

1. 适用范围 / SCOPE

此份规格书仅涵盖0402FA系列产品.

This specification covers 0402FA series devices, which is SMD Fuse.

2. 产品名称 / TYPE NUMBER

0402FA	5A	32V	Pending
(1)	(2)	(3)	(4)

(1) 系列号: 0402FA (尺寸:0402= 0.04×0.02; 系列标识: FA = 快断)

Series Number: 0402FA (Size: 0402 = 0.04×0.02; Series Mark: FA = Fast Acting)

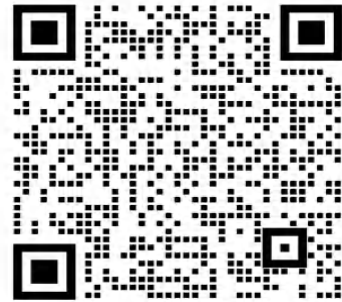
(2) 额定电流: (例如:5 A=5 安培)

Rating Current : (Ex. :5 A = 5 Ampere)

(3) 额定电压: (例如:32 V=32 伏特)

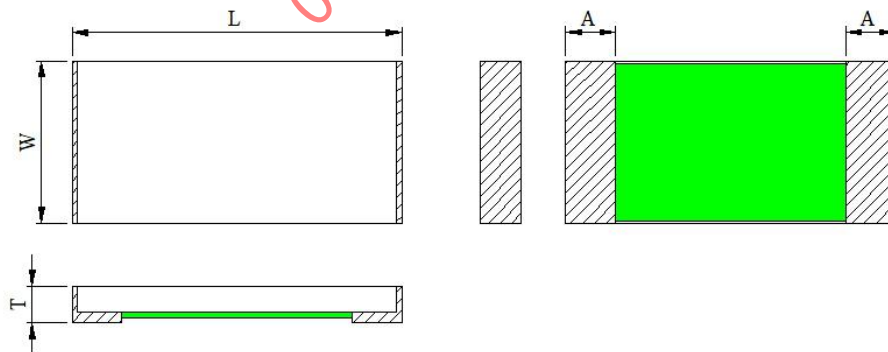
Rating Voltage : (Ex. :32 V = 32 Volt)

(4) 安规认证 / Safety Approval



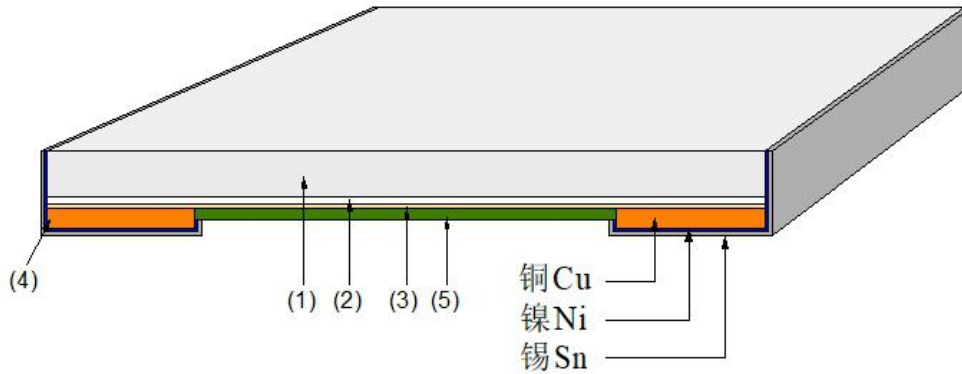
3. 产品尺寸和结构 / SIZE AND STRUCTURE

3.1 尺寸 (单位: mm) / SIZE (Unit: mm)



