SPECIFICATIONS

ELECTRICAL

1. Total resistance : 10k Ω ±20%
2. Rated power : 0.05 W
3. Rated voltage :

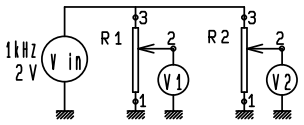
The rated voltage shall be the voltage of D.C. or A.C. (commercial frequency, effective value) corresponding to the rated power (dissipation), and be obtained from the following formula. When the obtained rated voltage exceeds the maximum working voltage given in the following, however, the maximum working voltage of the following shall be the rated voltage.

$$E = \sqrt{P \cdot R} \ (V)$$

Where E : Rated voltage (V)
P : Rated power(dissipation) (W)
R : Nominal total resistance (Ω)

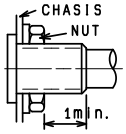
Maximum working voltage : 50 V A.C. , 10 V D.C.

4. Resistance taper : A
5. Maximun attenuation level at full C.C.W. position : 80 dBmin.
6. Inseration loss at full C.W.position : 0.1dB maX.
7. Sliding noise : Less than 100mV. (Measured by JIS C 6443)
8. Insulation resistance : More than 100 MΩ at 250V D.C.
9. Withstand voltage: 300V A.C. for 1 mimute.
10. Gang error :3 dB max.
to -40dB less than 0dB



MECHANICAL

1. Total rotational angle : 300°±5°
2. Rotational torque : 2~25mN·m (Rotational speed 60°/sec.)
3. Stopper strength : No damage with an application of 0.5N·m.
4. Resistance to soldering heat : Please refer to the attached
5. Bushing nut tightening strength : Tightening torque to be no greater than 1N·m.
*Pay attention otherwise the strength may not be assured.



6. Push/pull strength :
After installing the potentiometer, no damages with an application of push or pull force 80N for 10 seconds.
7. Shaft wobble :
The resistor shall be mounted by soldering the mounting legs on the panel and a side thrust of 50mN·m at the end of the shaft shall be applied, then the total play of the shaft shall not exceed 0.6xL/20 mmp-p.
(L is the length between mounting surface and measuring point.)

ENDURANCE

1. Rotational life : 15,000 cycles min.

NOTE

1. Operating temparature range : -10~+70°C
2. Storage temparature range : -20~+80°C
3. The items except above mentioned items shall meet or exceed JIS C 6443.
4. The use for HomeAudio.
5. This type is protected against sulfides.

SYMB	DATE	APPD	CHKD	DSGD

ALPSALPINE CO.,LTD.

APPD.	CHKD.	DSGD.	TITLE
Aug. 19,'93	Aug. 19,'93	Aug. 19,'93	
S. Aizawa	M. Satoh	Y. Saitoh	DOCUMENT NO. LX

Confidential

SPECIFICATIONS

Resistance to soldering heat :
There shall be no evidence of poor contact between resistancee element and terminals, or any physical damages as a result of soldering.

*Dip soldering :
Condition of soldering :
Soldering shall be certified with following condition.

Substrate to be soldered :
Copper clad laminated phenol board in one surface of 1.6mm thickness.

Solder flux :
Flux of 0.82 specific weight in bubbling type solder fluxcoating apparatus shall be used and bubbling surface height shall be defined substantially as half thickness of substrate.
Flux shall not flow up on substrate surface.

Preheating
Surface temperature of substrate shall be settled within 100°C in two minutes.

Dip soldering :
To be performed in 260±5°C , 5±1 sec.

Please use the above process only one or two times.

*Manual soldering :
To be performed in three seconds within 350°C.

SYMB	DATE	APPD	CHKD	DSGD

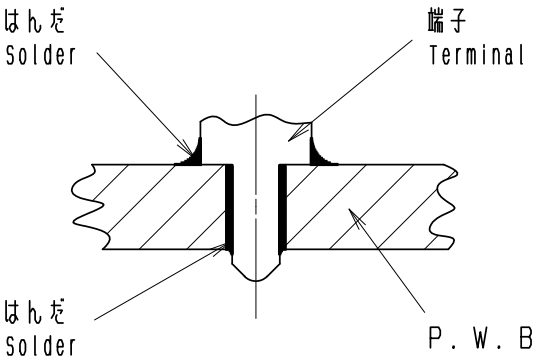
ALPSALPINE CO.,LTD.

APPD.	CHKD.	DSGD.	TITLE
Aug. 19, '93	Aug. 19, '93	Aug. 19, '93	
S. Aizawa	M. Satoh	Y. Saitoh	DOCUMENT NO. LX

Confidential

1. はんだ付けに関するその他注意事項
   Other precautions for Soldering

1） 図のようにP. W. Bの上面にはんだ付けをする配線は、お避け下さい。
Please avoid soldering on upper surface of P.W.B. as shown below.



