

承認書

FOR APPROVAL

客戶名稱
 Customer: OZDISAN
 機種
 Product: _____
 客戶料號
 Part No.: _____



客戶確認回覆: Customer Approval Status:	
簽核: Signature:	
合格 PASSED	拒收 REJECTED

昇威資料 SOUNDWELL'S INFORMATION

機種類別
 Product: V. R
 品號
 Part No.: RD1610NOA0X-PA1-137
 規格
 Specification: B103-Q0-FA250D120 (送货单标签只写流水号)
 樣辦批號
 Samples lot No.: 22081912026V
 圖號
 Drawing No.: C-RD16XX-0003
 摘要
 Note: 鍍高溫鎳，黑亮型外壳

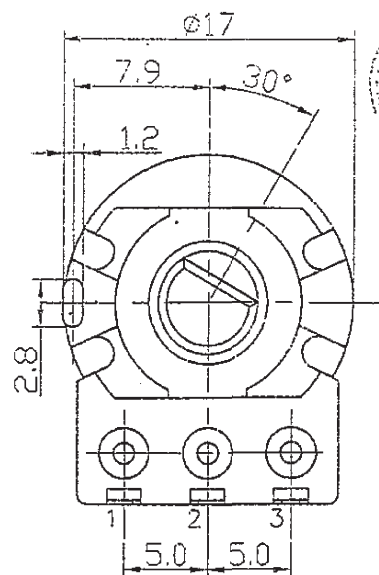
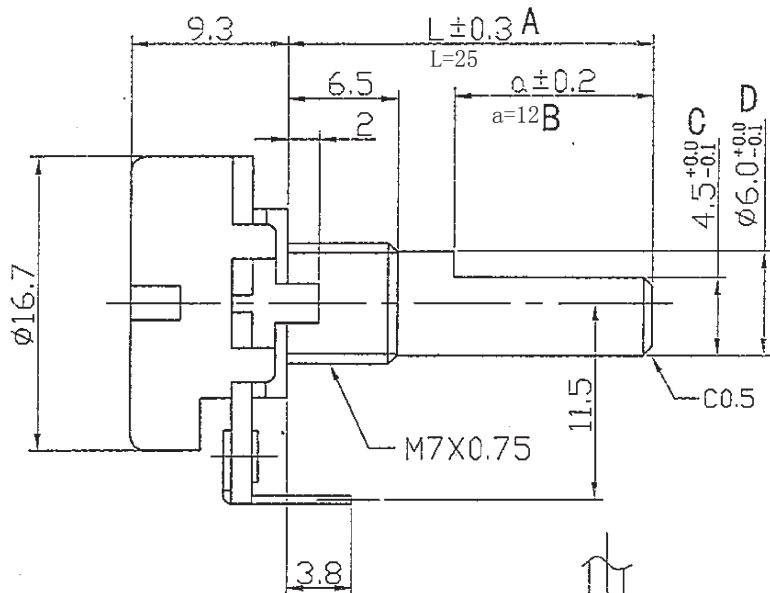
承辦 Prepared By	校對 Proofed By	審核 Checked By	營業部 Sales Department
 19-12-27 李苗	 19-12-27 歐陽昌雄	 19-12-27 蘇朝暉	Angelo

東南亞首家榮獲TUV & SQCC ISO9002證書之電位器製造商
 The First Potentiometers Manufacturer in South Eastern Asia Certified By ISO9000
 ISO14001 TS16949認證企業

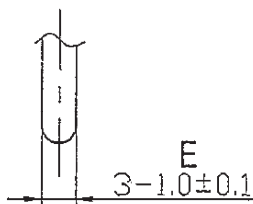


香港公司: 昇威電子元件有限公司
 SOUNDWELL ELECTRONIC COMPONENTS CO., LTD
 香港九龍觀塘開源道六十四號源成中心十一樓五室
 Room 5, 11/F., Yen Sheng Centre,
 64 Hoi Yuen Road, kwun Tong, Kowloon, Hong Kong
 TEL: (00852) 27966770 (12 Lines) FAX: (00852) 27530400
 E-mail: sw@soundwell-cn.com
 Website: www.soundwell-cn.com
 大陸工廠: 廣東昇威電子製品有限公司
 SOUNDWELL ELECTRONIC PRODUCTS (GUANG DONG) CO., LTD
 東莞市塘廈鎮鳳凰崗昇威工業園
 Soundwell Industrial Park, Feng Huang Gang, Tang
 Xia Town, Dong Guang City
 TEL: (0769) 38833333/86856888 FAX: (0769) 87930111/87930222