型号 / Type number	W	L	T	A
0402FA5A32V	0.51±0.12	1.00±0.12	0.40±0.10	0.25±0.10

3.2 产品结构及使用材料说明 / STRUCTURE & MATERIAL



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



4. 基本信息/ ORDERING INFORMATION

型号 Type Number	标示 Marking	额定电流 Rated Current	额定电压 Rated Voltage	阻值 Nominal Resistance	I^2t Nominal Melting I^2t (min.)
		(A)	(VDC)	(mΩ)	(A ² s)
0402FA5A32V	/	5	32	8.2-10.2	0.35

说明/Notes :

- a. “一般电阻值”是在通以小于额定电流的 10%的弱电流条件下量测的阻抗。
Nominal Resistance measured with <10% rated current ;
- b. “一般 I^2t ”是指通以 10 倍额定电流动作过程所对应的 I^2t 。
Nominal Melting I^2t measured at 10 times of rated current.

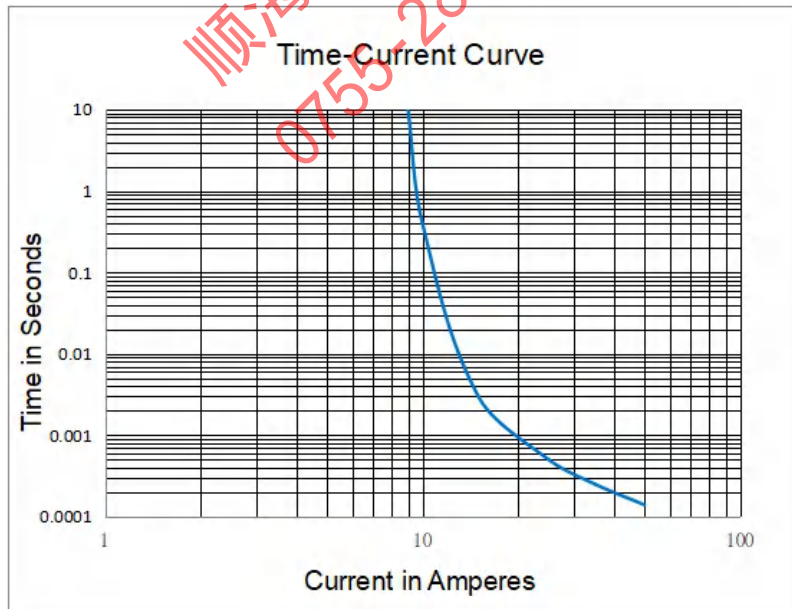


5. 电气特性 / ELECTRICAL CHARACTERISTICS

5.1 时间-电流特性/ Pre-Arcing Time-Current Characteristics (limits)

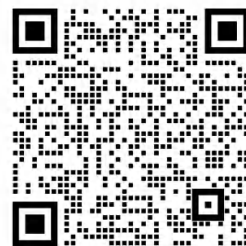
额定电流 RATED CURRENT	1.0In	2.0In	3.0In
5A	4hrs min.	5sec max.	0.2sec max

In : 25°C下额定电流 / Rating Current at 25°C
时间-电流特性曲线 / Time-Current Curve:



