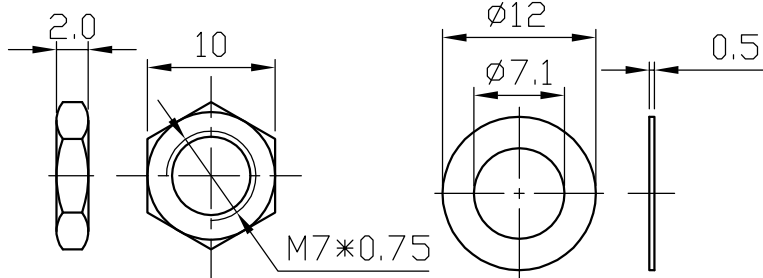


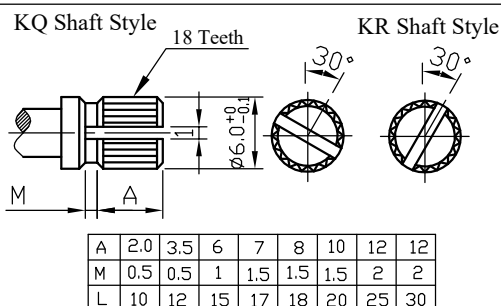
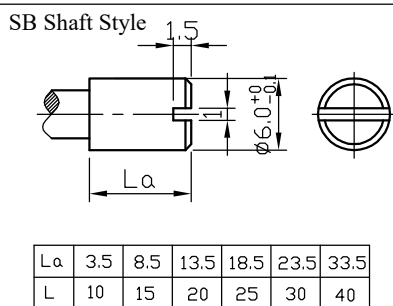
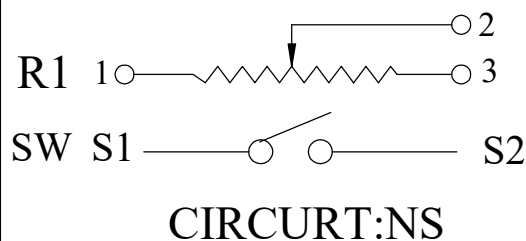
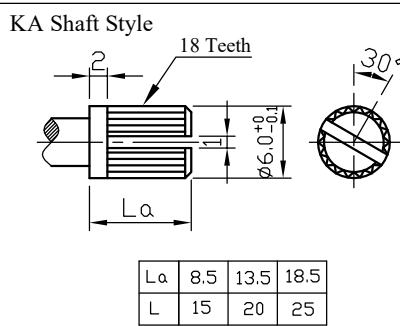
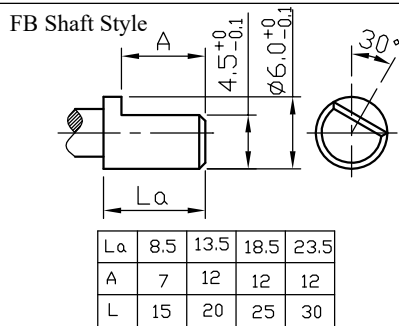
SHAFT SHOWN IN FULL C.C.W. POSITION

Nut 螺母(可选项)

Washer 垫圈(可选项)



轴的类型:



KB Shaft Style

01			04		
00	ORIGINAL DRAWING	2010-06-24	03		
.ISSU.	REVIATION	DATE	02		
		TOL.UTHERWISE SPEC	深圳明佳创新电子有限公司		
		BASIC DIMENSIONS	TOL.	型号	R16101NSXBN1
DSGD.	CHKD.	APPD.	L ≤ 10	TYPE NO.	
			L > 10		
	SCALE	X. XX:1	100 ≤ L	图号	MJ-R1610-0010
	UNIT	mm		DRAWING NO.	

R161 SERIES GENERAL SPECIFICATION

R161系列规格书

1、General一般事项

1.1 Scope

The specification applies to model R161 type mainly used for consumer products, Rotational(1 shaft,1 dual).

适用范围

此规格书适用于R161机型，
回转形（1轴，1联）。

1.2 Operating temperature range: -30℃~60℃

使用温度范围： -30℃~60℃

1.3 Storage temperature range: -40℃~70℃

保存温度范围： -40℃~70℃

1.4 Test conditions

试验状态

Standard atmospheric conditions:

标准状态:

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

无特别规定之实验及测定时以温度:

15~35℃, 相对湿度: 25~85%,

Ambient temperature:15~35℃ Relative humidity:25~85%

气压: 86~106kpa之标准状态测定。

Air pressure: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（温度: 20±1℃, 相对湿度:

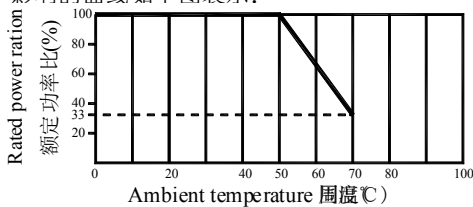
(Ambient temperature:20±1℃ Relative humidity:63~67%

63~67%, 气压: 86~106kpa)

Air pressure:86kpa to 106kpa).