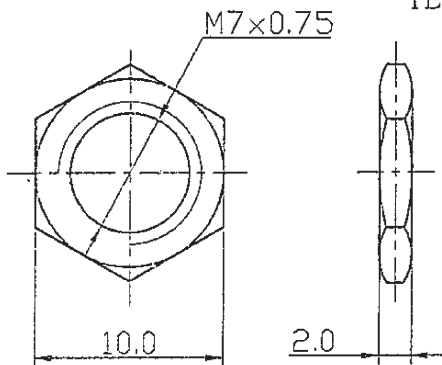




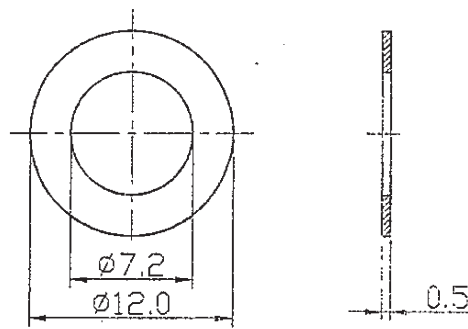
SHAFT SHOWN IN FULL
C. C. W. POSITION



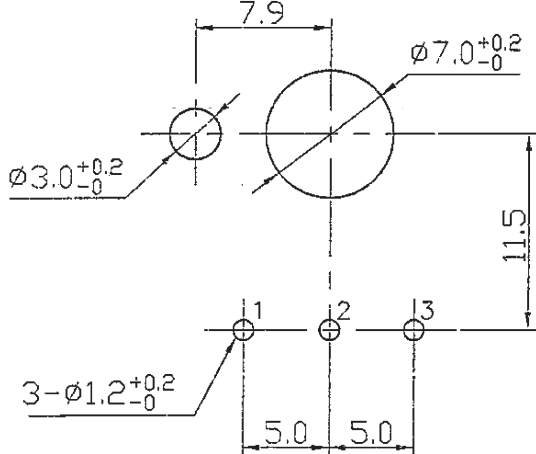
TERMINAL DETAIL (2:1)



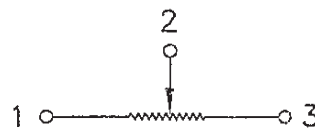
NUT 1 PCS



WASHER 1 PCS



P. C. B. MOUNTING HOLE DETAIL



CIRCUIT: NO

注：重点管控尺寸A-E。

01			03	
00	ORIGINAL DRAWING	2012-01-15	02	
ISSU.	REVISION	DATE	ISSU.	
		TOL. UNLESS OTHERWISE SPEC.	SOUNDWELL ELECTRONICS	
		BASIC DIMENSIONS	TOL.	TITLE: 电位器
DSGD.	CHKD.	L ≤ 10	± 0.3	MODEL: RD1610NOAOX-PA1-FAXXXDXXX
	APPD.	10 < L	± 0.5	DRAWING NO: C-RD16XX-0003
	SCALE	100 ≤ L	± 0.8	NC:
	UNIT	ANGLE	± 5°	

RD16 SERIES GENERAL SPECIFICATION

RD16 系列规格书

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1、GENERAL 一般事项

1.1、Sscope 适用范围

The specification applies to model RD16 type mainly used for consumer products Rotational type
此规格书适用于RD16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°C to 35°C

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°C

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°C to 70°C

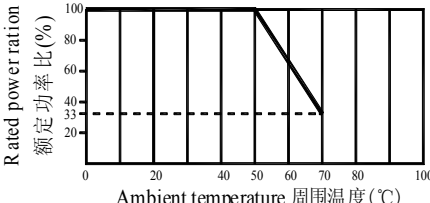
1.4、Storage temperature range


保存温度范围 : -25°C to 70°C

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 电气性能

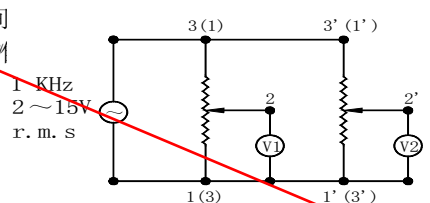
Item 项 目	Conditions 条 件	Specifications 规 格
3.1、Nominal total resistance and tolerance 公称全阻抗值	The resistance between terminals 1 and 3 shall be measured 端子1-3间阻值测定。	<u>10</u> KΩ ■ ±20%
3.2、Resistance law 阻抗变化特性	Measurement shall be made by the resistance law method. For other procedures(refer JISC5261 standard) 用电压法测试，参照JISC5261标准	<u>B</u> Taper (Refer to the attached) <u>B</u> 线性 (参见附页)
3.3、Power rating 额定功率 (W)	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所示： 	0.1 W

