



CONQUER
功得電子

規格書

Specification For Approval

Spec NO. SFA082

型 號： ALC 系列 瓷管保險絲

Model： ALC *Series Ceramic Tube Fuses*

Designed in accordance to UL248 standard.

Conquer Electronics Co., Ltd.

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History of Change

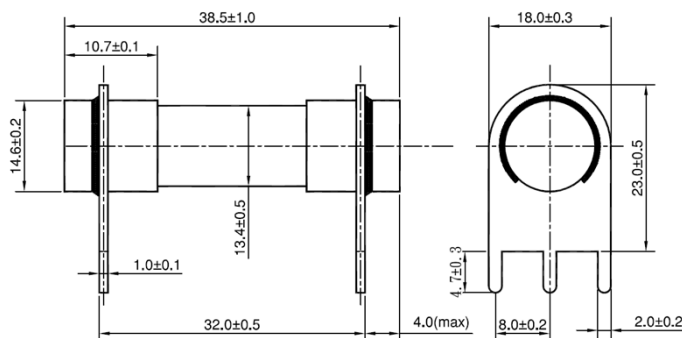
REV.	Description	Date	Drawn	Designed	Checked	Approved
1	(1)發出Issue	2014.12.01	陳柏宇	邱俊傑	蔡進義 趙宏達	蔡其翔
2	(1)版面重整	2020.03.17	林嘉豪	黃琦志	邱信雄 趙宏達	蕭煥益

1 適用範圍 Applications:

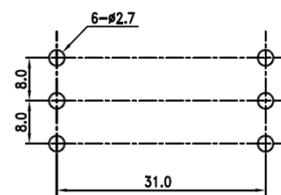
本標準適用於保護儀器、電源供應器和電話機用之筒管式熔斷保險絲。

For protecting instruments, power supplies and telephone sets.

2 形狀及尺寸 Shape & Dimensions : unit : mm



Recommend Circuit Board distance



2.1 構造形狀 Structure & Shape : 如上圖 As shown in figure above

2.2 額定電壓 Rated Voltage : 600V/250VAC

2.3 額定電流 Rated Current : 63A

3 材料 Material:

Part Name 部品名稱		Volume 數量
Copper alloy Cap 銅帽	- Nickel Plating - 鍍鎳	2
Ceramic Tube 瓷管	- Non-Transparent Ceramic Tube - 不透明瓷管	1
Terminal 附腳	- Copper (Tin plating) - 銅鍍錫	2
Fuse Element 可熔體		1

4 電氣特性 Electrical Characteristics:

- 4.1 負載容量: 通過額定電流值 100 % (亦即 $1.0 \times I_n$ A) , 能繼續通電至少 4 小時無任何熔化現象。
Loading Capacity: Loading 100% of rated current (i.e. $1.0 \times I_n$ A) the fuse shall not operate during 4 hours.
- 4.2 溫度特性: 通過額定電流值 100% (亦即 $1.0 \times I_n$ A) 1.5 小時, 繼續維持原加之電流, 每隔十分鐘測試一次, 連續測三次, 溫度不得升高, 若使用熱偶式測量方法, (Thermocouple method) 則本體溫升在 175K 以下。
Temperature: Loading the 100 % ($1.0 \times I_n$ A) for 1.5 hours, keep testing it with the original current every 10 minutes. Continue to test it for 3 times. The temperature is not allowed to be higher. The main temperature rise is below 175K by way of Thermocouple Method.
- 4.3 過載熔斷: 請參照下表。Melting due to overloading: Detail as following Table

※最大熔斷時限: Operating Characteristics

安培數 Ampere Rating	100% Rating Min.	200% Rating Max.
63A	4hrs	120sec

5 機械特性 Mechanical Characteristics:

拉力強度: 當施加軸拉力 4 kg (或 40N) 於兩端附腳 (或銅帽) , 無鬆動或損壞現象發生。
Terminal Strength : Terminals and/or caps are soldered (adhered) to withstand axial pulling force of 4 kg (or 40N) without loosening or any appearance defect

6 突波實驗 Pulse Test:

為適應電感或電容性電路所產之暫態電流, 本品於 10 倍額定電流的熔斷時間最少為 1ms
In order to stand transient current caused by inductive or capacitive circuit ,the fuses are designed to have minimum clearing time of 1 millisecond at 1000% of rated current.

