine, ammonium, etc.)

⑥ Must be free from ozone, ultraviolet rays or any other radiation

⑦ Must be kept in capacitor original package

Aluminum Electrolytic Capacitor
SHG Series Structure



No.	Name	Material
①	Case	Aluminum
②	Element (Electrode)	High Purity Aluminum foil
	(Separator)	Manila hemp pulp
	(Electrolyte)	---
③	Rubber Bung	Synthetic Rubber
④	Sleeve	PET
⑤	Lead Wire	Tin plated Steel Wire

Controls of ozone layer destructive chemical materials

Regulated materials : CFCs, Halon, Carbon Tetrachloride, 1.1.1-Trichloroethane

The products and parts do not include the above materials

The products and parts are not used the above materials on process.

The products and parts are not used PBBOs (Poly Bromo Bi-phenyl Oxides).

All materials are mentioned as existing chemical material in the "Law of examine and control of Production of Chemical Material"

The products are not listed in Appendix 1 of Export Trade Rule and Regulation

A condenser of this series supports RoHS regulation.

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LXY50VB4.7M-5X11 RFO-100V471MJ7P# ECE-A1EGE220 B41041A2687M8 B41041A7226M8 B41044A7157M6 EKXG201EC3101ML20S EKZM160ETD471MHB5D NCD681K10KVY5PF NEV1000M25EF-BULK NEV100M35DC NEV100M63DE NEV220M25DD-BULK NEV.33M100AA NEV4700M50HB NEV.47M100AA NEVH1.0M250AB NEVH3.3M250BB NEVH3.3M450CC KM4700/16 KME50VB100M-8X11.5 SG220M1CSA-0407 ES5107M016AE1DA ESMG160ETD102MJ16S ESX472M16B 227RZS050M 476CKH100MSA 477RZS050M UVX1V101KPA1FA UVX1V222MHA1CA KME25VB100M-6.3X11 VTL100S10 VTL470S10 VTL470S16A 511D336M250EK5D 052687X ECE-A1CF471 EKMA500ELL4R7ME07D NRE-S560M16V6.3X7TBSTF RGA221M1CTA-0611G ERZA630VHN182UP54N UPL1A331MPH SK035M0100AZS-0611 MAL214658821E3 NEV1000M6.3DE NEV100M16CB NEV100M50DD-BULK NEV2200M16FF NEV220M50EE NEV2.2M50AA