文控编号: RD-002	编制时间	 SOUNDWELL ELECTRONIC		
版本号: 10	04.12.09			
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10、重新整理	2016-10-15	技术部 19-12-27 李苗	技术部 19-12-27 欧阳昌雄	技术部 19-12-27 苏朝晖
8、更改止档强度	2008-8-9	TITLE标题: POTENTIOMETER电位器 DOCUMENT NO.文号: RD16		
9、更改适用温度	2008-9-1			

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3、ELECTRICAL CHARACTERISTICS 电气性能			
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。	Max Operation Voltage 最高工作电压 150V 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: $\leq 10 \Omega$ R2,3: $\leq 20 \Omega$	
3.6、Rotational noise 转动噪音	Apply DC 20V between terminals 1-3 to measure the noise voltage . (rated voltage $\leq 20V$. apply by rated voltage) 在端子1-3间加直流电压20V(额定电压 $\leq 20V$,则以额定电压值测试),测定的杂音电压。 Slide speed : 1 Cycles/3s 滑动速度: 1来回/3秒	100mVp-p Less than 100mVp-p 以下	
3.7、Tracking error 连动误差	The voltage of 2 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'). It should be the same standard with the first measuring result . If there is not any doubt about the results, this DC. voltage shall be used as the test voltage. 在端子1-3间,1'-3'间,输入频率1KHz,电压2V的正弦波实值,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: 10M Ω or more 电压表输入阻抗:10M Ω 以上	此项不适用	
3.8、Insulation resistance 绝缘阻抗	Measurement shall be made under the condition which a voltage of DC 500V 60s \pm 5s is applied between individual terminals and bracket. 在端子和安装支架间施加电压 DC250V 60 s \pm 5s。	Between individual terminals and bracket 100M Ω MIN. 端子与安装支架间电阻100M Ω 以上	
3.9、Dielectric strength 耐电压	A voltage of 250V AC shall be applied for 60s \pm 5s between individual terminals and bracket. 在端子和安装支架间施加 AC 250V 电压60s \pm 5s	Without arcing or breakdown. 不得有漏电、绝缘破坏。	
3.10、Switch contact resistance 开关接触电阻	Voltage step-down test at DC 5V 1mA 用DC 5V 1mA 电压降下法测定。	$\leq 100m \Omega$	此项不适用
3.11、Switch power rating 开关承受负载		$\leq 12V$ DC 1A	此项不适用
文控编号: RD-002	编制时间: 04.12.09		
版本号: 10	变更时间: 2016-10-15	DSGD: 主办 技术部 19-12-27 李苗	CHKD: 审查 技术部 19-12-27 欧阳昌雄
REVISION变更记事: 10、重新整理	变更时间: 2008-8-9	APPD: 核准 技术部 19-12-27 苏朝晖	TITLE标题: POTENTIOMETER电位器
8、更改止档强度	2008-8-9		DOCUMENT NO.文号: RD16
9、更改适用温度	2008-9-1		

