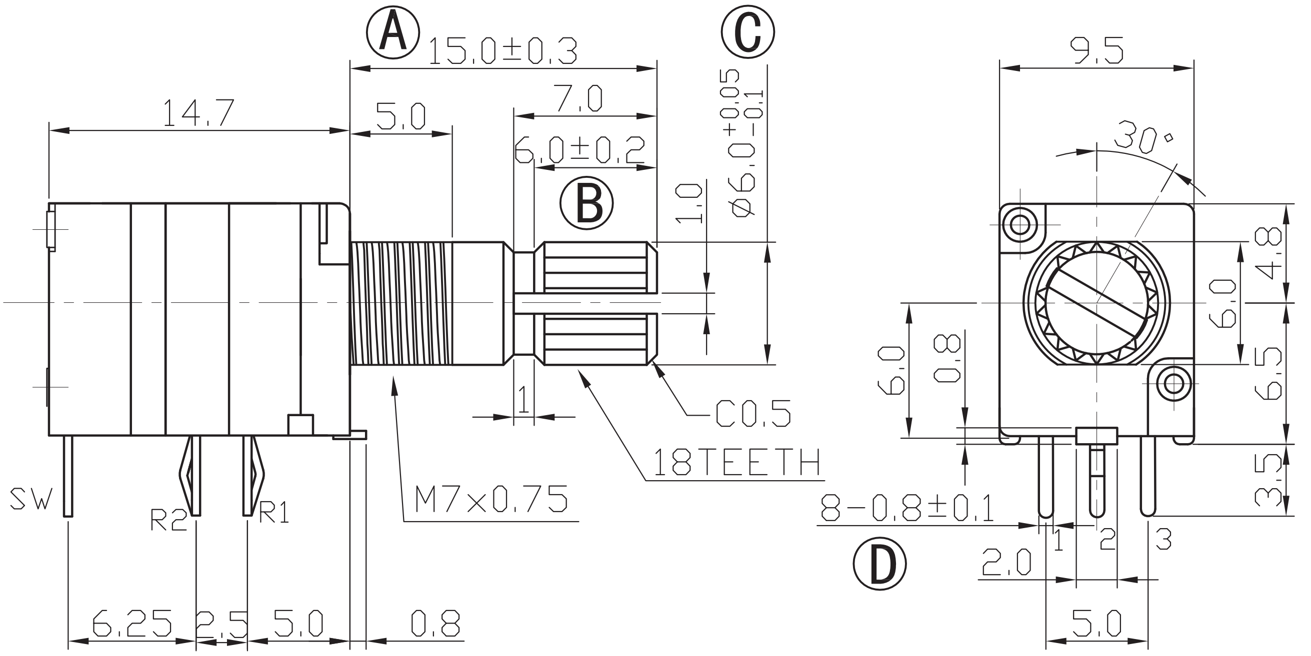
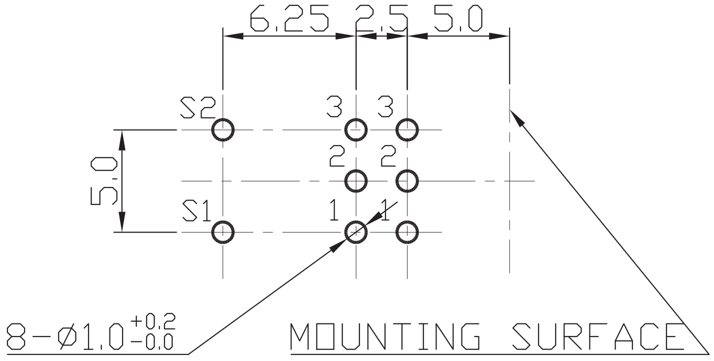
符合产品环境品质管理标准与用途

文件发行章

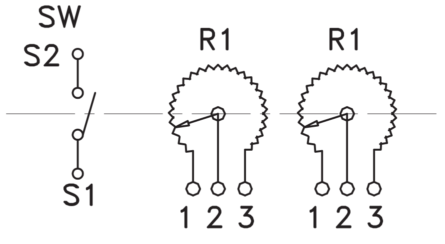


出图
20-09-09
升威电子

SHAFT SHOWN IN FULL
C.C.W. POSITION



P.C.B. MOUNTING HOLE DETAIL



CIRCUIT: SG

注：Ⓐ-Ⓓ 为重点管控尺寸。

01	变更为新结构	2020-09-09	03		
00	ORIGINAL DRAWING	2018-10-24	02		
.ISSU.	REVISION	DATE	.ISSU.		

