



功得電子工業股份有限公司  
CONQUER ELECTRONICS CO.,LTD.

# 規格書

Spec. No. SFA109

## Specification For Approval

型號：**SEJ 1.25A 250V** 方型瓷管保險絲

Model：**SEJ 1.25A 250V**

*Square Ceramic Surface Mount Fuse*

[www.conquer.com.tw](http://www.conquer.com.tw)

五股廠：新北市五股區五權五路26號(新北產業園區)  
Wugu Factory: No.26, Wucyuan 5th Rd., Wugu Dist.,  
(New Taipei Industrial Park) New Taipei City  
24888, Taiwan  
TEL: +886-2-89902189(Rep.)  
FAX: +886-2-8990-2577

北投廠：台北市北投區立德路120巷15號  
Peitou Factory: No. 15, Lite Road, Peitou,  
Taipei 11259, Taiwan.  
TEL: +886-2-2895-8895(代表號)  
FAX: +886-2-2895-8880



## History of Change

| REV. | Description                                                                               | Date       | Drawn | Designed | Checked | Approved |
|------|-------------------------------------------------------------------------------------------|------------|-------|----------|---------|----------|
| 1.0  | (1) Issue                                                                                 | 2017.08.14 | 彭正    | 邱俊傑      | 蔡進義     | 蕭順益      |
| 2.0  | (1)修改項目8:修改遮斷能力條件<br>(2)修改項目11:增加安規標記,印字方式<br>(3)修改項目13:修改溫度與效能曲線圖<br>(4)新增項目18:信賴性作業測試規定 | 2018.01.11 | 彭正    | 邱俊傑      | 蔡進義     | 蕭順益      |

Conquer Electronics Co., LTD.

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E-mail: conqfuse@ms62.hinet.net Official Website: <http://www.conquer.com.tw>

~ 筒管狀保險絲 ~

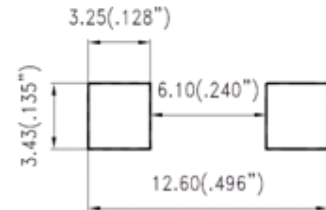
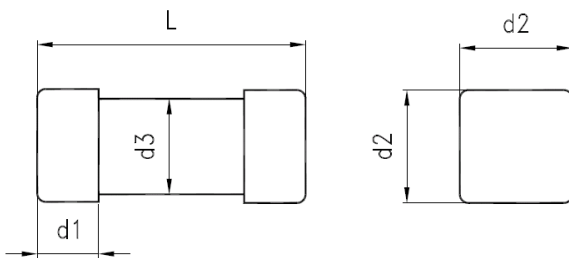
Fuses for Instrument, Power and Telephone (Non-indicating)

1 適用範圍 Available Range:

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 形狀及尺寸如下圖 單位: mm

Shape & Size as Following Illustrations.



Recommended Pad Layout

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

2.2 額定電壓 Rated Voltage: 250Vac

2.3 額定電流 Rated Current: 1.25A

3 材料 Material:

3.1 筒管本體: 不透明瓷管不可破裂或變形。

Tube (Body): Non-Transparent ceramic tube fuse. No breaking or deformation is allowed.

3.2 兩端銅蓋: 需以導電率良好之黃銅為材料。

Two brass end caps: Made of brass of good conductivity.

3.3 銅蓋處理: 銅蓋部份鍍金。

Coating of brass caps: Plating the surface with gold.

**SEJ Series**

| NO. | Part Name 部品名稱                                                | Volume 數量 |
|-----|---------------------------------------------------------------|-----------|
| A   | Square Cap - Gold Plating<br>方型銅帽 - 鍍金                        | 2         |
| B   | Square Ceramic Tube - Non-Transparent Ceramic<br>方型瓷管 - 不透明瓷管 | 1         |
| C   | Fuse Element<br>可熔體                                           | 1         |
| d1  | Height of Cap - 1.75±0.20 mm 銅帽高度                             |           |
| d2  | Dimension of Cap - 3.10±0.20 mm 銅帽尺寸                          |           |
| d3  | Dimension of Ceramic Tube - 2.65±0.20 mm 瓷管尺寸                 |           |
| L   | Body of Fuse - 10.10±0.40 mm 本體尺寸                             |           |