5.3 分断能力 / Breaking Capacity

额定电流 RATED CURRENT	分断能力 BREAKING CAPACITY
5A	V =32V DC ; I=35A



6. 产品特性及信赖性测试规范/PRODUCT CHARACTERISTICS AND RELIABILITY TEST STANDARD

序号 No.	项目 Item	内容 Content	判定标准 Criteria
1	时间/电流特性 Time/current characteristics	5A,分别通以1.0In、2.0In、3.0In电流, 得出相对应的时间 5A, I=1.0In、2.0In、3.0In and measure the value of time individually by meter ,	各电流条件下的时间参数符合规定值 Value of time measured in different currents is within spec. UL248-1/-14
2	分断能力测试 Breaking capacity	5A:V = 32V DC ; I=35A 5A:V = 32V DC ; I=35A	没有持续飞弧、燃烧、爆裂现象 No a permanent arcing, ignition, bursting UL248-1/-14
3	可焊性 Solderability	熔锡温度T = 245±5℃, 浸锡时间 t =5±0.5s, 浸入深度从基座面起 2.0±0.5mm, 放在20X的放大镜下检查 Temperature =245±5℃, t=5±0.5s, magnifier : 20X	锡覆盖率≥95% Cover ≥95% MIL-STD-202 Method 208
4	抗焊性测试 Soldering heat resistance	熔锡温度/ T = 260℃±5℃, 浸锡时间/ t =10±5s Temperature :260±5℃, t=10±5s	外观无裂纹和损伤, 前后阻值偏差小于或等于±15%; 文印清晰可辨 No crack and damage, ΔR≤±15% Marking is easily legible MIL-STD-202, Method 210F
5	冷热冲击 Thermal Shock	-65℃,放置时间为15min,→25℃, ,放置时间为5min→125℃放置时间15min 循环次数为100个 -65℃(15min)~25℃(5min)~ +125℃(15min) ; 100 cycles	外观无裂纹和损伤, 前后阻值偏差小于±10% No crack and damage, ΔR<±10% MIL-STD-202, Method 107G

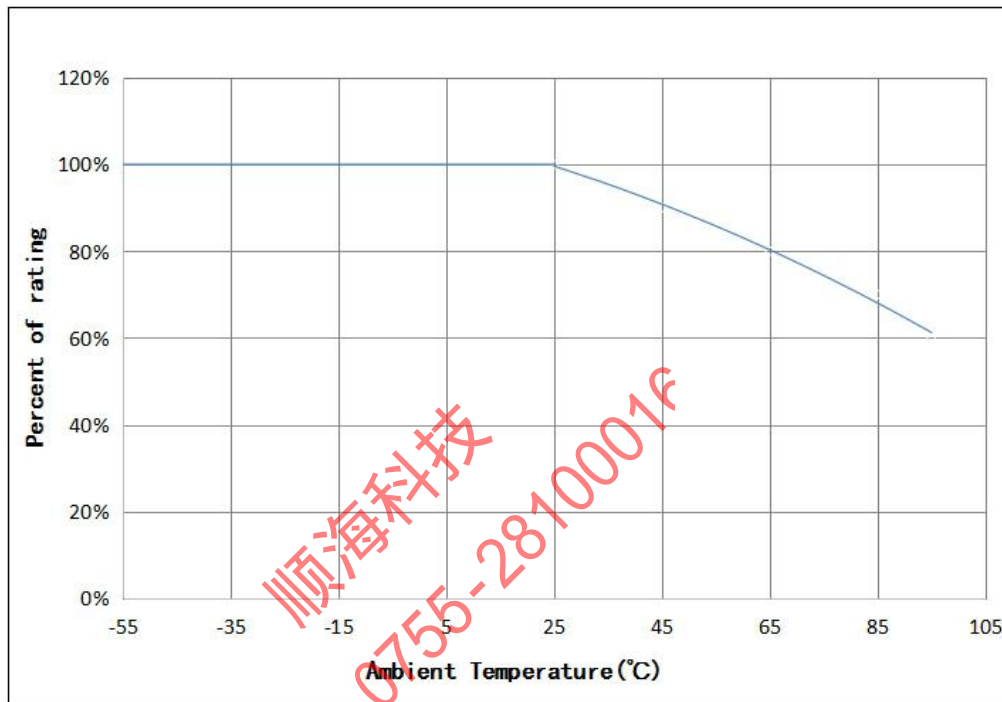
7. 环境特性 / ENVIRONMENTAL CHARACTERISTIC

7.1 操作温度范围: -55℃~95℃ / Operating Temperature:-55℃~95℃

若贵司操作环境温度超出 $25 \pm 5^\circ\text{C}$ 范围, 在选用保险丝规格时, 需考虑操作环境温度对保险丝的影响。请参照: 温度-电流曲线图。

