CUSTOMER'S NAME

Rapid Electronics

ALPHA REFERENCE NO.
SP14010082

SPECIFICATION

PART NO.	ALPHA MODEL NAME
	RD101F-40-10H-LB10K

MODEL NAME
MODEL NO.

APPROVAL

PREPARED BY	REVIEWED BY	APPROVED BY
鄧 2014.1.20 煥苑		李 2014-1-20. 延玲

ALPHA

台灣艾華電子工業股份有限公司

桃園市中正路1221～1223號9樓

TAIWAN ALPHA ELECTRONIC CO., LTD

9F,NO.1221,Chung Cheng Rd., Taoyuan, Taiwan, R.O.C.

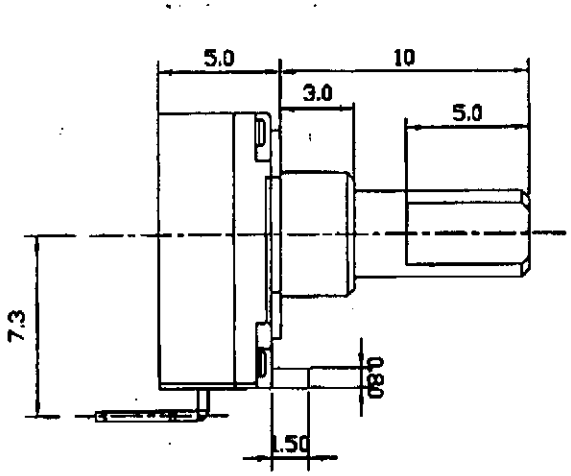
Tel: 886-3-3577799 Fax: 886-3-3577700

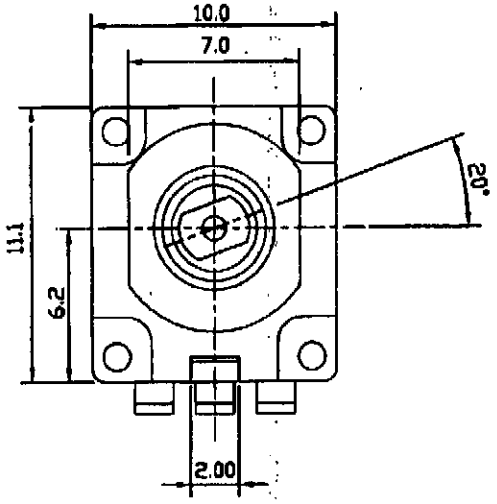
EMAIL: sales@taiwanalpha.com.tw

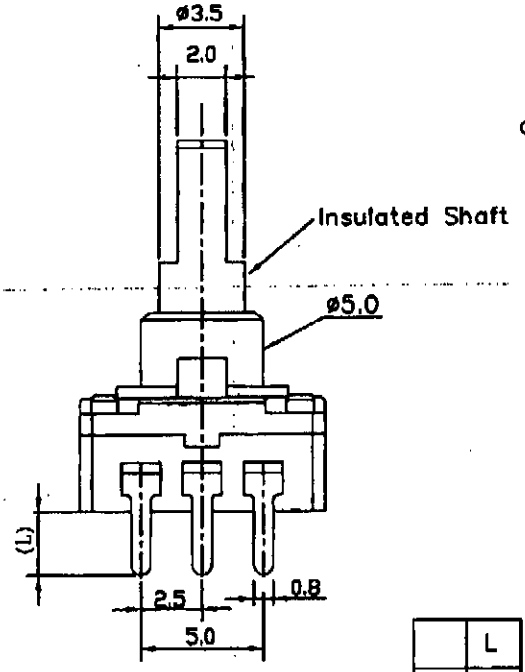
URL: http//www.taiwanalpha.com

THIRD ANGLE PROJECTION

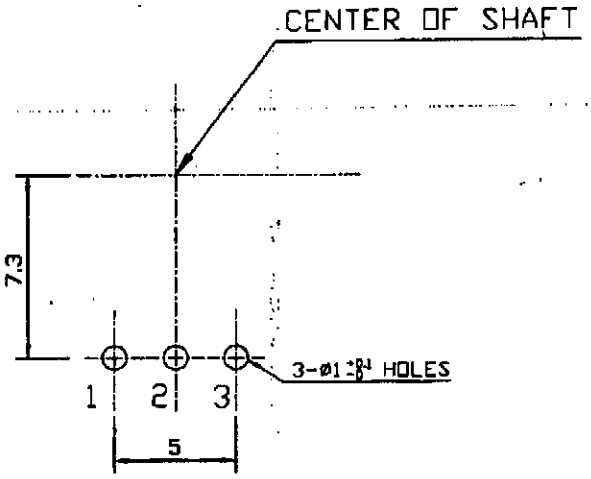
參考用圖







P.C.B MOUNTING DETAIL(TOLERANCE±0.1)
(P.C.B THICKNESS t=1.6mm)



	L
	2.6
	5.9

No.	DATE	DESCRIPTION	PART No.	NAME
				RD101F-40-10H-XXX

TOL. UNLESS OTHERWISE STATED			DIMENSION	SCALE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING No.
less than	10	± 0.3	M.M.	1/1	呂 '12.12.07	呂 '01.12.7	吳 '12.12.07	RD101F
above	10-30	± 0.5						
above	30-100	± 1.0						
above		± 3°						

TAIWAN ALPHA ELECTRONIC CO., LTD.