#### 4 電氣特性 Electrical Characteristics:

4.1 負載容量: 通過額定電流值 125 % (亦即  $1.25 \times I_n$  A), 能繼續通電至少 1 小時無任何熔化現象。

Loading Capacity: Loading 125% Rated Current (i.e.  $1.25 \times I_n$  A) for flowing, and it's available to let current keep on flowing at least 1 hour without any melting. (Can keep 1 Hour minimum)

4.2 壓降測量: 以額定電流, 通過保險絲, 其兩端壓降值不得超過最大值, 可參考 IEC60127-4 Sheet 2。

Voltage drop: Loading 100% of rated current.(ie  $1.0 \times I_n$ ), the voltage drops across the fuse-links shall not exceed the maximum values given on the relevant standard sheet ( IEC 60127-4 sheet 2 )

4.3 過載熔斷: 請參照下表。Melting due to overloading: Details as follows Table.

※最大熔斷時限 Operating Characteristics

| 安培數<br>Rating | 125% Rating | 200% Rating | 1000% Rating |       |
|---------------|-------------|-------------|--------------|-------|
|               | Min.        | Max.        | Min.         | Max.  |
| 1.25A         | 60min       | 2min        | 10ms         | 100ms |

#### 5 機械特性 Mechanical Properties:

拉力強度 Terminal Strength:

當施加軸拉力 1kg 於兩端銅帽, 無鬆動或損壞現象發生。

Caps are soldered (adhered) to withstand axial pulling force of 1kg without loosening or any harmfulness to firmly attachment.

#### 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 10ms。

In order to stand transient current caused by inductive or capacitive, the fuses are designed to have minimum clearing time of 10 millisecond at 1000% rated current.

#### 7 耐久實驗 Endurance(On-Off Test):

7.1 於 1.05 倍額定電流 ( $1.05 \times I_n$ ), 1 小時 ON, 15 分鐘 OFF, 共 100 次。

Loading 105% rated current ( $1.05 \times I_n$ ), 1 hour ON, 15 minutes OFF. Keep 100 cycles.

7.2 接著以 1.25 倍之額定電流 ( $1.25 \times I_n$ ) 通過 1 小時。

Followed by 1 Hour at 1.25 times the rated current ( $1.25 \times I_n$ ).

7.3 再以 4-2 之方式量測壓降值, 所測得之壓降值不可比原值增加 10% 以上。

The voltage drop across the fuse-link after the test shall not have increased by more than 10% of the original value measured before the test

#### 8 遮斷能力 Interrupting Rating:

1.25A :200 amperes at 280Vac

200 amperes at 250Vac

200 amperes at 63Vac

100 amperes at 250Vdc

100 amperes at 125Vdc

200 amperes at 63Vdc

### 9 包裝 Packing:

打帶軸裝：SEJ 2500pcs/軸(13")/盒；10000pcs/箱

內盒印明下列標示：料號、額定(電壓、電流、遮斷能力)及安規名稱。

包裝材料均符合RoHS或者HF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。

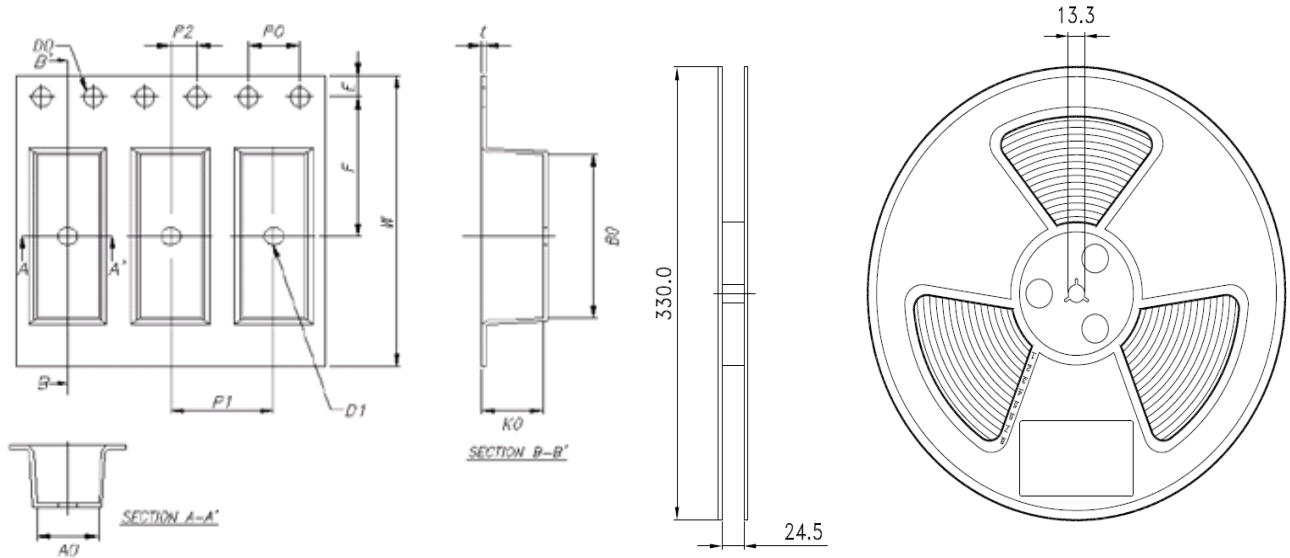
Tape in reel: SEJ 2500pcs in a reel(13") in an inner box and 10000pcs in an outer box.