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 存储条件 / Storage Conditions

在温度 $10^\circ\text{C} \sim 40^\circ\text{C}$ 、相对湿度 $\leq 75\%$ 的密闭条件下可存放2年。

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

在温度 $10^\circ\text{C} \sim 40^\circ\text{C}$ 、相对湿度为95%的非露天下最多可存放30天。

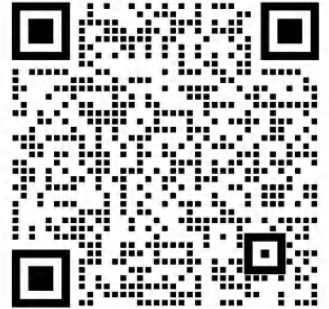
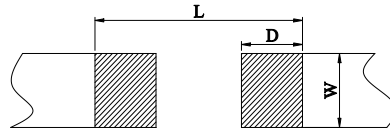
Without dew in temperature $10^\circ\text{C} \sim 40^\circ\text{C}$ 、relative humidity be 95% maximum value for 30days.



8. 焊垫尺寸及焊接条件 / SOLDER PAD SIZE AND WELDING CONDITIONS

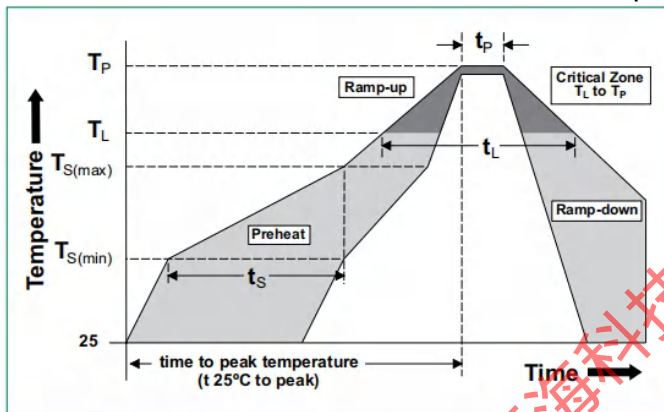
8.1 焊垫尺寸建议 / Recommended Size of the Pad.

L	W	D
1.55	0.65	0.58



8.2 建议客户焊接参数 / Recommended Customer Soldering Parameters

8.2.1 回流焊温度曲线 / Solder reflow Temperature condition



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 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		5°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		250 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

8.2.2 焊接方法建议 / Recommended Reflow Methods

焊接热源方式可用红外线, 热蒸气, 热风

IR, vapor phase oven, hot air oven.

如果焊锡温度超过允许最高温度, 则产品本身会有功能损坏的疑虑

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

9. 批量生产出货测试项目 / LOT ACCEPTANCE TEST REQUIREMENTS



9.1 外观 / Visual

方法：利用放大镜进行检查

Procedure: Visual

标准：不能有脏污、不洁、破损等

Acceptance Criteria: No parts are outstandingly stained.

9.2 尺寸 / Dimensions

方法：使用合适且经校正的标尺

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

标准：尺寸均在规定标准范围内

Acceptance Criteria: No parts outside specific dimensions.

9.3 时间-电流特性 / Time-Current Characteristics

方法：测试电流 $I=1.0I_n$; $2.0I_n$; $3.0I_n$,量测出个别电流下的对应时间

Procedure : $I=1.0I_n$; $2.0I_n$; $3.0I_n$ and measure the value of time individually by meter at 25°C

标准：对应时间值均在规定标准范围内

Acceptance Criteria: All parts must within the specification.

