


**1. 適用範圍 / SCOPE**

此份規格書僅涵蓋1206F系列產品.

This specification covers 1206F series devices, which is SMD Fuse.

**2. 產品名稱及編碼 / TYPE NUMBER & PART NUMBER**
**2-1 產品名稱/ TYPE NUMBER**

1206F	****A	***V	
(1)	(2)	(3)	(4)



( 1 ) 系列號: 1206F (尺寸: 0.12×0.06; 熔斷特性:快斷 )

Series Number: 1206F (Size: 0.12×0.06; Melting characteristic: Fast Acting)

( 2 ) 額定電流: (例如:3.5A=3.5 安培)

Rating Current : (Ex. :3.5A = 3.5 Ampere)

( 3 ) 額定電壓: (例如:63V=63 伏特 )

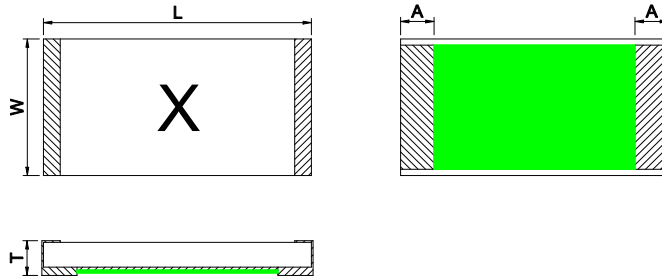
Rating Voltage : (Ex. :63V = 63 Volt)

( 4 ) 安規認證 / Safety Approval

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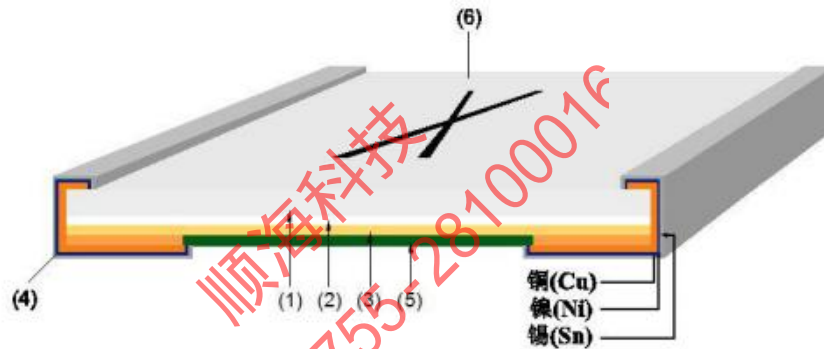
3. 產品尺寸和結構 / SIZE AND STRUCTURE

3-1 尺寸 (單位: mm) / SIZE (Unit: mm)



型號 / Type number	W	L	T	A
1206F****A***V	1.60±0.25	3.20±0.25	0.60±0.15	0.58±0.20


3-2 產品結構及使用材料說明 / STRUCTURE & MATERIAL



編號 No.	元件 Component	材質 Material	數量 Quantity
(1)	基板 Substrate	氧化鋁陶瓷 Alumina Ceramic	1
(2)	粘著層 Adhesion layer	環氧樹脂 Epoxy	1
(3)	熔絲本體 Fuse element	銅合金/錫 Cu Alloy / Sn	1
(4)	端電極 Terminal electrode	銅/鎳/錫 Cu / Ni / Sn	2
(5)	保護防焊層 Protective coating	防火級環氧樹脂 Flame-retardant epoxy	1
(6)	文印防焊層 Marking coating	防火級環氧樹脂 Flame-retardant epoxy	1

### 4. 基本資訊/ ORDERING INFORMATION

● approved ○ pending

型號 Type Number	標示 Marking	額定電流 Rated Current	額定電壓 Rated Voltage	阻值 Nominal Resistance	I <sup>2</sup> t Nominal Melting I <sup>2</sup> t	安規認證 Safety Approval
		(ADC)	(VDC)	(Ω)	(A <sup>2</sup> s)	
1206F 1A 63V	P	1.0	63	0.2450	0.138	●
1206F 1.25A 63V	Q	1.25	63	0.1500	0.216	●
1206F 1.5A 63V	Q1	1.5	63	0.1400	0.311	●
1206F 1.75A 63V	R1	1.75	63	0.1300	0.424	●
1206F 2A 63V	S	2.0	63	0.0530	0.553	●
1206F 2.5A 63V	T	2.5	63	0.0370	0.865	●
1206F 3A 63V	T1	3.0	63	0.0275	1.245	●
1206F 3.5A 63V	U1	3.5	63	0.0190	1.695	●
1206F 4A 63V	V	4.0	63	0.0180	2.214	●
1206F 5A 63V	W	5.0	63	0.0150	3.459	●
1206F 6A 63V	W1	6.0	63	0.0120	4.981	●
1206F 7A 63V	X1	7.0	63	0.0100	6.780	●
1206F 8A 63V	Y	8.0	63	0.0080	8.856	●
1206F 10A 63V	Z	10.0	63	0.0070	13.837	●