1、 General 一般事項：

1.1 Scope 適用範圍：

此規格為 RD101F 機種適用於消費性產品上。

This specification is applied to model RD101F types mainly used for consumer products.

1.2 Operating temperature range 使用溫度範圍 -10～+70°C

Storage temperature range 保存溫度範圍 -25～+80°C

1.3 Test conditions 試驗條件

Standard atmospheric conditions 標準狀態

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows:
Ambient temperature: 5～35°C Relative humidity : 45～85%
Atmospheric pressure: 86 kPa to 106 kPa.

無特別規定之實驗及測定時以溫度 5～35°C，相對溼度 45～85%，氣壓 86～106 kPa 之標準狀態測定。

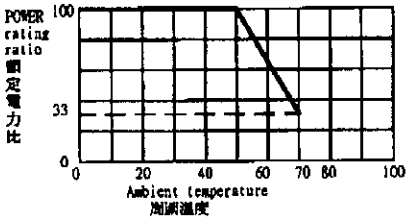
If there is any doubt about the results, measurements shall be made under the following conditions:
Ambient temperature:20±2°C Relative humidity : 60～70%
Atmospheric pressure: 86 kPa to 106 kPa.

發生判定疑問或另有特別要求則以基準狀態(溫度 20±2°C，相對溼度 60～70%氣壓 86～106 kPa)為準測定。

2、 Mechanical characteristics 機械的性能

NO	Item 項目	Conditions 條件		Specifications 規格
2.1	Total Rotational Angle 全迴轉角度			220 ± 5°
2.2	Rotation torque 回轉轉矩	Rotational speed 迴轉速度 60° /sec 秒	Standard atmospheric conditions 常溫 5°C TO 35°C	80 gf·cm or less 80gf-cm 以下
2.3	Noise 摺動雜音	Refers to JIS C6443 依 JIS C6443 測定法		Less than 200mV 200 mV 以下

NO	Item 項目	Conditions 條件	Specifications 規格
2.4	Residual Resistance 殘留阻值		No specification 無規格
2.5	Shaft stop strength 軸迴轉止動強度	The rotational torque 1.0 Kgf.cm shall be applied continuously to the shaft for 10±1 s. 持續施加旋轉扭力 1.0Kgf.cm 於軸上 10±1 秒	1.0Kgf-cm
2.6	Side Pushing Strength of shaft。 側推軸的強度	The specimen shall be soldered on the single-sided printed circuit board to be imposed with the perpendicular moment of 1.0 kgf.cm onto the tip of shaft. 試驗應焊接於單面印刷電路板上，於軸的尖端方向施加 1.0kgf.cm 力量	Variation rate of total resistance shall be within ±5 %. Para. 2.3. Rotational Noise shall be satisfied. 總電阻變化率應在±5%以內。旋轉雜音應滿足第 2.3。
2.7	Push and pull strength of shaft 軸壓拉強度	Push and pull static load of 500 gf shall be applied to the shaft in the axial direction for 10±1 s. No abnormality in electric characteristics and operating feeling. 在軸壓及拉的方向加 1.0kgf 靜負荷 10±1 秒鐘，作用後不會影響其電氣特性及操作感覺。	Variation rate of total resistance shall be within ±5 %. Para. 2.3. Rotational Noise shall be satisfied. 總電阻變化率應在±5%以內。旋轉雜音應滿足第 2.3。
2.8	Shaft wobble 軸晃動	A momentary load of 100 gf.cm shall be applied at the point 5 mm from the tip of the shaft in a direction perpendicular to the axis of shaft 軸端前 5 mm 位置加 100gf.cm 力量	Less than 0.6X(L/20)mm. L: Length from the mounting surface to the measuring point 晃動程度 0.6 x L / 20 mm 以下，
2.9	Resistance to soldering heat 銲錫耐熱性	Terminals shall be immersed into the solder bath at 300±5"C for 3 ± 0.5 seconds to a point 2 ± 0.3 mm from the top of the terminal. And then the specimen shall be left for 1 to 2 hours at the standard conditions. 接線端子應浸入到焊錫槽在 300±5"C 為 3±0.5 秒到點 2±0.3mm 從終端的頂部。在標準條件下，試樣應保留 1 至 2 小時。	After soldering, there shall be no evidence of poor contact between resistance element and terminals or any physical damages as a result of the test. 銲錫後,不能發生顯著的鬆動或接觸不良
2.10	Solderability 焊錫性	Solderability shall be measured according to JIS C 5261 (issued in 1993) . Terminals shall be immersed into the solder bath at 235±5 ℃ for 3±0.5 s in the same manner as para. 8. 10 above. and then left in the standard conditions for 1 to 2h. 依 JIS C 5261 (1993)測量銲錫性。同上述 2. 9，將端子浸於 235±5 ℃錫槽約 3±0. 5 s 後，再置於常溫下 1~2 小時。	Not less than 90 % of the surface immersed into solder shall be cover with new solder,except for cut surface. 除切面外，浸到助焊劑的表面至少需 90 %以上覆蓋焊錫。