7 耐久實驗 Endurance(On-Off Cycle Test) :

本實驗乃保證產品之壽命與可靠度, 施加 60% 額定電流之脈波, 1 分鐘 ON, 2 分鐘 OFF, 1000 次以後, 本品不熔斷且內阻變化 20% 以下。
This test is designed to assure a reliable fuse, setting 60% of rated current, 1 minute ON, 2 minutes OFF per cycle, the fuse can pass 1000 cycles and the difference of fuse resistance shall be less than 20%.

8 包裝 Packing :

ALC 60 PCS/ 盒 一箱數量: 600 PCS, 內盒印明下列標示: 料號、額定 (電壓、電流、遮斷能力)。
包裝材料均符合 RoHS 的環保要求, 且包裝材料不會和零件發生化學反應造成不良。
ALC 60 pcs in an inner box, Outer box Q'ty: 600 pcs The following items are indicated on the inner box catalog number、rated voltage、rated current、interrupting rating. The packing material complied with RoHS environmental protection request and shall not have the chemical reaction with the parts of fuse.

9 標記/安規認證 Mark/ Agency Approvals :

Ampere Rating	Interrupting Rating		Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A ² sec.)
63A	1500A @ 600Vac 2000A @ 250Vac 500A @ 125Vdc	**	0.000907~0.00168	9892.95

[** : 安規認證及保險絲上有安規印字標記 Agency approvals and mark on fuse body.](#)

(※ I^2t measured at 1000% rated current)

10 產品描述 Description :

例: ALC 63A 600V (PF)
 1 2 3 4

- 1 系列品名 Series Model : ALC
- 2 安培數 Ampere Rating : 63A
- 3 伏特數 Voltage Rating : 600V / 250V
- 4 無鉛標示 Pb free : (PF)

11 建議生產參數(無鉛焊錫使用) :