說明/Notes :

a. “一般電阻值”是在通以小於額定電流的 10% 的弱電流條件下量測的阻抗。

Nominal Resistance measured with <10% rated current ;

b. “一般 I<sup>2</sup>t ”是指自通電至作動時間為 10ms 的過程所對應的 I<sup>2</sup>t.

Nominal Melting I<sup>2</sup>t measured at 10 m sec opening time ;

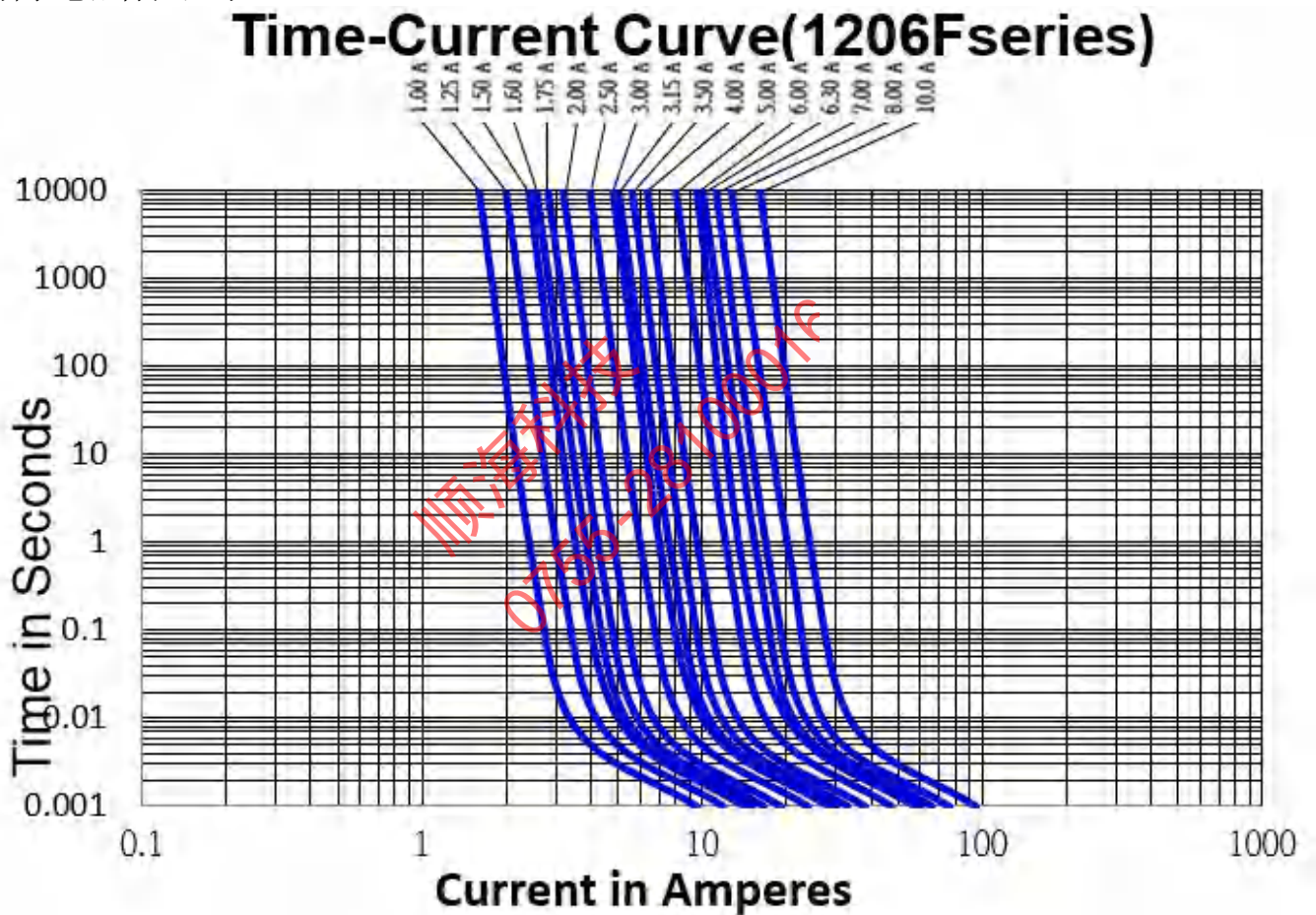