2） 基板に挿入される金属足ははんだ付けしてご使用願います。
Please solder all inserted metal terminals and bracket to a PWB.

3） はんだ付け後、溶剤などで製品を洗浄しないで下さい。
After soldering , please not to wash or clean products by liquid such as solvent or any similar.

4） Selective solderingの場合は、Dip solderingと条件が異なりますので、
事前に貴社設備で充分確認の上条件設定をお願いします。
Please thoroughly test and decide appropriate parameters for soldering by your soldering equipment under actual condition of production.(for example , parameters for selective soldering can be different from for wave soldering.)

5） Spray flaxerの場合は、製品の実装側からflaxが浸入しないようにして下さい。
If you use spray fluxer equipment , please prevent the flux from entering the inside of product from mounting side.

SYMB	DATE	APPD	CHKD	DSGD

ALPSALPINE CO.,LTD.

APPD.	CHKD.	DSGD.	TITLE その他注意事項 （DIP/手はんだ） Other precautions (DIP/Manual soldering)
Oct. 22. 2015 S. Urushihara	Oct. 22. 2015 K. Sasaki	Oct. 22. 2015 Y. Ashida	DOCUMENT NO. C－2 （1/1）

Confidential

1. ご使用上の注意 precautions in use

1) 当製品は密閉構造ではありませんので、使用環境によって外部ガスが製品内部に侵入し接点障害を起こす場合があります。
同一セット内に以下の様な部材を使用しないで下さい。
・硫化、酸化ガスを発生する部材(例:ゴム材,接着剤,合板,潤滑剤,梱包材)
・低分子シロキサンガスを発生する部材(例:シリコン系ゴム,潤滑剤,接蒸剤)
As this product does not have hermetical structure , it is possible gas from outside get inside of product and may cause contact failure depends on using environment.
Please avoid using following materials. If you have to use any of material in parentheses , please pay special attention and confirm it does not influence to products through tests under actual using conditions.
-materials which may generate sulfide gas or oxidized gas.
(rubber , glue , adhesive , plywood , packaging material)
-materials which may generate low-molecular-weight siloxane gas.
(silicone base rubber , lubricant , glue)

2) 高湿度環境下、又は結露する環境下、液体が製品にかかる環境下では、端子間の電流リークが発生する恐れがありますのでご使用にならないで下さい。
Please not to use this product under the atmosphere with high humidity , with possibility of dew condensation or of direct splash of liquid. Because it may cause leak between terminals.

3) ツマミを挿入する際に、軸に規定荷重以上の力や衝撃荷重が加わると製品が破壊する場合があります。
ツマミの寸法や 挿入治具の圧力管理は、規定荷重以下で挿入できる設定の配慮をお願いします。
The product may have malfunction if excessive stress or impact than specified value is applied when insert knob to the shaft.
Please fix appropriate dimension for knob or fix insertion force of knob of mounting equipment which can avoid excessive stress to the product than specified value.

4) 使用温度範囲の上限、下限付近で長期間の連続使用はできません。
動作寿命の規定は常温15℃~35℃、常湿25%~85%の環境条件に限ります。
使用温度範囲の上限、下限付近で長期間の連続動作を行う場合は、機種毎に仕様規定が可能かどうか確認が必要になります。
This product can't be continuously used under high operating temperature or low operating temperature specified in this document.
Unless otherwise specified , the durability is specified only under normal conditions , temperature 15 to 35 degree Celsius and related humidity 25 to 85%.
When this product is operated at temperature near from upper or lower limit of operating temperature range , feasibility must be examined by each product specification.

5) 製品本体を規定の取付面まで挿入して水平になるように取付けて下さい。
水平にならないまま取付けますと、動作不良の要因となります。
Insert these switches to the specified mounting surface and mount them horizontally.
If not mounted norizontally, these switches will malfunction.

6) 塵埃が多い環境で使用されますと塵埃が開口部から入り出力不良や動作不良の原因となることがありますのでセット設計時に予めご配慮ください。
If this product is used under dusty conditions , dust or debris may get inside of product from openings and possible to cause output failure or malfunction. Please consider protections against dust when surrounding parts of the product are designed.

SYMB	DATE	APPD	CHKD	DSGD

ALPSALPINE CO.,LTD.