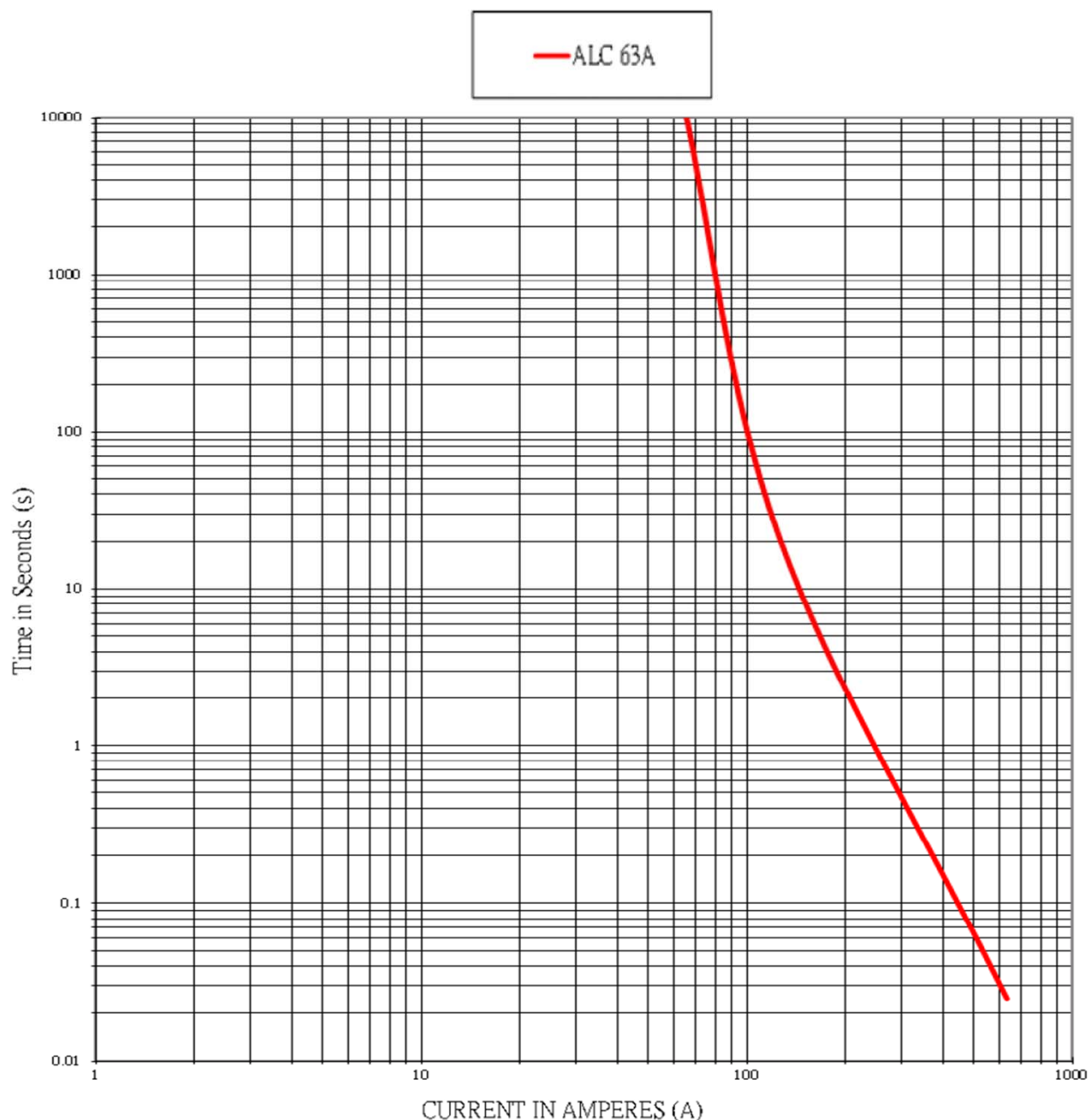
Recommended Applications Parameters(for the action to Lead-free solder alloy) :

11.1 建議手持烙鐵焊接參數 Recommended hand-soldering parameters	烙鐵溫度 : 350°C +/-5°C Soldering Iron Temperature : 350°C +/-5°C 加熱時間 : 40 seconds Max. Heating Time : 40 seconds Max.	
11.2 波峰參數 Wave soldering Parameters	預熱溫度 Pre-heat temperature 最低溫度 : 100度 Minimum Temperature : 100°C 最高溫度 : 150度 Maximum Temperature : 150°C	錫槽溫度(280度 Maximum) Solder Pot Temperature : 280°C Max 焊接時間 8 seconds max Solder Dwell Time: 8 seconds max

12 It曲線圖 Time Current Characteristic Curve :

* The curves are average value, for reference only *.