**5. 電氣特性 / ELECTRICAL CHARACTERISTICS**
**5-1 時間-電流特性/ Pre-Arcing Time-Current Characteristics (limits)**

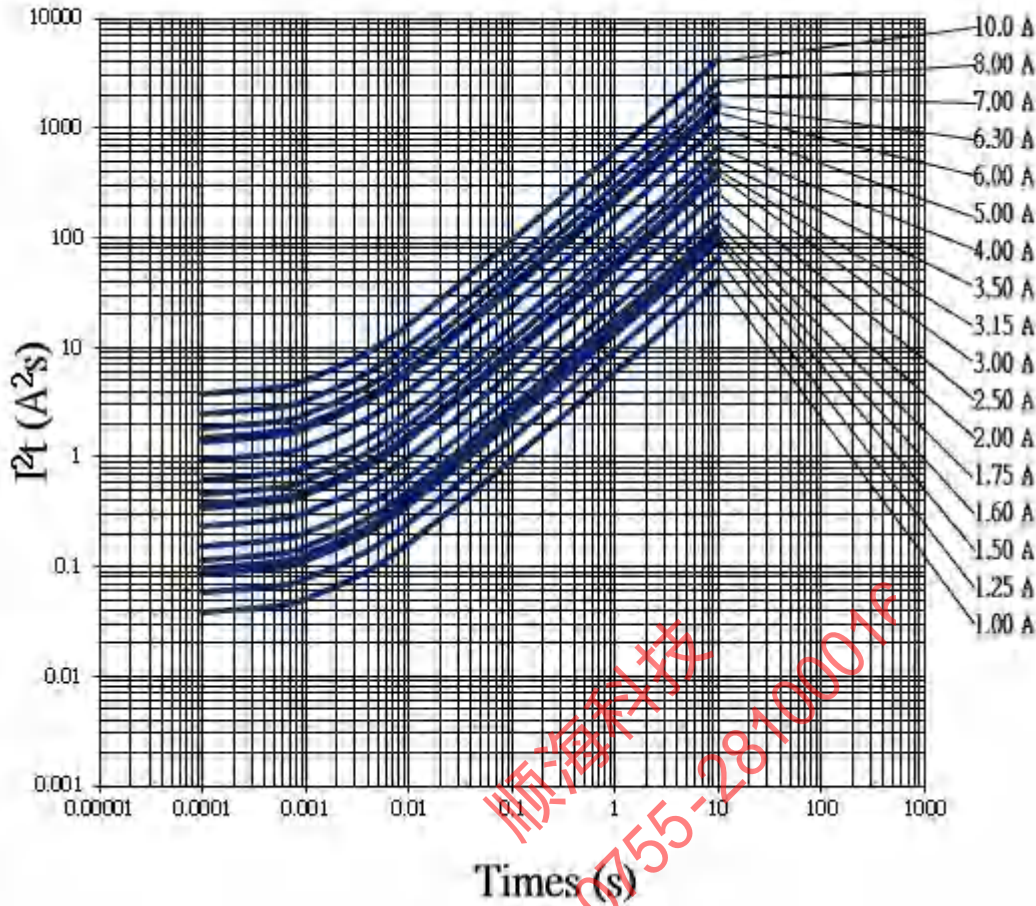
額定電流 RATED CURRENT	1.0I <sub>n</sub>	2.5I <sub>n</sub>	3.5I <sub>n</sub>
0.5A to 10A	4hrs min.	5sec max.	1sec max.