为标准测定。

2 ELECTRICAL CHARACTERISTICS电气特性

Item 项目	Conditions 条件	Specifications 规格
2.1 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。	_____KΩ ±20%
2.2 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。	_____ Taper线性 Refer to the attached 参见附页
2.3、Power rating 额定功率	Power rating is based on continue 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: 	B:0.1W A、C: 0.05W
2.4、Residual resistance 残留电阻	Contact brush stop at the end of the (A).Resistance Between terminals 1 and 2, Terminals 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	$R \leq 10K \Omega$ _____Ω $10K \Omega < R < 500K \Omega$ _____Ω $R \geq 500 K \Omega$ 0.1%max. of total resistance
2.5、Rated voltage 额定电压	Rated voltage 额定电压: $E = \sqrt{PR}$	Maximum operating voltage 最高使用电压
	Power rating P: 额定功率 (W)	Nominal total resistance R: 公称全阻抗值
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.		50V AC 10VDC


R161 SERIES GENERAL SPECIFICATION

R161系列规格书

2.6 Rotational noise 转动噪音	Apply DC20V 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)后,测定的杂音电压. Shaft rotation : 1rotation /3sec 轴转速:1回转/3秒	未滿47 Mv Less than 47mV
2.7、Gang error 同步误差	The voltage of 2 V r.m.s to 15V r.m.s .Shall be applied between terminals 1 to 3 and between terminals ①to③by measuring frequency at 1KHz. The output voltage shall be measured between terminals 1 and 2 and between terminal①to② (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 volgate 在端子1-3间, ①-③间, 输入频率1KHz, 电压2V-15v的正弦波实数值, 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.	<input type="checkbox"/> 双联Dual: R1-R2: $\pm 3dB$ or more For volume Control 音量用 -40~0dB R1-R2: $\pm 3dB$ 以下 <input type="checkbox"/> 单联Single: 无
2.8、Insulation resistance 绝缘阻抗	A voltage of 250V DC shall be applied 1 min,after which measurement shall be made DC.250V 1分钟 Between individual terminals and frame/shaft 在端子、支架与轴芯间	100M Ω or more 100M Ω 以上
2.9、Dielectric strength 耐电压	Applying 2000V AC measure for 1minute. Applied position: between terminal and frame. Between terminal and shaft. 施加2000V之交流电压,测试1分钟。 测试位置: 端子和外壳, 端子和轴心间。	Electrical characteristics shall be satisfied with specification 电气性能符合规定要求
3 MECHANICAL CHARACTERISTICS机械特性		
3.1、Total mechanical rotation 全回转角度	Angle of effective rotation 有效旋转角度	$300^{\circ} \pm 5^{\circ}$
3.2、Rotational torque 旋转力矩	Rotational speed standard atmospheric conditions 常温5°C至35°C 旋转速度 S 300°/3秒 -10° C	20~200gf.cm 450gf.cm or less(以下)
3.3、Shaft stop strength 止档强度	The following torsion moment load of $\geq 3kgf.cm$ shall be applied to the shaft for 10 ± 1 sec at both ends (after fixation) 固定后于轴转至末端加 $\geq 3kgf.cm$ 力矩并持续10 ± 1 秒.	Electrical characteristics shall be satisfied with specification 电气性能符合规定要求
3.4、Shaft push & pull strength 轴向推拉强度	Push & pull static load of 7kgf shall be applied to the shaft in vertical with axial directions for 10 seconds .(After soldering of the PC board). 固定后距轴垂直的端面方向加7kgf并保持10秒。(产品焊锡固定在PCB上)	Shaft play in axial direction 0.4 Max 轴向虚位间隙0.4以内
3.5、Shaft wobble 轴摆动	A momentary load of 500gf shall be applied at the point 5mm from the tip of the shaft in a direction perpendicular to the axis (after fixation) 固定后电位器在与轴心末端往下5mm处施加500gf静载荷。	$0.7 \times L / 30mm$ p-p L is the length between mouting surface L: 固定面到测试点的距离
3.6、Click torque C.C. 扭力		<input type="checkbox"/> 100~300 gf.cm <input type="checkbox"/> 无 <input type="checkbox"/> 1C <input type="checkbox"/> 41C
4 ENDURANCE CHARACTERISTICS耐久性能		
4.1、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 $\pm 5^{\circ}C$ for 3 ± 1 s . 端子在260 $\pm 5^{\circ}C$ 温度的焊锡槽内浸锡3 ± 1 秒.	A new uniform coating of solder shall cover 75% minimum of the surface being immersed. 浸渍面须有75%以上焊锡附着.
	Method Soldering 手焊条件: Bit temperature 温度300° C Application time of soldering 时间: 3 ± 1 秒 Subjected to be soldered:Cooper clad laminated phenol in one surface of 1.6mm	Change in total resistance is relative to the value before test : $\pm 5\%$