SOUNDWELL ELECTRONICS

			TOL. UNLESS OTHERWISE SPEC.	
薛可乐	HUNG KAM PIU	HUNG KAM PIU	BASIC DIMENSIONS	TOL.
			L≤10	±0.3
DSGD.	CHKD.	APPD.	10<L	±0.5
	SCALE		100≤L	±0.8
	UNIT	mm	ANGLE	±5°

TITLE: POTENTIOMETER

MODEL: RA0902SGA0X-VA1-012

SPECIFICATION: B503-P0-KA150A060

RA0902/RA0919 SERIES GENERAL SPECIFICATION
RA0902/ RA0919 系 列 规 格 书

1、GENERAL一般事项

1.1、Sscope 适用范围

The specification applies to model RA0902/RA0919 type mainly used for consumer products Rotational type

此规格书适用于RA0902/RA0919机型回转型

1.2、Standard atmospheric conditions 标准状态

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and test is as follows:

无特别规定外，测量应在以下状态下进行：

Ambient temperature 温度 :15℃ to 35℃
Relative humidity 相对湿度 :25% to 85％
Air pressure 气压 :86kpa to 106kpa

If there is any doubt about the results, measurements shall be made within the following limit:

发生判定疑问或另有特别要求则以基准状态：

Ambient temperature 温度 :20±1℃
Relative humidity 相对湿度 :63% to 67％
Air pressure 气压 :86kpa to 106kpa

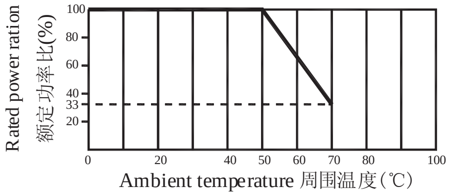
1.3、Operating temperature range
使用温度范围 ： -10℃ to 70℃

1.4、Storage temperature range
保存温度范围 ： - 25℃ to 70℃

2、Application Notes 使用上的事项

2.1、Avoid storing the products in a place at high temperature, high humidity and in corrosive gases. Please use this product as soon as possible with 12 months limitation . If any remainder left after packing is opened, please store it with proper moistureproofing, gasproofing etc. 避免储藏于高温,潮湿及腐蚀的场所，产品购入后尽可能在12个月内使用完。拆包装后未使用完的剩余产品需储藏于防潮防毒的环境下。

3 ELECTRICAL CHARACTERISTICS电气特性

Item 项 目	Conditions 条 件	Specifications 规 格
3.1、Nominal total resis-tance and tolerance 公称全阻抗值	The resistance between terminals 1 and 3 shall be measured 端子1-3间阻值测定。	50 KΩ ■±20%
3.2、Resistance law 阻抗变化特性	Measurement shall be made by the resistance law method. For other procedures(refer JISC5261 standard) 用电压法测试，参照JISC5261标准	3 B Taper (Refer to the attached) 3 B 线性 (参见附页)
3.3、 Power rating 额定功率	Power rating is based on continuum full load operation at the maximum voltage between terminals 1 and 3. Power rating vs.ambient temperature shall be denoted on the following graph. 端子1-3间连续负载后的最大功率。 环境温度对功率影响的曲线如下图表示： 	0.05W

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6、增加止档强度选项	11.06.13	技术部 20-11-06 李 苗	技术部 20-11-06 欧阳昌雄	技术部 20-11-06 苏朝晖	
7、重新整理	13.04.03				DOCUMENT NO.文号： RA0902/RA0919
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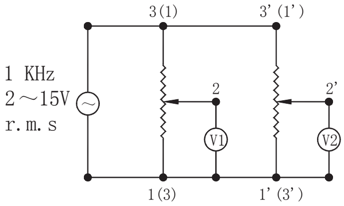
RA0902/RA0919 SERIES GENERAL SPECIFICATION
RA0902/ RA0919 系 列 规 格 书