I<sub>n</sub> : 25°C 下額定電流 / Rating Current at 25°C

時間-電流特性曲線 / Time-Current Curve:





**5-2 I<sup>2</sup>t-t 曲線 / I<sup>2</sup>t-t Curve:**
**I<sup>2</sup>t vs. t Curves(1206F series)**

**5-3 分斷能力 / Breaking Capacity**

額定電流 RATED CURRENT	分斷能力 BREAKING CAPACITY
1A~10A	V =63V DC ; I=50A



**6. 產品特性及信賴性測試規範/PRODUCT CHARACTERISTICS AND RELIABILITY TEST STANDARD**

序號 No.	項目 Item	內容 Content	判定標準 Criteria
1	時間/電流特性 Time/current characteristics	分別通以1.0In、2.5In、3.5In電流， 得出相對應的時間 I=1.0In、2.5In、3.5In and measure the value of time individually by meter ,	各電流條件下的時間參數符合規定值 Value of time measured in different currents is within spec. UL248-1/-14
2	分斷能力測試 Breaking capacity	V = 63V DC /125V DC ; I=50A	沒有持續電弧、燃燒、爆炸現象 No a permanent arcing, ignition, bursting UL248-1/-14
3	可焊性 Solder ability	熔錫溫度245°C±5°C，浸錫時間 5s±0.5s，浸入深度從基座面起 2.0mm±0.5mm，放在20X的放大鏡下 檢查T=245°C±5°C，t=5s±0.5s， magnifier : 20X	錫覆蓋率≥95% Cover ≥95% MIL-STD-202 Method 208
4	抗焊性測試 Soldering heat resistance	熔錫溫度/ T =250°C±5°C，浸錫時間 / t =30±5s T=250±5°C, t=30±5s	外觀無裂紋和損傷，前後阻值偏差小於或 等於±15%；文印清晰可辨 No crack and damage, ΔR<15% Marking is easily legible MIL-STD-202, Method 210F, Condition K
5	冷熱衝擊 Thermal Shock	-65°C,放置時間為15min,→ 25°C, ,放置時間為5min→ 125°C放置時間15min 循環次數為100個 -65°C 15min~25°C 5min~ +125°C 15min ; 100 cycles	外觀無裂紋和損傷，前後阻值偏差<±10% No crack and damage, ΔR<10% MIL-STD-202, Method 107G conditionB-3
6	機械衝擊 Mechanical Shock	峰值100 G,持續時間11ms,波形: 半正弦，五次脈衝 a=100G for 11ms, 5pulses	外觀無裂紋和損傷，前後阻值偏差<± 10%。 No crack and damage, ΔR<10% MIL-STD-202, Method 213B
7	振動測試 Vibration	承受振幅為0.03 英寸(全程最大0.06 英寸),頻率在大約10Hz到55Hz 的範 圍均勻地變化的簡諧運動.)	MIL-STD-202, Method 201A
8	高頻振動測試 Vibration, High Frequency	20g's峰值，公差值為±10%，振動 頻率10Hz-2000Hz，總計時間為 12h	MIL-STD-202, Method 204D, Condition D