3.3	Rating Power 額定功率	The rated power is the max. power, which is applied between term. 1-3 at the range of -10 and 50℃ under the continuous full load. At the range of 50 to 70℃, the power level shall be derated in accordance with the fig.1 below. 額定功率是在-10~50 ℃溫度間之持續負載下，施於1-3端之最大功率。在50~70 ℃間，功率依圖1所示遞減。  	0.05W
3.4	Rated voltage 額定電壓	Rated voltage(額定電壓) E=√PR . P：rating power (額定功率) E：Rated voltage (額定電壓) R：Nominal total resistance(全阻抗值) When the rated voltage exceeds the maximum operating voltage, the maximum operating voltage becomes the rated voltage. 額定電壓超過最高使用電壓時，最高使用電壓為額定電壓 Maximum operating voltage 最高使用電壓	D.C 6V
3.5	Insulation resistance 絕緣阻抗	Insulation resistance shall be measured between terminals and mounting plate with DC 250 ± 25 V Megaohm-meter. and then between terminals and shaft. 絕緣阻抗須以 DC 250 ± 25 V Mega 歐姆計量測端子和固定片之間、以及端子和主軸間。	100MΩ or more 100MΩ以上
3.6	Dielectric Strength 耐電壓	AC 250 +12.5/ 0 V shall be applied between terminals and mounting plate for 1 min +10/0 s. 在端子和安裝板間施以 AC 250 +12. 5/ 0 V 約 1 min +10/0 s.	No damage, are or insulation breakdown shall cause. 無損傷，不得造成絕緣擊穿

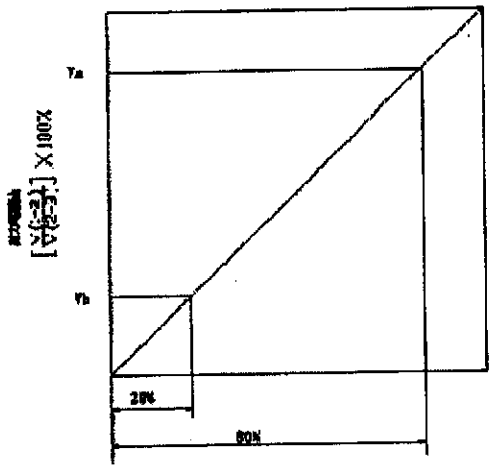
4、Endurance.耐環境性能

4.1	Low temperature 低溫試驗	The potentiometer shall be stored at a temperature of -25+/-3° C for 96 hours in a temperature chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed. And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.	Change in total resistance is relative to the value before test : +/-30%. Operating force: < 100gf. 全阻值初期值±30%. 動作力:100gf 以下。

		存放於溫度-25±3℃恒溫槽中 96 小時後,取出去除表面水滴，再置於常溫常濕 1 小時後，再進行量測。	
4.2	High Temperature 高溫試驗	The potentiometer shall be stored at a temperature of 85+/- 3°C for 96 hours in a temperature chamber. Then the potentiometer shall be maintained at standard atmospheric conditions for 1 hour，after which measurement shall be made. 存放於溫度 85±3℃恒溫箱中 96 小時後，再放置於常溫常濕 1 小時，再進行量測。	Change in total resistance is relative to the value before test : +/-30%. Operating force: < 100gf. 全阻值初期值±30%. 動作力:100gf 以下。
4.3	Humidity 耐濕試驗	The potentiometer shall be stored at a temperature of 40+/-3° C with relative humidity of 90% to 95% for 96 hours in a temperature chamber. Then the potentiometer shall be maintained at standard atmospheric conditions for 1 hour，after which measurement shall be made. 存放於溫度 40±3℃,相對濕度 90-95%恒溫恒濕槽中 96 小時後,再放置於常溫常濕 1 小時，再進行量測。	Change in total resistance is relative to the value before test : +/-30%. Operating force: < 100gf. 全阻值初期值±30%. 動作力:100gf 以下。