3 ELECTRICAL CHARACTERISTICS电气特性

Item 项 目	Conditions 条 件	Specifications 规 格
3.4、 Rated voltage 额定电压	Rated voltage 额定电压：$E=\sqrt{PR}$ Power rating P: 额定功率 (W) Nominal total resistance R：公称全阻抗值 (Ω) When the rated voltage exceeds the maximum operating voltage. the maximum operating voltage shall be the rated voltage 额定电压大于最高使用电压时,最高使用电压作为额定电压.	
	Maximum operating voltage 最高使用电压	50V AC
3.5、Residual resistance 残留电阻	The resistance at each end of the (A). Resistance between terminals 1 and 2, terminal 2 and 3 shall be measured. A: Angle of effective rotation 接触刷停留在(A)终端位置,在端子1-2间,端子2-3间测定之电阻值. A:有效回转角度	R1,2: ≤ 10 Ω R2,3: ≤ 20 Ω
3.6、Rotational noise 转动噪音	Apply DC 20V between terminals 1-3 to measure noise voltage . (rated voltage ≤20V . Apply by rated voltage). 在端子1-3间加直流电压20V(额定电压≤20V,则以额定电压值测试)后,测定的杂音电压. Shaft rotation : 1 rotation /3Sec 轴转速:1回转/3秒	100mVp-p Less than 100mVp-p 以下
3.7、 Tracking error 连动误差	The voltage of 2~15 V r.m.s. Shall be applied between terminals 1 and 3 and between terminals 1' to 3' by measuring frequency at 1KHz. The output voltage shall be measured between terminals 1 and 2 and between terminal 1' and 2'(for the 15C and 25C taper. the measurement shall be made between terminals 2 and 3 and between terminals 2'and 3') units the first of these shall be the standard one .If there is not any doubt about the results .d.c. voltage shall be used as the test voltage. 在端子1-3间,1'-3'间,输入频率1KHz,电压2~15V的正弦波实效值,测量端子1-2间,端子1'-2'间的输出电压(适用于15C和25C线型,端子2-3间,2'-3'间也应测量输出电压）结合第一次的测量结果,应为同一标准.如对测量结果没有质疑，则将此电压作为测试电压值。 Input impedance of the voltmeter: 10MΩ or more 电压表输入阻抗:10M Ω 以上	
	For volume contract : (音量用) -40~0dB	± 4 dB or less 以下
3.8、 Insulation resistance 绝缘阻抗	Measurement shall be made under the condition which a voltage of DC 250V 60s±5s is applied between individual terminals and bracket. 在端子和安装支架间施加电压 DC250V 60 s±5s。	Between individual terminals and bracket 100MΩ MIN. 端子与安装支架间电阻10 0MΩ以上
3.9、Dielectric stren 耐电压	A voltage of 250V AC shall be applied for 60s±5s between individual terminals and bracket. 在端子和安装支架间施加 AC 250V 电压60s±5s。	Without arcing or breakdown. 不得有漏电、绝缘破坏。

4 MECHANICAL CHARACTERISTICS机械特性

Item 项 目	Conditions 条 件	Specifications 规 格
4-1、Total mechanical rotation全回转角度	Angle of effective rotation 有效旋转角度	300°±5°

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6、增加止档强度选项	11.06.13	技术部 20-11-06 李苗	技术部 20-11-06 欧阳昌雄	技术部 20-11-06 苏朝晖	
7、重新整理	13.04.03				DOCUMENT NO.文号： RA0902/RA0919
8、重新整理	2016-9-25				

4 MECHANICAL CHARACTERISTICS机械特性

Item 项 目	Conditions 条 件	Specifications 规 格
4.2、Rotational torque 旋转力矩	Measured at standard atmospheric conditions 标准状态下测定 Shaft rotation : 1 rotation /3s 轴转速:1回转/3秒	8±7 mNm (80 ±70 gf.cm)
	Shaft shall be able to be rotated at the temperature at -10℃ 在-10℃温度条件下轴柄能转动	
4.3、Number of Detemts Click 定位数目	此项不适用	☐ without Detent ☐ 1C (Center Detent中段功能) ☐ Other其它____C
4.4、 Detent Torque 定位力矩	Rotation speed 60°/ s 旋转速度 60°/s 此项不适用 Measured at standard atmospheric conditions 标准状态下测定	14 ±11 mNm (140±110 gf.cm)
4-5、 Shaft stop strength 止档强度	The following torsion moment load ☐ of shall be applied to the shaft for 5sec at both ends (after fixation) 固定后于旋转前后两端末加☐力并持续5秒. ☐ With detents 0.35 N.m(3. 5Kgf)带定位 0. 35 N. m(3. 5Kgf) ☑ Without detents 0.5 N.m(5. 0Kgf)不带定位0. 5 N. m(5. 0Kgf)	Electrical characteristics shall be satisfied. 电气性能符合规定要求
4-6、Shaft push & pull strength 轴向推拉强度	Push &pull static load of 80 N（8Kgf）shall be applied to the shaft in perpendicular to axial directions for 10 s (after fixation) 固定后在与轴垂直的端面方向加80 N（8Kgf）静载荷并保持10秒。	Shaft without damage; Rotational torque without abnormality; Electrical characteristics shall be satisfied with speciification . 轴无破损，旋转无异常。 电气性能符合规定要求
4-7、Nut tightening strength 螺母紧固强度	Nut tighten with 0.8 N.m（8.0kgf.cm） 螺母紧固强度为0. 8 N. m（8.0kgf.cm.）	No excessive uneven rotation feeling 不可有回转发生（打滑）。
4-8、 Shaft wobble 轴摆动	A momentary load of 5 N（500gf） shall be applied at the point 5 mm from the tip of the shaft in a direction perpendicular to the axis (after fixation). 固定后在与轴心末端往下5mm处施加5 N（500gf）静载荷。	0.7*L/20mm p-p or less 以下 L is the length between mounting surface and measuring points L: 固定面到测试点的距离