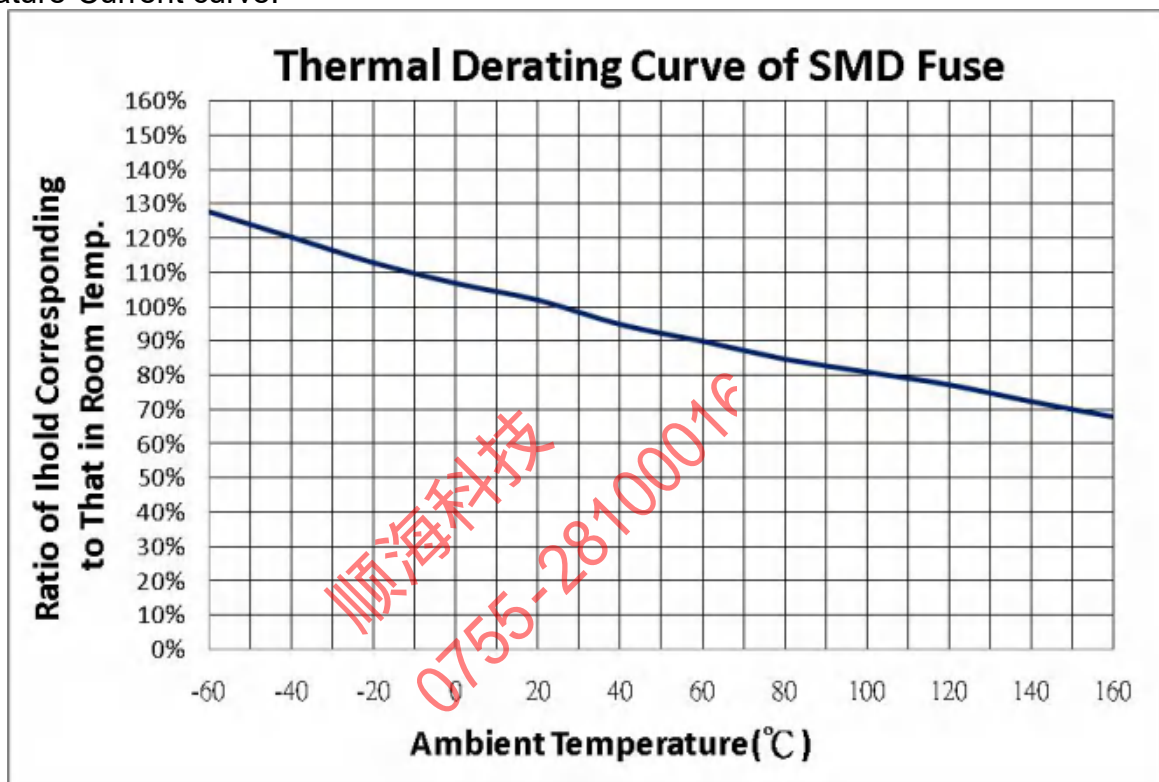
## 7. 環境特性 / ENVIRONMENTAL CHARACTERISTIC

### 7-1 操作溫度範圍: $-55^{\circ}\text{C} \sim 150^{\circ}\text{C}$ / Operating Temperature: $-55^{\circ}\text{C} \sim 150^{\circ}\text{C}$

若貴司操作環境溫度超出 $25 \pm 5^{\circ}\text{C}$ 範圍，在選用保險絲規格時，需考慮操作環境溫度對保險絲的影響。請參照：溫度-電流曲線圖。

When choosing the fuse's specification, if the operating environmental temperature beyond the scope from  $20 \sim 30^{\circ}\text{C}$ , you should consider the environmental temperature's affection to fuses. please refer:

Temperature-Current curve:



### 7-2 存儲條件 / Storage Conditions

在溫度 $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 、相對濕度 $\leq 75\%$ 的密閉條件下可存放2年。

Under airtight in temperature  $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 、relative humidity  $\leq 75\%$  can store 2 years.

在溫度 $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 、相對濕度為95%的非露天下最多可存放30天。

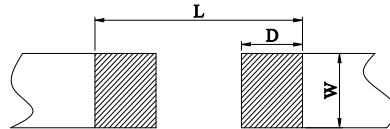
Without dew in temperature  $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 、relative humidity be 95% maximum value for 30days.

8. 焊墊尺寸及焊接條件 / SOLDER PAD SIZE AND WELDING CONDITIONS

8-1 焊墊尺寸建議 / Recommended Size of the Pad.

L	W	D	t
4.05mm	2.40mm	1.25mm	$\geq 35\mu\text{m}$

t : 元件焊墊金屬層厚度 (min.) / t : Thickness of pad metal (min.)



8-2 焊接參數建議 / Recommended Customer Soldering Parameters

溫度曲線 Temperature Condition

預熱段 :  $145 \pm 15^\circ\text{C}$ , max. 120 sec.

Preheating :  $145 \pm 15^\circ\text{C}$ , max. 120 sec.

焊錫段 : min.  $220^\circ\text{C}$ , max. 60 sec.

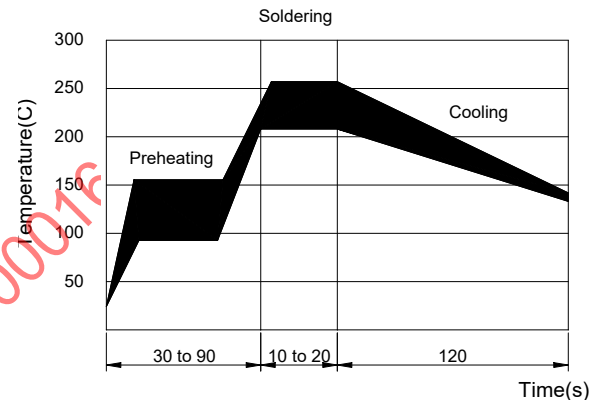
Soldering: min.  $220^\circ\text{C}$ , max. 60 sec.