The following items indicated on the box.

Mark: Catalog number, ratings (voltage, current, interrupting capacity) and safety mark.

The packing material conforms to RoHS or the HF environmental protection request.

And the packing material can't have the chemical reaction with the components.



**Taping Carrier**

**Taping Reel**

| Item      | W     | P1    | E     | F     | D0    | D1    | P0    | P2    | t     | K0    | A0    | B0    |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Spec      | 24.00 | 8.00  | 1.75  | 11.50 | 1.50  | 1.50  | 4.00  | 2.00  | 0.30  | 3.40  | 3.40  | 10.40 |
| Tolerance | +0.30 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.05 | +0.10 | +0.10 | +0.10 |
|           | -0.30 | -0.10 | -0.10 | -0.10 | -0.00 | -0.00 | -0.10 | -0.10 | -0.05 | -0.10 | -0.10 | -0.10 |

(Unit: mm)

### 10 其他 Other:

10.1 除非另有指定，上述機械、電器特性，係於常溫，標準狀況下測試之。

Unless otherwise, specified, all tests to be performed at 25±5°C and 35-75% RH.

10.2 於標準狀況下儲放一年，本品乃確保上述機械與電氣之特性。

After one year's storage under normal condition, this item is guaranteed to meet the requirements mentioned above.

10.3 使用於此產品之材料中，使用高溫熔化型之焊錫，此焊錫成份中鉛含量大於85%，故此產品符合RoHS指令(2011/65/EU)要求之焊錫含鉛量超過85%之排除條款規範。

Because the materials used in these fuses include high melting temperature type solder and this solder contains more than 85% lead (Pb), so these products can conform to the exempts of the requirements of RoHS Directive (2011/65/EU).



11 標記/安規認證 Mark/Safety Certification:

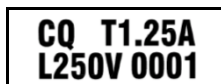
SEJ

| Mark<br>Approvals |   |   |   |   | Nominal Resistance<br>Cold Ohms | Nominal Melting I <sup>2</sup> T<br>A <sup>2</sup> Sec |
|-------------------|---|---|---|---|---------------------------------|--------------------------------------------------------|
| 1.25 A            | * | * | - | - | 0.0735-0.1365                   | 5.04                                                   |