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4 Mechanical characteristics 机械性能					
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±10°			
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	5.5± 4.5 mNm (55±45 gf.cm)			
	Shaft shall be able to be rotated at the temperature at -10°C 在-10°C温度条件下轴柄能转动				
4.3、Number of Detents Click 定位数目	此项目不适用	<input type="checkbox"/> without Detent 没有定位 <input type="checkbox"/> 1C (Center Detent中段功能) <input type="checkbox"/> Other其它 ___C			
4.4、Detent Torque 定位力矩	Rotation speed 60°/s 旋转速度 60°/s 此项目不适用 Measured at standard atmospheric conditions 标准状态下测定	16 ± 14 mNm (160±140 gf.cm)			
4.5 Shaft stop strength 止档强度	The following torsion moment load of 0.3 N.m (3Kgf.cm) shall be applied to the shaft for 5s at both ends (after fixation) 固定后于旋转前后两端末加0.3 N.m(3Kgf.cm)力矩并持续5秒.	Electrical characteristics shall be satisfied with specification 电气性能符合规定要求			
4.6、Nut tightening strength 螺母紧固强度	metal :Nut tighten with 8.0kgf.cm 金属: 螺母紧固强度为8.0kgf.cm plastic : Nut tighten with 4.0kgf.cm 塑胶: 螺母紧固强度为4.0kgf.cm	No excessive uneven rotation feeling occur 不可有回转发生(打滑)。			
4.7、Shaft push & pull strength 轴向推拉强度	Push & pull static load of 50 N (5kgf) shall be applied to the shaft in perpendicular to axial directions for 10 s (After soldering of the PC board) 在轴端, 沿轴向施加50 N(5 kgf)的静负荷力推和拉各10秒钟 (焊锡固定在PCB上)	Without damage or excessive play in shaft. No excessive abnormality in rotational feeling. And electrical characteristics shaft be satisfied. 轴无破损, 旋转、电气性能无异常。			
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 0.7×L/20mm p-p以下 L is the length between mounting surface and measuring points L: 固定面到测试点的距离			
4.9、Terminal strength 端子强度	A static load of 12 N(1.2kgf) shall be applied to the terminals for 10 Seconds in any direction(After fixation) 固定后与端子加12 N (1.2kgf)的力矩并保持10秒	Electrical characteristics shall be satisfied.with specification 电气性能符合规定要求			
4.10、Switch working angle 开关工作角度	Working angle of the switch between On and Off 开关从开到关或从关到开的工作角度 此项目不适用	50°±5°			
4.11、Switch working torque 开关工作力矩	Working torque of the switch between On and Off 开关从关到开或从开到关所需要的工作力矩 此项目不适用	25 ±20 mNm (250±200 gf.cm)			
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%以上焊锡附着			
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版本号: 10	04.12.09				
REVISION变更记事:	变更时间:	DSGD.主办	CHKD 审查	APPD.核准	TITLE标题:
10、重新整理	2016-10-15				POTENTIOMETER电位器
8、更改止档强度	2008-8-9				DOCUMENT NO.文号:
9、更改适用温度	2008-9-1				RD16

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RD16 系列规格书

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5 ENDURANCE CHARACTERISTICS耐久性能					
Item 项 目	Conditions 条 件	Specifications 规 格			
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 Application time of soldering iron: within 3 s. 温度350°C以下, 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: $t=1.6\text{mm}$ 的覆铜板。 2. Solder flux: Flux of 0.82 specific weight in bubbling 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 : Surface temperature of board: 100°C or less; Preheating time : within 2 min. 预热: 基板表面温度100°C以下, 时间2分钟以内。 4. Soldering : Solder temperature : 260°C \pm 5°C less Immersion time:within 5 \pm 1 s 焊接: 温度260°C \pm 5°C, 时间5 \pm 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。			
5.3、 Resistance to heat 耐热性	The potentiometer shall be stored at a temperature of 70°C \pm 2°C for 120h \pm 4h 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 \pm 2°C恒温槽中120小时 \pm 4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 : \pm 20% 总阻变化值: 初期值的 \pm 20%			
5.4、 Resistance to Cold 耐寒性	The potentiometer shall be stored at a temperature of -25°C \pm 3°C for 120h \pm 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 \pm 3°C恒温槽中120小时 \pm 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 : \pm 20% 总阻变化值: 初期值的 \pm 20%			
5.5、 Damp heat 耐湿性	The potentiometer shall be stored at a temperature of 40°C \pm 2°C, with relative humidity of 90% to 95% for 120h \pm 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.. shall be made.温度40°C \pm 2°C,湿度90%-95%,恒温恒湿槽中放置120小时 \pm 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: 20M Ω or more 绝缘阻抗: $\geq 20\text{M}\Omega$ Noise : 150mV p-p or less 转动噪音: $\leq 150\text{mV p-p}$			
文控编号: RD-002	编制时间				
版本号: 10	04.12.09				
REVISION变更记事:	变更时间:	DSGD 主办 技术部	CHKD 审查 技术部	APPD 核准 技术部	TITLE标题:
10、重新整理	2016-10-15	19-12-27 李苗	19-12-27 欧阳昌雄	19-12-27 苏朝晖	POTENTIOMETER电位器
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RD16 SERIES GENERAL SPECIFICATION

