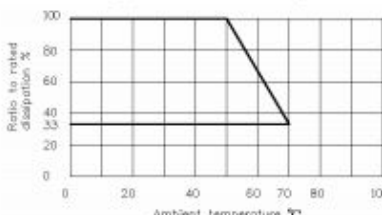


一、ELECTRICAL CHARACTERISTICS 电气特性

日期:2015 年 4 月 8 日

序号 NO.	项 目 ITEM	性 能 PERFORMANCE	测试条件 TEST CONDITIONS
1	Total resistance 全阻值	<div> <div>■ 5K±10%</div> <div>□ 50K±20%</div> <div>□ 100K±20%</div> <div>□ 120K±20%</div> </div>	Between terminal 1 and terminal 3 1-3 端子间
2	Resistance taper 阻抗特性型式	Type B; Refer to attached drawing “Resistance taper characteristics” B 型: 见附页 “阻型特性图”	Percentage of the voltage of terminal 1-2 to the voltage of terminal 1-3. 端子 1-2 电压对端子 1-3 电压的百分比。
3	Rated voltage 额定电压	Linear Taper B: AC 50V DC 5V B 型: AC 50V DC 5V	$E = \sqrt{PR}$ E:额定电压 Rated voltage(V) P:额定功率 Rated power(W) R:公称全阻值 Nominal total resistance(Ω) The rated voltage is calculated by above formula. When the rated voltage exceeds the maximum operating voltage, the maximum operating voltage should be the rated voltage. 额定电压按以上公式计算, 当额定电压超过最大工作电压时, 最大工作电压即为额定电压。
4	Rated power 额定功率	Linear Taper B: 0.0125W B 型: 0.0125W	The rated power should be changed according to the following chart when the ambient temperature changed. 它与环境温度按以下曲线变化。 Derating curve of rated dissipation 

二、MECHANICAL CHARACTERISTICS 机构特性

序号 NO.	项 目 ITEM	性 能 PERFORMANCE	测试条件 TEST METHODS AND REFERENCE
1	Figure of lever operation 摇杆动作形式	Circular operating 圆形式	/

2	The stopper strength of the lever 摇杆止动强度	More than 3.1Kgf.cm 3 seconds min 大于 3.1Kgf.cm, 至少 3 秒钟	Apply side force on the lever perpendicular to the lever's axial direction.. 垂直于摇杆的力作用于摇杆上.
3	Pull strength of lever 摇杆拉拔强度	More than 5.0 Kgf.cm 3 seconds min 大于 5.0Kgf.cm, 至少 3 秒钟	Apply specified pull force on the lever upward. 作用于摇杆上, 沿摇杆方向向上.
4	Push Strength of lever 摇杆推强度	More than 3.0 Kgf.cm 3 seconds min 大于 3.0Kgf.cm, 至少 3 秒钟	Apply specified push force on the lever downward. 作用于摇杆上, 沿摇杆方向向下.
5	Operating force of lever 摇杆作用力	<input type="checkbox"/> 160±40 gf <input type="checkbox"/> 220±40 gf	Test position: More than 10 degrees deflection of lever. 摇杆偏斜 10 度以上之位置测定.
6	Accuracy of reset position of lever 摇杆复归精度	±5°	Measure the angle between the lever and the axial center line after the lever pushed to the direction of X-X(Y-Y) and resets. 摇杆推向 X-X(Y-Y)方向自由复归后测摇杆与垂直中心线的角度.
7	Operation angle of lever 摇杆使用有效角度	60° ± 6 °	The maximum angle of the lever pushed to the direction of X-X and Y-Y. 摇杆推向 X-X(Y-Y)方向的最大角度.

三. ENDURANCE CHARACTERISTICS 耐久性能

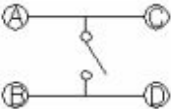
序号 NO.	项 目 ITEM	性 能 PERFORMANCE	测试条件 TEST CONDITIONS
1	Free falling 自由落下试验	No damage and lever deformation, but deformations of terminals and molded parts are allowed. 无不良产生,端子变形除外.	Height: 75cm Number of falls: 3 times 从高度为 75 厘米落下测试 3 次后