\*:有安規認證 Have safety certify

-:Pending

印字方式 →



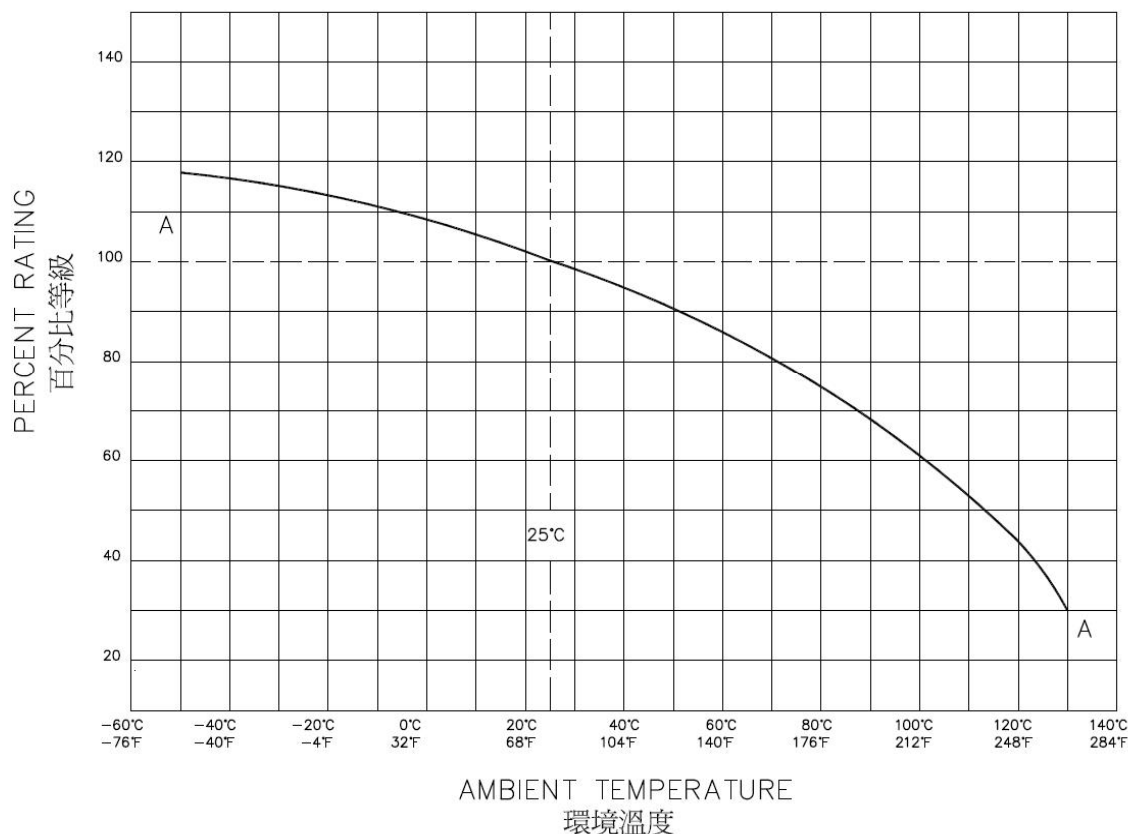
12 系列品名列表 Series Model List :

例: SEJ    1.25A    250V  
           1           2           3

- 1 系列品名 Series Model : SEJ
- 2 安培數 Ampere Rating : 1.25A
- 3 伏特數 Voltage : 250V

13 溫度與效能曲線圖 Temperature Derating 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



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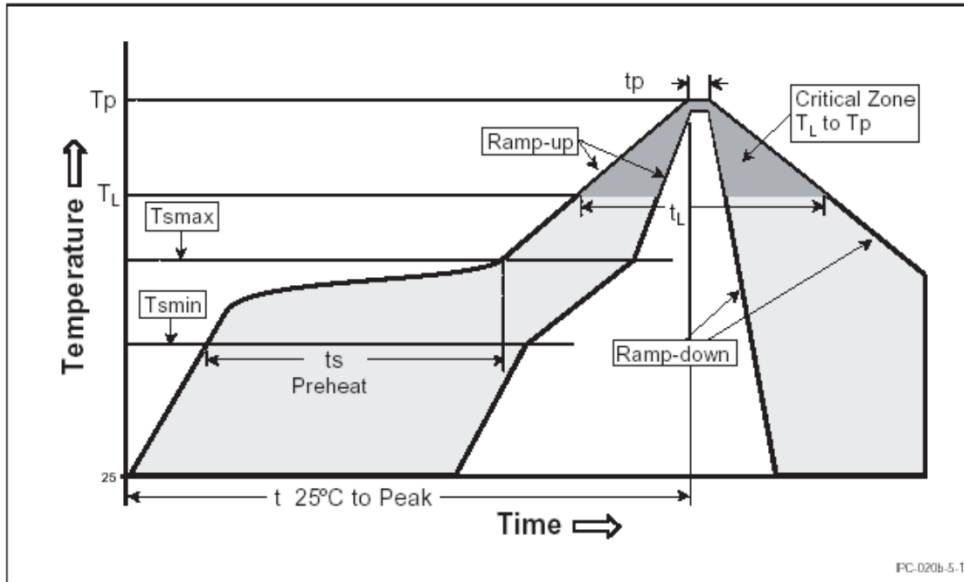
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14 建議焊接方式及生產參數(無鉛焊錫使用及回流焊)：  
 Recommended Soldering Method and Process Parameters  
 (for the action to Lead-free solder alloy and reflow soldering)：