5 ENDURANCE CHARACTERISTICS耐久性能

Item 项 目	Conditions 条 件	Specifications 规 格
5-1、 Solder ability 焊锡性	The terminals shall be stored at a temperature of 40°C with relative humidity of 90%~95% and measured in 168h. 温度40°C，湿度90%~95%RH， 168小时测定。 The terminals shall be immersed into solder bath at 260°C±5°C for 3s±1s.端子在260°C±5°C温度的焊锡槽内浸锡3±1秒	A new uniform coating of solder shall cover a minimum of 75% of the surface being immersed. 浸渍面须有75%以上焊锡付着
5-2、 Resistance to soldering heat 焊锡耐热性	Manual soldering手工焊接 Bit temperature of soldering iron: 350°C less than 温度350°C以下 Application time of soldering iron: within 3 s.时间3秒以内 Dip soldering槽焊 1. Printed wiring board : copper clad laminate board with thickness of 1.6mm; 使用基板：t=1.6mm的覆铜板。 2. Solder flux: Flux of 0.82 specific weight in bubbing type, solder flux coating apparatus shall be used and bubling surface height shall be defined substantially as half thickness of substrate. Flux shall not flow up on substrate surface; 助焊剂：使用发泡式比重0.82以上的焊剂，发泡面高大致在基板厚度一半的位置，而且助焊剂不可流入基板表面上。 3. Preheating预热 : Surface temperature of board: 100°C or less;基板表面温度100°C以下 Preheating time : within 2 min.时间2分钟以内 4. Soldering焊接 : Solder temperature温度 : 260℃±5℃ less Immersion time:within 时间：5±1 s Apply the above soldering process for 1 or 2 times.以上工程适用1至2次	Electrical characteristics shall be satisfied. No mechanical abnormality. 不得有绝缘体的破损、变形、接触无异常。

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5 ENDURANCE CHARACTERISTICS耐久性能

Item 项 目	Conditions 条 件	Specifications 规 格
5-3、Resistance to heat 耐热性	The potentiometer shall be stored at a temperature of 70°C±2°C for 240h±8h in a thermostatic chamber.Then the potentiometer shall be measured after maintaining at standard atmospheric conditions for 1h with its surface moisture removed. 温度70°C±2°C恒温槽中240±8小时放置后,置于常温常湿1小时除去水滴后测定。	Change in total resistance is relative to the value before test : ±20% 总阻变化值：初期值的±20%
5-4、Resistance to Cold 耐寒性	The potentiometer shall be stored at a temperature of -25°C±3°C for 96h±4h in a thermostatic chamber.Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed. And measure the potentiometer which shall be subjected to standard atmospheric conditions for 1h . 温度-25°C±3°C恒温槽中96±4小时放置后，置于常温常湿1小时除去水滴后, 1小时内测定。	Change in total resistance is relative to the value before test : ±20% 总阻变化值：初期值的±20%
5-5、 Damp heat 耐湿性	The potentiometer shall be stored at a temperature of 40°C±2°C, with relative humidity of 90% to 95% for 96h±4h in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed. And measure the potentiometer which shall be subjected to standard atmospheric conditions for 1h.. 温度40°C±2°C,湿度90%-95%,恒温恒湿槽中放置96±4小时后, 置于常温常湿1小时除去水滴后, 1小时内测定。	Change in total resistance is relative to the value before test : +35-5% 总阻变化值:初期值的+35-5% Insulation resistance：20MΩ or more 绝缘阻抗： 20MΩ 以上 Rotational Noise:150mV p-p less than 转动噪音：150mV p-p 以下
5-6、 Change of temperature 温度循环试验	The potentiometer shall be subjected to 5 successive change of temperature cycles, each as shown in table below. Surface moisture shall be removed. And measure the potentiometer which shall be subjected tostandard atmospheric conditions for 1hour. 以下条件温度连续5个周期的试验后,置于常温常湿1小时除去水滴后,1小时内测定。	Change in total resistance is relative to the value before test : ±30% 总阻变化值：初期值的±30% Insulation resistance:100MΩ or more 绝缘阻抗：100MΩ以上 Dielectric strength： Without damage to parts arcing or breakdown etc. 耐电压:无损伤,变形,绝缘破坏等情形. Appearance: There shall be no daformation or cracks of molded part. 外观：塑胶部分无形成破裂