9.4 分断能力 / Breaking Capacity

方法： $5A:V = 32V/DC$; $I=35A$; 利用此条件冲击组件

Procedure: $5A:V = 32V/DC$; $I=35A$; and used this condition to impact components

标准：组件不发生持续飞弧，燃烧及爆裂

Acceptance Criteria: No permanent arcing, ignition, bursting

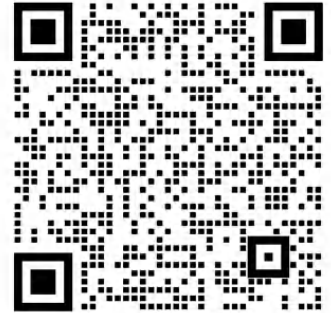
10. 安全认证及编号 / STANDARDS AND APPROVALS

	Pending
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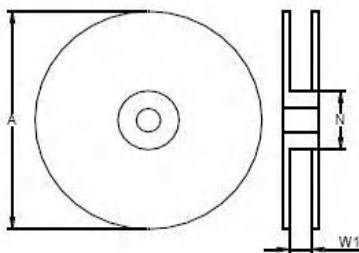
11. 包装讯息 / PACKING INFORMATION

11.1 包装数量 / QUANTITY

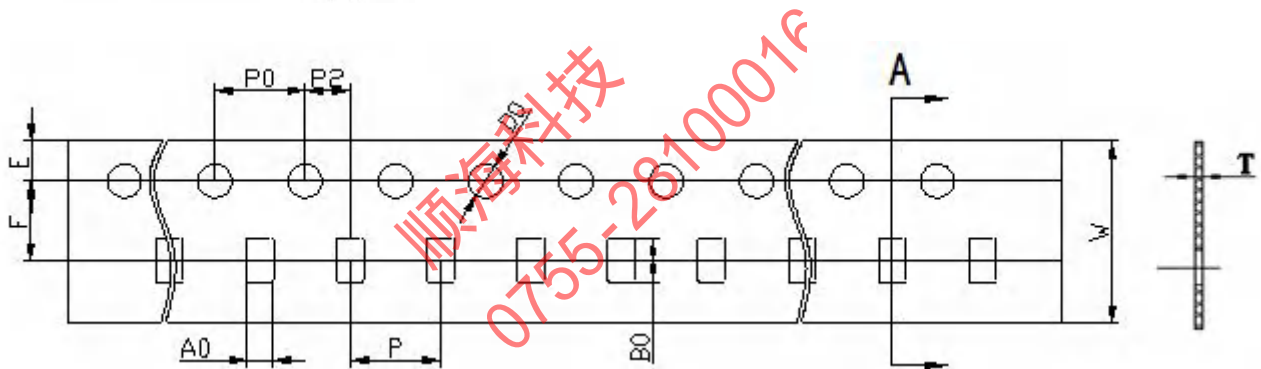
编码 Part Number	数量 (pcs) Quantity(pcs)
0402FA5A32V	10,000



11.2 卷轮规格 / Reel & Tape specifications



Unit(mm)		
$A \pm 5$	$N \pm 2$	$W1 +1/-0.7$
178	60	9.0

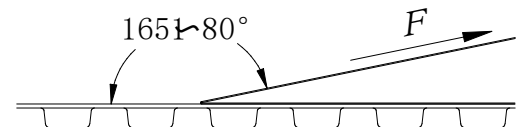


Unit(mm)							
W	8.00 ± 0.30	P0	4.00 ± 0.10	P	2.00 ± 0.10	P2	2.00 ± 0.10
A0	0.73 ± 0.10	B0	1.22 ± 0.10	D0	1.50 ± 0.10	F	3.50 ± 0.10
E	1.75 ± 0.10	T	0.60 ± 0.10	/	/	/	/

11.3 密封胶膜剥离强度要求 / Peeling Strength of Seal Tape

F = 剥离强度 : 0.1 – 1.0N (10 - 100gf)

F = Peeling Strength: 0.1 – 1.0N (10 - 100gf)



12. 其他 / OTHERS

12.1 如果在使用中有超出本规格书的要求，必须经由双方协商确认。

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

12.2 如果本规格书有不适当的情况，必须通过双方协商并由本公司修改。

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



顺海科技
0755-28100018

版次	製作	確認	審核
第2版	蔡小梅 2021.11.2	陈鹏安 2021.11.2	陈荣 2021.11.2