14.1 Reflow Soldering : 260°C, 30Sec. max.. See detail in the soldering profile.



| Reflow Condition                                       |                                   | Pb-free assembly |
|--------------------------------------------------------|-----------------------------------|------------------|
| Pre-Heat                                               | Temperature Min. ( $T_{s(min)}$ ) | 150°C            |
|                                                        | Temperature Max. ( $T_{s(max)}$ ) | 200°C            |
|                                                        | Time (Min to Max) ( $t_s$ )       | 60 - 180 sec     |
| Average Ramp-up Rate (Liquidus Temp ( $T_L$ ) to peak) |                                   | 3°C / sec max    |
| $T_{s(max)}$ to $T_L$ -Ramp-up Rate                    |                                   | 5°C / sec max    |
| Reflow                                                 | Temperature ( $T_L$ ) (Liquidus)  | 217°C            |
|                                                        | Time ( $t_L$ )                    | 60 - 150 sec     |
| Peak Temperature ( $T_p$ )                             |                                   | 260 +0/-5°C      |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                   | 10 - 30 sec      |
| Ramp-down Rate                                         |                                   | 6°C / sec max    |
| Time 25°C to peak Temperature (t 25°C to peak)         |                                   | 8 min max        |
| Do not exceed                                          |                                   | 260°C            |

14.2 Wave Soldering : 260°C, 10Sec. max.

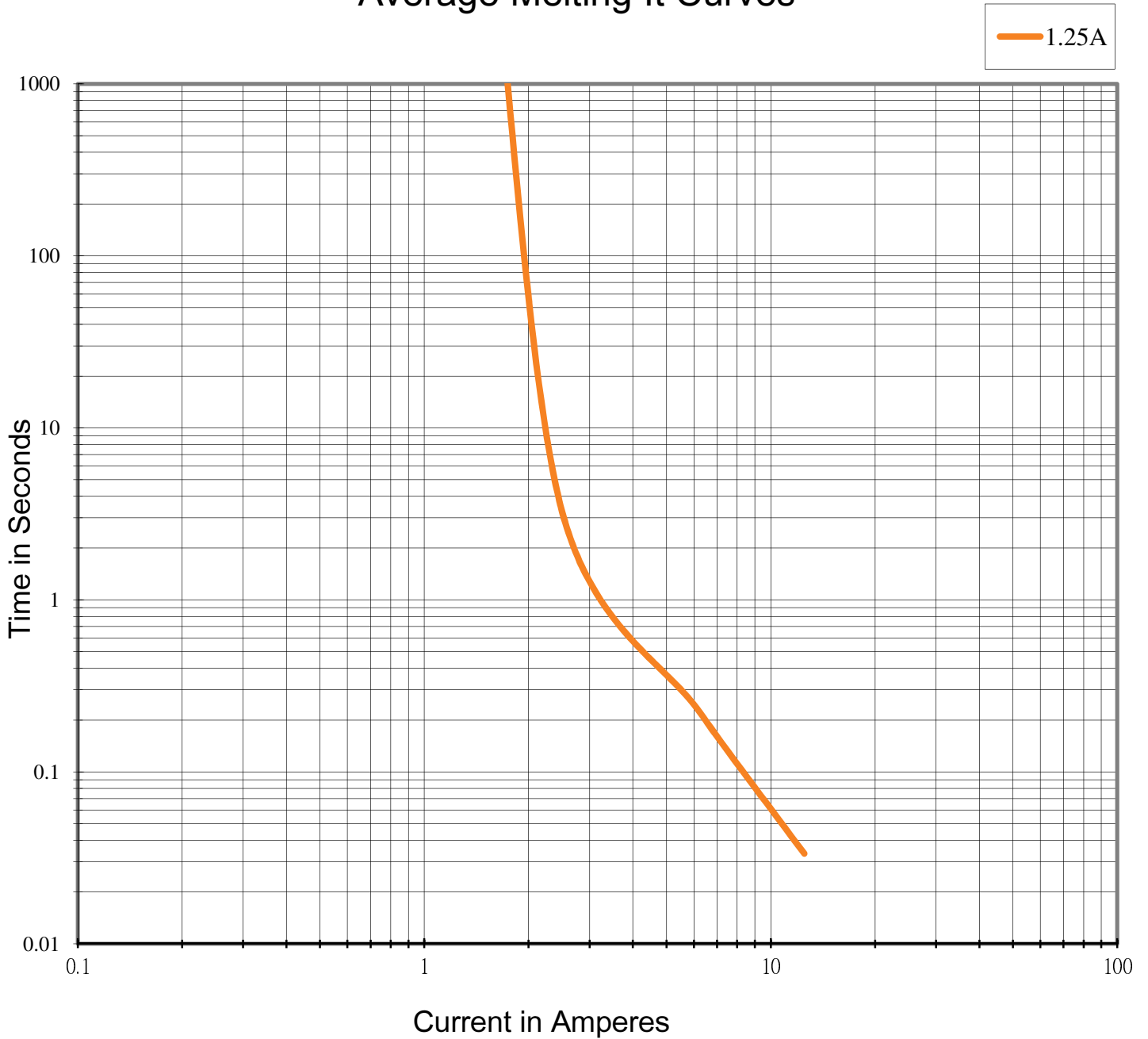
14.3 Hand Soldering : 350°C, 3Sec. max.