Average Melting It Curves



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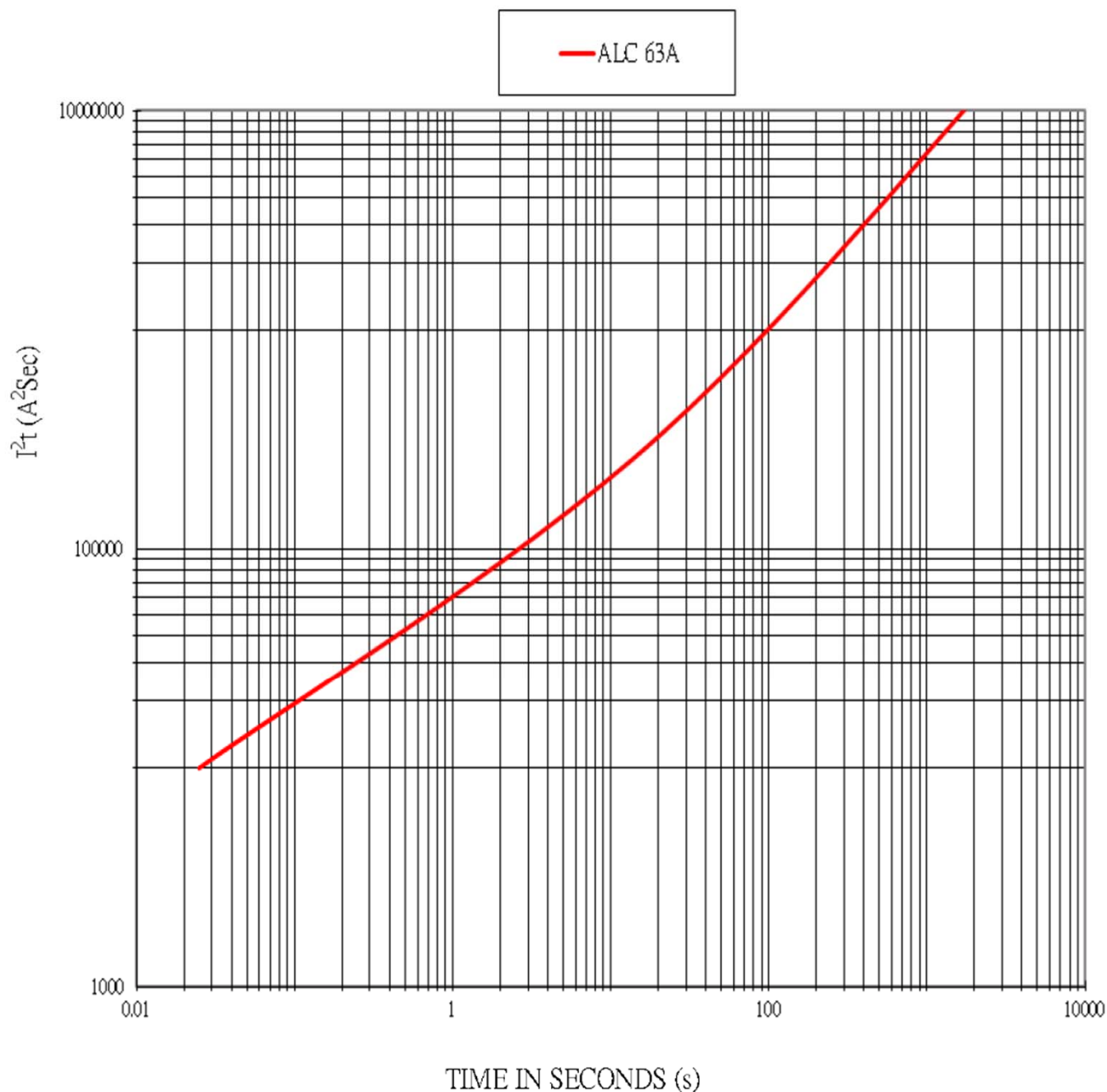
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13 I^2t 曲線圖 Average Melting I^2t Curves :

* The curves are average value, for reference only *.

Average Melting I^2t Curves



Product Characteristics & Reliability Tests

Test item	Test Description & Reference
Humidity unload test	MIL-STD-202G , Method 103B , Test Condition A Heat ($85\pm0.5^{\circ}\text{C}$) & High Humidity ($85\pm1\%$ RH), 240 hours , $\Delta R < 15\%$
Thermal shock test	MIL-STD-202G, Method 107g , Test Condition B Temperature setup : $25^{\circ}\text{C} \sim -65^{\circ}\text{C} \sim 25^{\circ}\text{C} \sim 125^{\circ}\text{C}$ Time setup : -65°C (30min) $\sim 25^{\circ}\text{C}$ (5min) $\sim 125^{\circ}\text{C}$ (30min) $\sim 25^{\circ}\text{C}$ (5min) 5 cycles , $\Delta R < 15\%$
Vibration test	MIL-STD-202G , Method 201A Frequency setup : $10 \sim 55 \sim 10\text{ Hz}$ Time setup : 1 Minute/cycle (X 、 Y 、 Z each 120 Cycles) 6hrs, $\Delta R < 15\%$
Salt spray Test	MIL-STD-202G , Method 101E , Test Condition A Salt spray concentration : $5 \pm 1\%$ Test liquid temperature : $35 \pm 0.5^{\circ}\text{C}$ 96hrs, $\Delta R < 15\%$
Solderability test	Reference IEC 60068-2-20 Temperature setup : $250 \pm 3^{\circ}\text{C}$, $3 \pm 0.3\text{sec}$ After testing, terminal electrode wetting area must be greater than 95%
Resistance to solder heat test	Temperature setup : $275 \pm 5^{\circ}\text{C}$, $10 \pm 1\text{ sec}$ $\Delta R < 15\%$