允許最高溫度 :  $260 \pm 5^\circ\text{C}$ , max. 10sec.

Maximum temperature :  $260 \pm 5^\circ\text{C}$ , max. 10sec.

允許烙鐵焊接條件(熱風設備) :  $350^\circ\text{C}$ , 3~5seconds

Rework Temperature (hot air equipment) :  $350^\circ\text{C}$ , 3~5seconds



8-3 焊接方法建議 / Recommended Reflow Methods

焊接熱源方式可用紅外線, 熱蒸氣, 熱風

IR, vapor phase oven, hot air oven.

如果焊錫溫度超過允許最高溫度, 則產品本身會有功能損壞的疑慮

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.



**9. 批量生產出貨測試項目 / LOT ACCEPTANCE TEST REQUIREMENTS****9-1 外觀 / Visual**

方法：利用放大鏡進行檢查

Procedure: Visual

標準：不能有髒汙、不潔、文印錯誤、破損等

Acceptance Criteria: No parts are outstandingly stained.

**9-2 尺寸 / Dimensions**

方法：使用合適且經校正的尺規

Procedure: As appropriate, calipers, micrometers, optical comparator, or approved gages.

標準：尺寸均在規定標準範圍內

Acceptance Criteria: No parts outside specific dimensions.

**9-3 時間-電流特性 / Time-Current Characteristics**

方法：測試電流 $I=1.0I_n$  ;  $2.5I_n$  ;  $3.5I_n$ ,量測出個別電流下的對應時間

Procedure :  $I=1.0I_n$  ;  $2.5I_n$ ;  $3.5I_n$  and measure the value of time individually by meter at  $25^{\circ}\text{C}$

標準：對應時間值均在規定標準範圍內

Acceptance Criteria: All parts must within the specific .

**9-4 分斷能力 / Breaking Capacity**

方法：測試電壓\電流為 $V = 125\text{V}/\text{DC}$  /  $63\text{V}/\text{DC}$  ;  $I=50\text{A}$ , 利用此條件衝擊元件

Procedure:  $V = 125\text{VDC}/63\text{VDC}$  ;  $I=50\text{A}$

標準：元件不發生持續電弧燃燒及爆裂

Acceptance Criteria: No permanent arcing, ignition, bursting

**10. 安全認證及編號 / STANDARDS AND APPROVALS**

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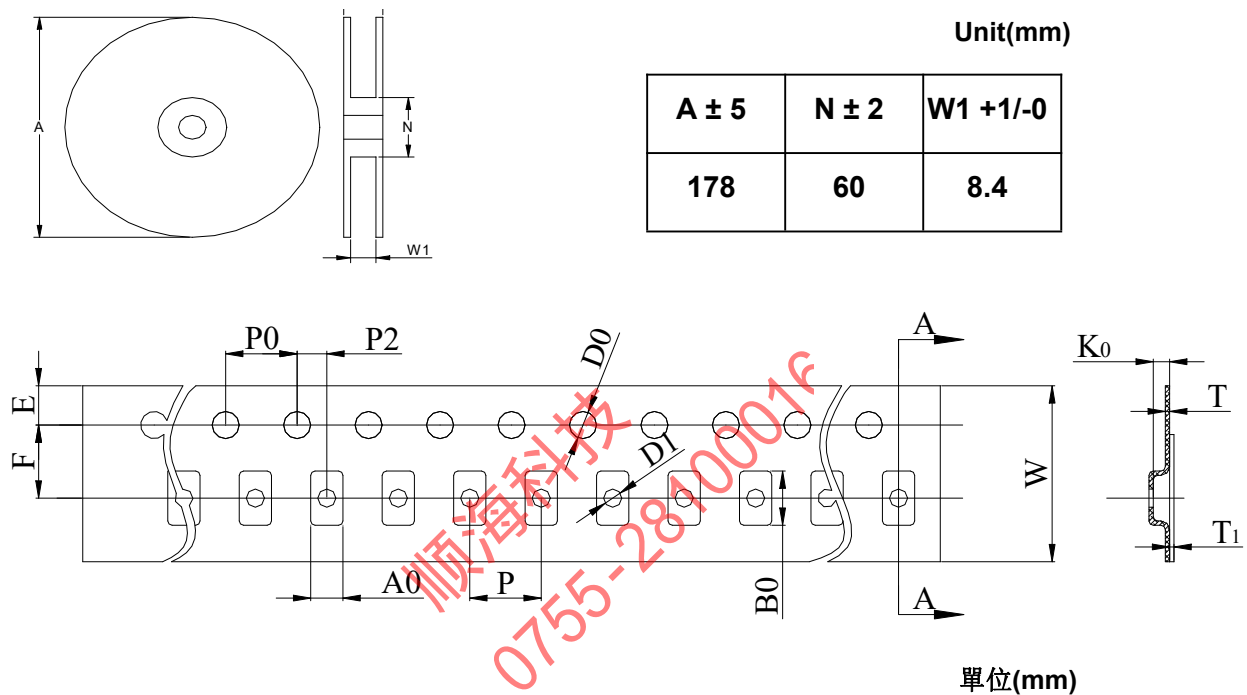