\*The soldering iron can not touch the cap directly.



15 IT 曲線圖 Clear Time Curve (I vs t curve):

### Average Melting It Curves



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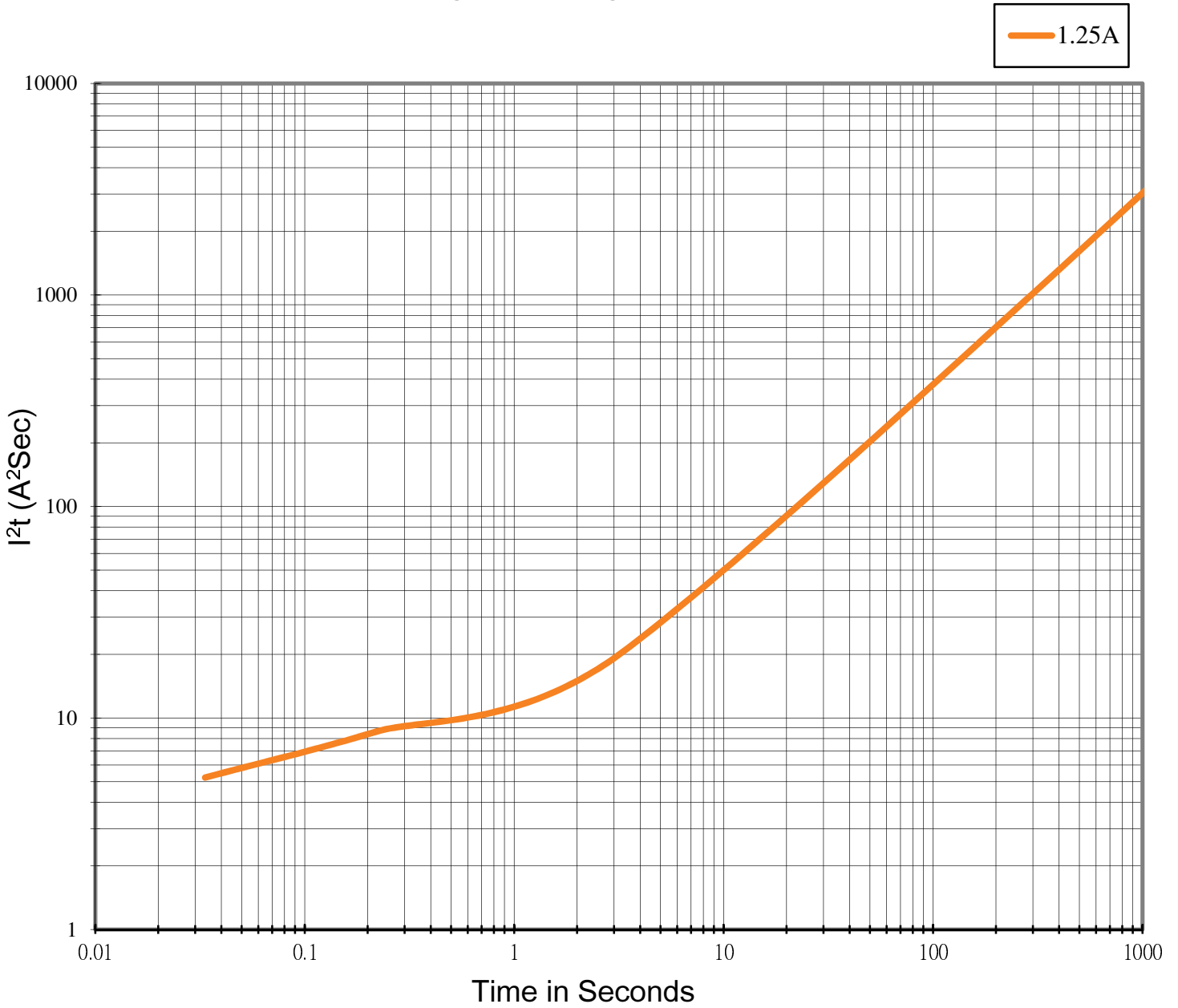
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15 I<sup>2</sup>T 曲線圖 Standing Pulse (I<sup>2</sup>t vs t curve):