RD16 系列规格书

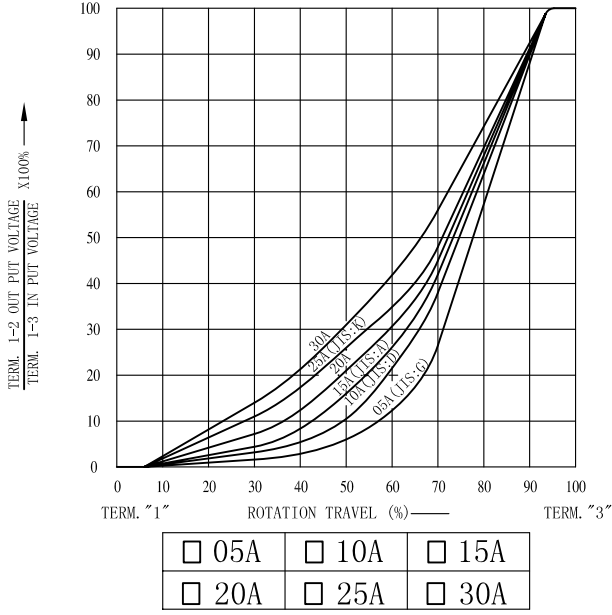
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5 ENDURANCE CHARACTERISTICS耐久性能																				
Item 项 目	Conditions 条 件			Specifications 规 格																
5.6、Change of temperature 温度循环试验	<p>The potentiometer shall be subjected to 5 successive change of temperature cycles, each as shown in table below. Surface moisture shall be removed. And measure the potentiometer which shall be subjected to standard atmospheric conditions for 1 hour.</p> <p>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。</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 40%;">Temperature 温度</th> <th style="width: 55%;">Duration 放置时间</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-10°C±3°C</td> <td style="text-align: center;">30 min (分)</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">standard atmospheric conditions 常温</td> <td style="text-align: center;">10 to 15 min(分)</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">70°C±2°C</td> <td style="text-align: center;">30 min (分)</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">standard atmospheric conditions 常温</td> <td style="text-align: center;">10 to 15 min(分)</td> </tr> </tbody> </table>				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)	<p>Change in total resistance is relative to the value before test : ±30% 总阻变化值: 初期值的±30%</p> <p>Insulation resistance:50MΩ or more 绝缘阻抗: 50MΩ以上</p> <p>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.</p> <p>Appearance: There shall be no deformation or cracks of molded part. 外观: 塑胶部分无形成破裂</p>	
	Temperature 温度	Duration 放置时间																		
1	-10°C±3°C	30 min (分)																		
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3	70°C±2°C	30 min (分)																		
4	standard atmospheric conditions 常温	10 to 15 min(分)																		
5.7、Endurance 耐久性	<p>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.</p> <p>And the moving contact shall be subjected to 600 cycles per hour, total 10000±200 cycles. (5000 to 8000continuous cycles for 24h).</p> <p>轴以600周/小时(来回算1周)的速度旋转,24小时旋转5000~8000周,有旋转角度超过90%,共10000±200周。</p>			<p>Change in total resistance is relative to the value before test : ±15% 总阻变化值: 初期值的±15%</p> <p>Rotational Noise: 150mV p-p less than 转动噪音: 150mV p-p 以下</p> <p>Rotational torque:No less than 50% of the initial torque . 旋转力矩: 不低于初期规格值的50%。</p> <p>Residual resistance 残留电阻: R1,2:< <u>20</u> Ω; R2,3:< <u>40</u> Ω</p>																
文控编号: RD-002	编制时间																			
版本号: 10	04.12.09																			
REVISION变更记事:	变更时间:	DSGD.主办	CHKD 审查	APPD.核准	TITLE标题:															
10、重新整理	2016-10-15				POTENTIOMETER电位器															
8、更改止档强度	2008-8-9				DOCUMENT NO.文号:															
9、更改适用温度	2008-9-1				RD16															

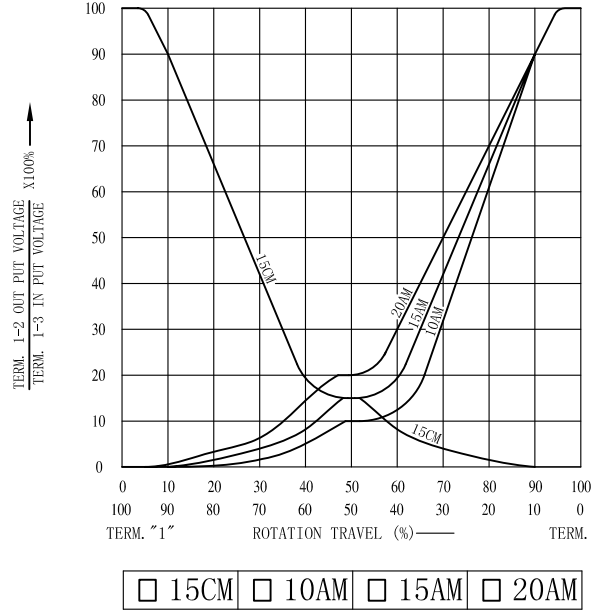
STANDARD RESISTANCE TAPER (電位器専用)