	Temperature 温度	Duration 放置时间
1	-10°C±3°C	30 min (分)
2	standard atmospheric conditions 常温	10 to 15 min(分)
3	70°C±2°C	30 min (分)
4	standard atmospheric conditions 常温	10 to 15 min(分)

Item 项 目	Conditions 条 件	Specifications 规 格
5-7、 Endurance 耐久性	The moving contact without electrical load shall be rotated from one end stop to the other and returned to its original position (exceeds 90% of effective angle). This procedure constitutes 1 cycle. And the moving contact shall be subjected to 600 cycles per hour. total 10 000±200 cycles.(5 000 to 8 000continuous cycles for 24h). 轴以600周/小时(来回算1周)的速度旋转,24小时旋转5 000~8 000周,有效旋转角度超过90%, 共10 000±200周.	Change in total resistance is relative to the value before test : ±15% 总阻变化值：初期值的±15% Rotational noise:150mVp-p or less 转动噪音： 150mV p-p 以下 Rotational torque:Initial torque 50%. 转动力矩：不低于初期规格值的50% Residual resistance 残留电阻: R1,2:＜ 20 Ω； R2,3:＜ 40 Ω

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7、重新整理	13.04.03				DOCUMENT NO.文号：
8、重新整理	2016-9-25				RA0902/RA0919

Rotational switch portion 旋转开关部分

Note: The following specification is only suitable for RA0902/RA0919 potentiometer series with switch construction.
注：以下规格只适用于此RA0902/RA0919电位器系列带开关结构。

1-1、Rated capacity（Resistance load）: DC 16V 3 A
额定容量（电阻负荷）： DC 16V 3 A

1-2、Electrical characteristics电气性能

ITEM 项 目	CONDITIONS 条 件	SPECIFICATIONS 规 格
1-2-1、SW Contact resistance 接触阻抗		50 mΩ MAX 50 mΩ 以下
1-2-2、Insulation resistance 绝缘电阻	Measurement shall be made under the condition which a voltage 250V 250V DC 60 s±5 s is applied between individual terminals and bracket. 在端子与安装支架间施加电压DC 250V 60s±5s。	Between individual terminals and bracke 50 MΩ Min. 在端子与安装支架间50 MΩ以上
1-2-3 Dielectric strength 耐电压	A voltage of 250V AC 60s±5s be applied between individual terminals and bracket. 在端子与安装支架间施加AC250V 60s±5s。	Without arcing or breakdown. 不得有漏电、绝缘损坏。

1-3 Mechanical characteristics机械性能

ITEM 项 目	CONDITIONS 条 件	SPECIFICATIONS 规 格
1-3-1、Switch type 开关型式		Single pole and single throw（rotational on） 单极单投（旋转ON）
1-3-2、Switch rotation angle开关回转角度		50° Max.
1-3-3、Switch action 开关作动力	Rotation speed 60°/ S 旋转速度 60°/S	10N.m（1Kgf.cm） Max.

1-4 Endurance characteristics耐久性能

ITEM 项 目	CONDITIONS 条 件	SPECIFICATIONS 规 格
Rotational operating life 开关旋转寿命	The potentiometer's shall be rotated to 10,000 cycles at a speed of 600 cycles/h without electrical load. 在无负荷条件下，对轴以每小时600次的速度旋转10 000次。	SW Contact resistance : 1Ω max. Operating force:Initial force 50%. 接触电阻 : 1Ω以下. 开关动作力为初期值的50%。

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STANDARD RESISTANCE TAPER (电位器专用)

Rotary, Slide, Equalizer & Trimmer (Only be applicable to potentiometer)

TAPERS (B) SERIES