15 其他 Other :

15.1 除非另有指定，上述機械、電氣特性，係於常溫，標準狀況下測試之。

Unless otherwise specified, all tests to be performed at $25\pm 5^{\circ}\text{C}$ and 35-75% RH.

15.2 於標準狀況下儲放一年內，本品乃確保上述機械與電氣之特性。

Store under normal conditions for one year, the fuse could meet the electrical and mechanical characteristics in clause 4 and 5.

15.3 操作溫度 Operation: $-55^{\circ}\text{C}\sim 125^{\circ}\text{C}$ 。

環境溫度超出 $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 範圍，在選用保險絲規格時應考慮環境溫度對保險絲的影響如圖1所示。

When the ambient temperature is not at $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$, customers should consider the effect of ambient temperature on current-carrying capacity as shown in Fig1.

溫度降額曲線

Temperature Re-rating curve

CHART SHOWING EFFECT OF AMBIENT TEMPERATURE
ON CURRENT-CARRYING CAPACITY
正常電流負載量情況下環境溫度的影響

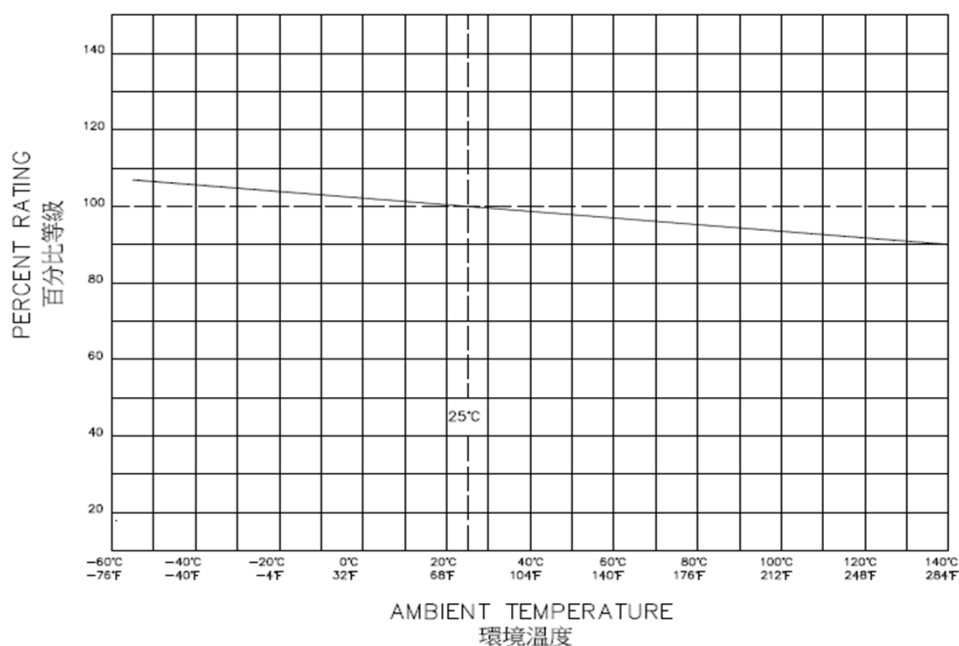


圖1 (Fig 1)

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