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

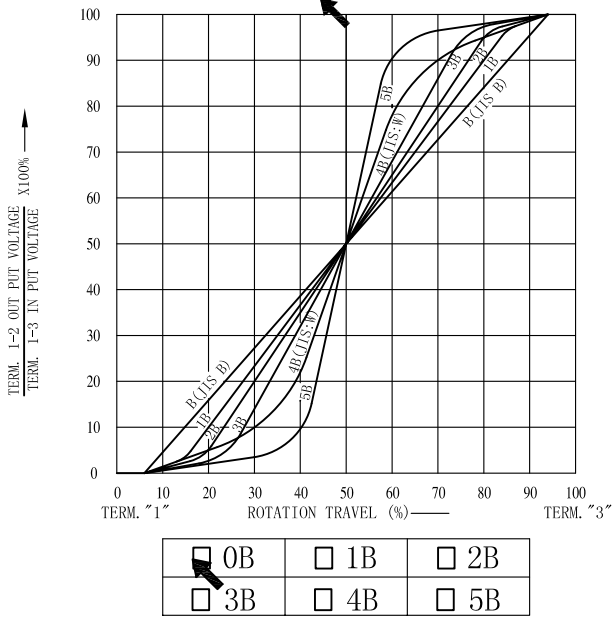
TAPERS (A) SERIES



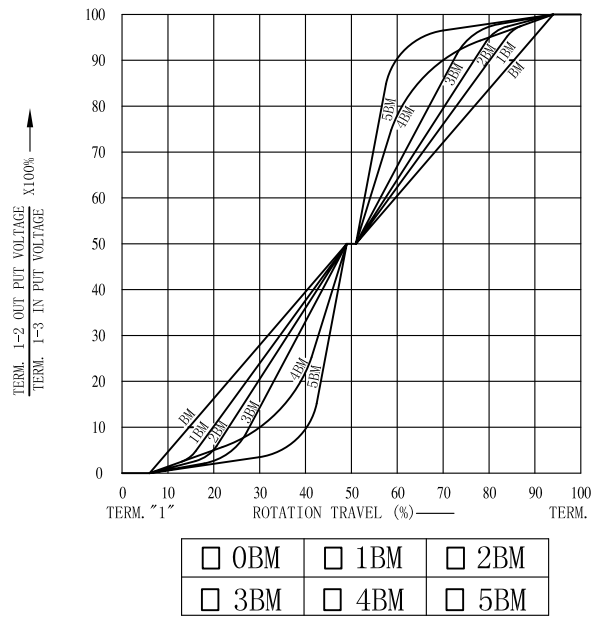
TAPERS (A&C) WITH 50% TAP



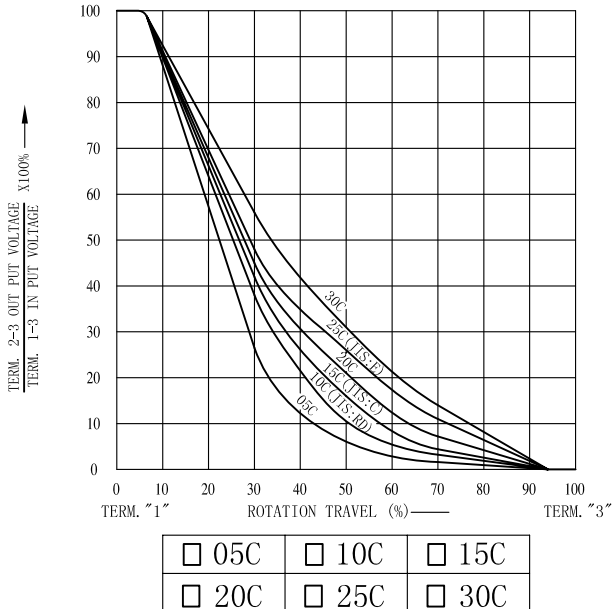
TAPERS (B) SERIES



TAPERS (B) WITH 50% TAP



TAPERS (C) SERIES



TAPERS (M & N)