2.11	Slide life test without load 無負載壽命測試	One cycle is one clockwise turn, and then one counterclockwise turn. In life test, the samples are subjected to a working speed of 3000 cycles/hr for a total of 1,000,000+/-20,000 cycles. 無負載壽命測試，旋轉速度 3000 回/時(往復 1 次 1 回)，合計 1,000,000+/-20,000 次的滑動。	After Life Test : Total resistance : +/-30% 15,000cycleNoise:60mV MAX Noise : 300mV MAX after Operating force : < 100gf .壽命測試後：全阻值變化: +/- 30% 雜音：<60mv, 15, 000cycle 前 雜音：300mV 最大 滑動力: < 100gf 以內

3、Electrical characteristics 電氣的性能

3.1	Nominal total resistance 全阻抗值許容差		10 KΩ ± 20%
3.2	Resistance taper 線性	Resistance change characteristic. Measure when moving standard point B → standard point A The 100% applied voltage between 1-3 出力電壓：與端子 1-3 端附加 100%電壓，順時針旋轉至 20%-80%位置時測試處出力電壓值 	全回轉角度： 20%-80%範圍 直線性±2%以內

可變電阻無鉛焊錫與保管條件共通規格書

Common Specification of Lead-Free Soldering and Storage conditions for Potentiometers

以下焊錫條件以可變電阻置於單層 1.6mm 厚度之印刷電路板上測試爲基準.

The specification below is based on testing results of 1.6mm thickness single layer printed circuit board.

1. 手工焊錫條件 :

   For Manual Soldering :

   1-1 操作溫度最高 **350°C**，操作時間 **3** 秒以內。

   To be performed within 3 seconds at 350°C or below.

2. 自動或半自動機台焊錫條件：

   For Automated or Semi-Automated Soldering Equipments:

   2-1 使用發泡式且比重 **0.82** 以上的助焊劑，發泡高度以印刷電路板厚度一半爲標準，且助劑不能流入可變電阻基板表面及印刷電路板表面。

   Flux of 0.82 specific gravity, applied by foam fluxer, shall be used. Foam head shall be limited to the height which is half thickness of printed circuit board to be soldered. No flux should be allowed to run up onto resistive element board of potentiometer and the surface of printed circuit board.

   2-2 預熱時間不超過兩分鐘，焊錫接面 (即印刷電路板底) 最高預熱溫度不超過 **100°C**。

   Regarding preheating, the entire flow duration should not exceed 2 minutes, and soldering surface temperature (undersurface of PCB) shall be settled within 100°C.

   2-3 焊錫過程機台設定溫度在 **260°C** 以下、 **4** 秒以內。

   Solder Dipping is to be performed within 4 seconds at 260°C or below.

3. 若回轉型電位器是塑膠軸且帶有檔位，請將主軸先調整至其中一個檔位或中心檔位上才可以進行焊錫作業。

   For rotary potentiometer with plastic shaft which have centre detent or multiple detents, the shaft should be settled in relevant detent position prior to soldering process.

4. 手工焊錫、自動或半自動機台焊錫不得超過一回。

   Regardless of soldering facility and method, solder dipping or solder smearing must not be carried out more than 1 time.

註: 本項焊錫溫度條件不適用於回流焊接作業設備。

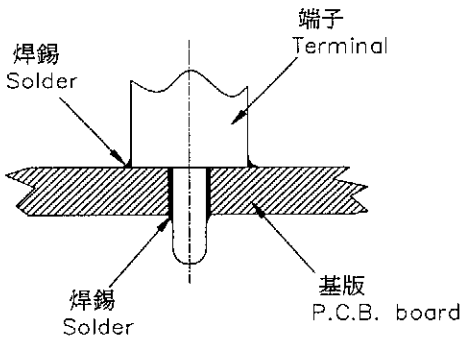
Remarks: This specification is not recommended for and applicable in reflow soldering.

焊錫注意事項:

Caution for soldering:

如圖所示，請避免 **PCB** 上層表面有焊錫

Please avoid soldering on upper surface of P.C.B. as shown.



5. 保管條件(Storage conditions):

產品需儲存在原始的包裝,以及保持常溫常濕、避免陽光直射、遠離任何腐蝕性氣體.
產品需盡快完全地使用完,建議最慢不要超過交貨後 6 個月. 產品經拆封後, 全部的數量都需迅速地使用完.

The products shall be stored in the original packaging and kept at room temperature and humidity, out of direct sunlight, and away from any and all corrosive gas. The products shall be completely used as soon as possible, but no longer than 6 months from the date of delivery. Once product packaging is opened, the complete quantity of such products shall be promptly used.