R161 SERIES GENERAL SPECIFICATION

R161系列规格书

<p>4.2、Resistance to soldering heat 焊锡耐热性</p>	<p>thickness,Do not use double side through PCB. 使用基板: T=1.6mm厚单面铜泊积层板面 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, 而且助剂不可流入基板表面上。 Preheating :Surface temperature of substrate shall be settled qithin 100°C in 2 minutes. 预热: 基板表面温度100° C以下, 2分钟以内。 Wave Soldering波峰焊条件: Bit temperature 温度260±5°C Application time of soldering 时间: 3 ±1秒</p>	<p>Without visual deformation or terminal loosening.,Electrical characteristics shall be satisfied with specification. 总阻变化值: ±5% 外观无变形,端子无松动。 电气性能满足规定要求。</p>															
<p>4.3Resistance to heat 耐热性</p>	<p>The potentiometer shall be stored at a temperature of 70±2°C for 240±8h in a thermostatic chamber.Then the potentiometer shall be measured after maintaining at standard atmospheric conditions for 1.5h, in order to remove surface moisture . 温度70±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。</p>	<p>Change in total resistance is relative to the value before test : +5/-30% 总阻变化值: 初期值+5/-30%</p>															
<p>4. 4、Resistance to cold 耐寒性</p>	<p>The potentiometer shall be stored at a temperature of -40±2°C for 96h 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±2°C恒温槽中96小时放置后, 置于常温常湿1小时除去水滴后, 1.5小时内测定。</p>	<p>Change in total resistance is relative to the value before test :±20% 总阻变化值: 初期值的 ±20%</p>															
<p>4.5、Damp heat 耐湿性</p>	<p>The potentiometer shall be stored at a temperature of 40±2°C, with relative humidity of 90% to 95% for 96±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±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。</p>	<p>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 DC 250V 绝缘阻抗: 20M Ω DC 250V Noise : 150mV p-p less than 转动噪音: 150mV p-p 以下</p>															
<p>4.6、Change of temperature 温度循环试验</p>	<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 . 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" data-bbox="292 1413 1094 1581"> <thead> <tr> <th></th> <th>Temperature 温度</th> <th>Duration放置时间</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-10±3°C</td> <td>30 min (分)</td> </tr> <tr> <td>2</td> <td>standard atmospheric conditions 常温</td> <td>10 to 15 min(分)</td> </tr> <tr> <td>3</td> <td>70±2°C</td> <td>30 min (分)</td> </tr> <tr> <td>4</td> <td>standard atmospheric conditions 常温</td> <td>10 to 15 min(分)</td> </tr> </tbody> </table>		Temperature 温度	Duration放置时间	1	-10±3°C	30 min (分)	2	standard atmospheric conditions 常温	10 to 15 min(分)	3	70±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% Insulation resistance:20M Ω DC 250V 绝缘阻抗: 20M Ω DC 250V Withstand Voltage AC 300V 1minute Appearance: There shall be no dafo- rmation 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±3°C	30 min (分)															
2	standard atmospheric conditions 常温	10 to 15 min(分)															
3	70±2°C	30 min (分)															
4	standard atmospheric conditions 常温	10 to 15 min(分)															
<p>4.7、Endurance 耐久性</p>	<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. And the moving contact shall be subjected to 600 cycles per hour. (5000 to 8000 continuous cycles for 24h).min 15000±200 cycles. 轴以600周/小时(来回算1周)的速度旋转 (24小时只能连续5000~8000周), 有效旋转角度超过90%, min 15000 ±200周。</p>	<p>Change in total resistance is relative to the value before test : ±20% 总阻变化值: 规格值的±20% Rotational noise: 150mV p-p less than 转动噪音: 150mV p-p 以下 Residual resistance:Two times of priginal 残留: 初始值的两倍</p>															
<p>Document control No. : 文控编号:R161-0001</p>	<p>编制时间 10.07.12</p>	<p style="text-align: center;"> 深圳明佳创新电子有限公司</p>															
<p>Version number 版本号: 00 REVISION变更记事</p>	<p>变更时间</p>		<p>DSGD.主办 CHKD.审查 APPD.核准</p> <p>TITLE 标题: R161 POTENTIOMETER R161电位器 DOCUMENT NO.文号: R161-0001</p>														