APPD.	CHKD.	DSGD.	TITLE ご使用上の注意 (共通) Precauyions in use (Common)
Oct. 15. 2015 S. Urushihara	Oct. 15. 2015 K. Sasaki	Oct. 15. 2015 Y. Ashida	DOCUMENT NO. C-4 (1/1)

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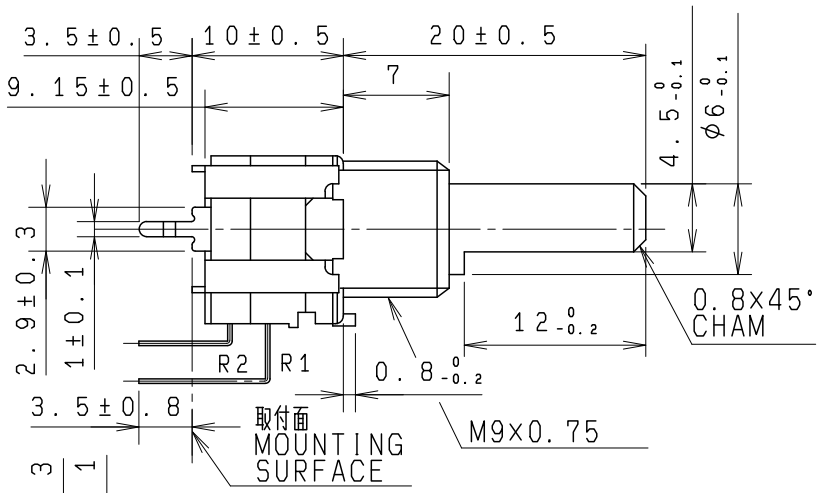
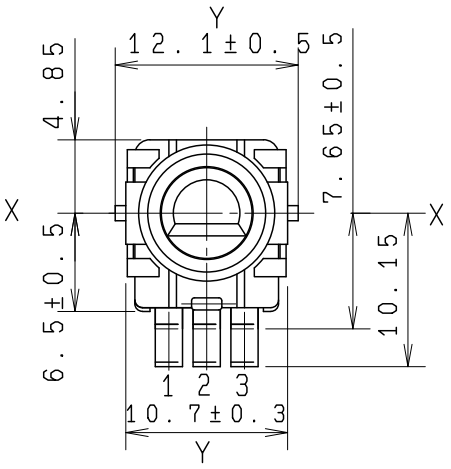
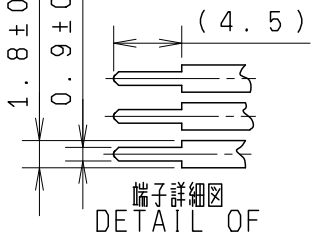
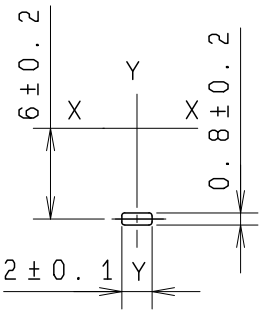




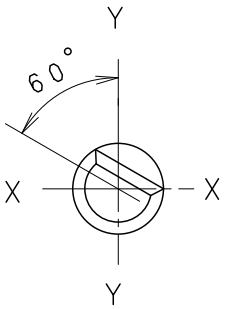


端子詳細図
DETAIL OF
TERMINALS

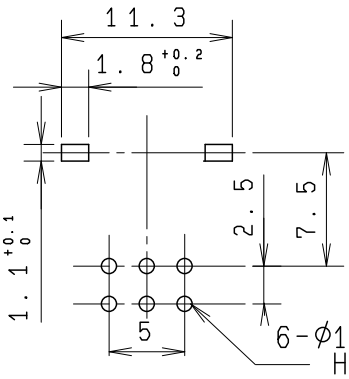


シャーシ止め 詳細図
LOCATING LUG
DETAIL

軸はセンター位置を示す
SHAFT SHOWN IN
CENTER POSITION

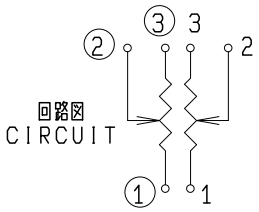


軸は、反時計方向に
回し切った状態を示す
SHAFT SHOWN
IN FULL C.C.W
POSITION.



端子取付穴寸法図（挿入側より見た図）
（許容差±0.1）
MOUNTING HOLE DETAIL
(TOLERANCE±0.1)
VIEWED FROM MOUNTING SIDE

P.W.B. 板厚 T=1.6



製品質量：7.3g
NET WEIGHT

指定なき部分の許容差 TOLERANCES UNLESS OTHERWISE SPEC	
L≦10	±0.3
10＜L＜100	±0.5
100≦L	±0.8
角度 ANGULAR DIMENSION	±5°

PART NO.	NAME	MATERIAL NAME / CODE	FINISH

SYMB	DATE	APPD	CHKD	DSGD

ALPSALPINE CO.,LTD.

DSGN. 1-設計1課 Y. Saitoh 93-10-01	SCALE 2/1	NO. RK09L12D1F20
CHKD. Y. Satoh 93-10-01		TITLE 9形1軸2連VR組立図 FIGURE
APPD. S. Aizawa 93-10-01	UNIT mm	DOCUMENT NO. K092W0013 F01