11. 包裝訊息 / PACKING INFORMATION

11-1 包裝數量、重量 / QUANTITY & WEIGHT

編碼 Part Number	數量 (pcs) Quantity(pcs)	重量(g) Weight(g)
<b>1206F****A***V</b>	<b>5,000</b>	<b>140±20</b>

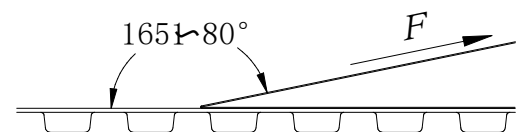
11-2 捲輪規格 / Reel & Tape specifications



<b>W</b>	<b>8.00±0.10</b>	<b>E</b>	<b>1.75 ± 0.10</b>
<b>P0</b>	<b>4.00 ± 0.10</b>	<b>T</b>	<b>0.20±0.05</b>
<b>P</b>	<b>4.00 ± 0.10</b>	<b>T1</b>	<b>Max. 0.1</b>
<b>P2</b>	<b>2.00 ± 0.10</b>	<b>A0</b>	<b>2.05±0.10</b>
<b>D0</b>	<b>1.50 ± 0.10</b>	<b>B0</b>	<b>3.65±0.10</b>
<b>D1</b>	<b>1.00 ± 0.10</b>	<b>K0</b>	<b>0.85±0.10</b>
<b>F</b>	<b>3.50±0.10</b>		

11-3 密封膠膜剝離強度要求 / Peeling Strength of Seal Tape

F = 剝離強度 : 0.3 – 1.0N ( 30 - 100gf )  
F = Peeling Strength: 0.3 – 1.0N (30 - 100gf)



**12. 其他 / OTHERS**

12-1 如果在使用中有超出本規格書的要求，必須經由雙方協商確認。

In the event that an impropriety is found beyond this specification ,it shall be fixed by mutual agreement between the parties.

12-2 如果本規格書有不適當的情況，必須通過雙方協商並由本公司修改。

In the event that an impropriety is found in this specification , Walter Electronic Technology Co., Ltd. shall amend it by mutual agreement between the parties.



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版次	製作	確認	審核
第1.8版	蔡小梅 2021/12/21	陈鹏安 2021/12/21	陈荣 2021/12/21



# UL iQ for Fuses



## Fuses

E56092

### Guide Information

## SUZHOU WALTER ELECTRONIC CO LTD

Fenhu Technic Development Zone, Wujiang Jiangsu 215211 CN

### F93, 1206F

Supplemental micro fuses

<u>Size</u> <u>mm(in)</u>	<u>Amps</u> <u>(A)</u>	<u>Volts</u> <u>(V)</u>	<u>Interrupting</u> <u>Rating (A)</u>
3.2 x 1.6 x 0.6 (0.13 x 0.06 x 0.02)	0.5 - 0.8	125Vdc	50
	1 - 10	63Vdc	50
	1 - 10	24Vdc	50
	1 - 10	32Vdc	50
	0.5 - 0.8	24Vdc	50
	0.5 - 0.8	32Vdc	50
	0.5 - 0.8	63Vdc	50

Report Date: 2009-06-09

Last Revised: 2018-09-04

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