2	Dry heat 耐热性	Variation of total resistance should be within $\pm 5\%$ to -30% . To be operated mechanically. 全阻值变化要在 $\pm 5\%$ 以内， 机械方面能动作。	Test temperature: $80 \pm 2^\circ\text{C}$, Test duration: $96 \pm 4\text{h}$, Exposure the room temperature: 1 to 2h. 测试温度: $80 \pm 2^\circ\text{C}$, 时间: $96 \pm 4\text{h}$ 小时， 室温保持 1 至 2 小时。
3	Cold 耐寒性	The total resistance change should be within $\pm 20\%$. To be operated mechanically. 全阻值变化要在 $\pm 20\%$ 以内， 机械方面能动作。	Test temperature: $-30 \pm 3^\circ\text{C}$, Load condition: No load, Low temperature exposure: $96 \pm 4\text{h}$ Exposure to room temperature: 1 to 2 h 测试温度: $-30 \pm 3^\circ\text{C}$, 无负载， 时间 96 ± 4 小时， 室温保持 1 至 2 小时。
4	Damp heat 耐湿性	Insulation resistance: more than $10\text{M } \Omega$ with 250V insulation resistance tester. The total resistance change should be within 20% . To be operated mechanically. 用 250V 绝缘测试机测试，绝缘阻抗 $10\text{M } \Omega$ 以上， 全阻值变化要在 $\pm 20\%$ 以内， 机械方面能动作。	Place the tested samples in the thermostat with the temperature $40 \pm 2^\circ\text{C}$ and 90% to 95% of the relative humidity for $96 \pm 4\text{ hrs}$, then drop off water and proceed test. 测试温度 $40 \pm 2^\circ\text{C}$ ，湿度 90% 至 95%，时间 96 ± 4 小时，并在恒温箱外擦干水珠后立即检测。
5	Temperature cycling test 温度循环测试	The total resistance change should be within $\pm 20\%$. To be operated mechanically. 全阻值变化要在 $\pm 20\%$ 以内， 机械方面能动作。	Place the tested samples at $-10 \pm 3^\circ\text{C}$ temperature for 30 minutes, then $60 \pm 2^\circ\text{C}$ for 30 minutes. Repeat this test for 5 times. Then test the samples two hours after the moisture are absorbed. 在低温为 $-10 \pm 3^\circ\text{C}$ 放置 30 分钟，高温 $60 \pm 2^\circ\text{C}$ 放置 30 分钟，测试 5 次。在表面湿气干燥后 2 小时后正常状态下测试。
6	Resistance to soldering 焊锡性	Not less than 3/4 of the surface dipped shall be covered with new solder. 浸锡部分表面最少 3/4 被新锡覆盖。	Temperature of solder: $235 \pm 5^\circ\text{C}$, Dipping duration: $3 \pm 0.5\text{S}$. 焊锡温度: $235 \pm 5^\circ\text{C}$, 浸锡时间: 3 ± 0.5 秒。

7	Resistance to soldering heat 焊锡耐热性	Variation of total resistance shall be within $\pm 5\%$, and terminals shall not work loose to injure electric contact, after test. 全阻值变化 $\pm 5\%$ 以内,测试后无端子松动,不会损坏电气接点。	Soldering temperature $260 \pm 5^\circ\text{C}$ for 5 sec. 焊锡温度 $260 \pm 5^\circ\text{C}$, 5 秒.
8	Number of cycles 耐久次数值	Total resistance \cong Initial value $\pm 20\%$. Sliding Noise: Less than 300mV. No mechanical malfunction. 全阻值变化 \cong 初始值 $\pm 20\%$. 滑动噪声: 小于 300mV. 机械方面能动作.	■ 100,000 Cycles min □ Other / Cycles min

四、SWITCH CHARACTERISTICS (FOR WITH-SWITCH TYPE)

开关规格(适用于带开关机种)

序号 NO.	项 目 ITEM	性 能 PERFORMANCE	测试条件 TEST CONDITIONS
1	Operating force 作用力	820 \pm 260 gf.cm 1000 \pm 260 gf.cm	Apply side force perpendicular to the lever's axial direction on the lever until the lever stops, measure the max force value. 将一个垂直力施加于摇杆上直到其不动为止,量取施力期间之最大值.
2	Travel 移动量	$0.5^{+0.5}_{-0.4}$ mm	Put the switch lever upward, apply 2 times of the static operating force over the vertical direction of the lever, measure the variance of the switch stroke. 将开关操作部(摇杆)置于垂直朝上,并在操作柄中央施加两倍于作动力之静负荷测量柄被压到不动时之移动距离.
3	Push strength 按压强度	No mechanical and electrical malfunction. 不得有电气及机构上之异常现象.	Put the switch lever upward, apply 3kgf of the static load over the vertical direction of the lever for 60 seconds. 将开关之操作部(摇杆)置于垂直方向,并沿操作方向加 3kgf 之静负荷 60 秒.
4	Circuit diagram 电路图		/

5	Contact resistance 接触阻抗	Less than 100 m Ω 低于 100 m Ω	Apply 2 times of the operating force of the static load on the vertical direction of the lever, measure the resistance by using the Contact Resistance Tester with 1KHZ, 20mV, 5~50mA of current. 将两倍于作动力之静负荷加于操作柄之中央以(1KHZ,20mV, 5~50mA)微电流接触阻抗计测定.
6	Insulation resistance 绝缘阻抗	More than 100 M Ω 100 M Ω 以上	A voltage of DC100V is applied between terminals for 1 minute. 以 DC100V 之电压加于端子间 1 分钟测定.
7	Withstand voltage 耐电压	There shall be no damage , arc or dielectric breakdown. 无绝缘破坏之现象	A voltage of AC 250V(50~60HZ) shall be applied for 1 min between terminals. 以 AC250V(50~60HZ)电压施加于端子间 1 分钟.
8	Rated power 额定功率	12 V DC 50 mA	Within 70℃ 小于 70℃
9	Number of cycles 开关耐久次数	Contact resistance 200m Ω MAX, No mechanical malfunction. 接触阻抗最大 200m Ω , 机械方面能动作.	<input checked="" type="checkbox"/> 100,000 Cycles min <input type="checkbox"/> Other <u> </u> Cycles min

五、General 一般事项

序 号 NO.	项 目 ITEM
1	Unless otherwise specified, test and measurement should be carried out in following condition: 如无特殊要求,试验与测试将按以下条件进行:
	Ambient temperature 温度 15°C to 35°C
	Relative humidity 相对湿度 25% to 75%
	Air pressure 气压 86 KPa to 106 KPa
2	Operating temperature range 使用温度范围 -10°C to +70°C
3	Storage temperature range 储存温度范围 -30°C to +80°C