### Average Melting I<sup>2</sup>t Curves



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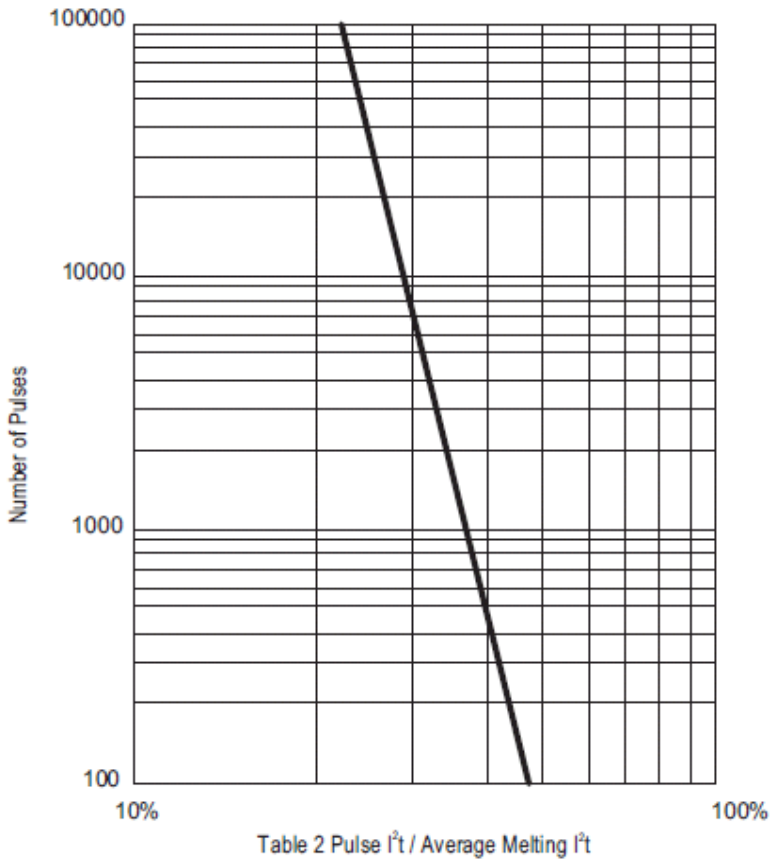
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17 Pulse Derating Curve:



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18 信賴性作業測試規定 Product Characteristics & Reliability Tests:

Product Characteristics & Reliability Tests

| Test item                      | Test Description & Reference                                                                                                                                                          |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Humidity unload test           | MIL-STD-202G , Method 103B , Test Condition A<br>Heat (85±0.5°C) & High Humidity (85±1% RH),<br>240 hours , ΔR<15%                                                                    |
| Thermal shock test             | MIL-STD-202G, Method 107g , Test Condition B<br>Temperature setup : 25°C ~ -65°C ~ 25°C ~ 125°C<br>Time setup : -65°C(30min)~25°C(5min)~125°C(30min)~ 25°C(5min)<br>5 cycles , ΔR<15% |
| Vibration test                 | MIL-STD-202G , Method 201A<br>Frequency setup : 10 ~ 55 ~ 10 Hz<br>Time setup : 1 Minutes/cycle (X-Y-Z,120 Cycles)<br>6hrs, ΔR<15%                                                    |
| Salt spray Test                | MIL-STD-202G , Method 101E , Test Condition A<br>Salt spray concentration : 5 ± 1%<br>Test liquid temperature : 35 ± 0.5°C<br>96hrs, ΔR<15%                                           |
| Solderability test             | Reference IEC 60068-2-58<br>Temperature setup : 250 ± 3°C , 3 ± 0.3 sec<br>After test terminal electrode wetting area must be greater than 95%                                        |
| Resistance to Solder Heat Test | Reference IEC 60068-2-58<br>Temperature setup : 260± 5°C , 10± 1 sec<br>ΔR<15%                                                                                                        |

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