承　认　书

APPROVAL SHEET

客户 **Customer**	

产品名称 **Product Name**	自控制保险丝　Self Control Fuse	
产品编号 **Part Number**	K9550XXAXXV	
规格描述 **Specification**	9550自控制保险丝 K9550 XX A XX V	
文件编号 Document	版次 Revision	生效日期 Effective Date
KPN-SP-004	A0	2025-09-01

供应商-科埔联 **Supplier-Kopplen**		**零件承认章** **Approval Signet**	**客户** **Customer**	**零件承认章** **Approval Signet**
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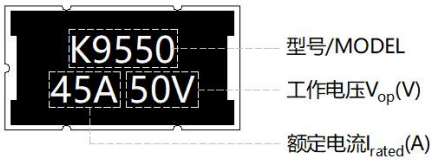
History of Change变更记录			
文件编号 DOCUMENT	**版次 Revision**	**生效日期 Effective Date**	**更改内容 Changed Contents**
KPN-SP-004	A0	2025-09-01	取得UL认证证书，新发布New Release

1.适用范围 / SCOPE

K9550 系列自控制保险丝，适用于锂电池过电流与过充电双重保护。
K9550 Series Self Control Fuse, Protect Li-ion battery from the overcurrent and the overcharge.

2.产品标示/ Marking

例「example」：



Part Number System

K 9550 45A 50V

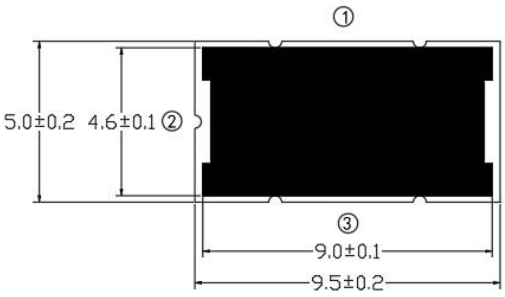
- Operation Voltage (50V)
- Rated Current (45A)
- Device Size (9.5mm*5.0mm)
- Company Symbol (KPN)

3.产品特点/ Features

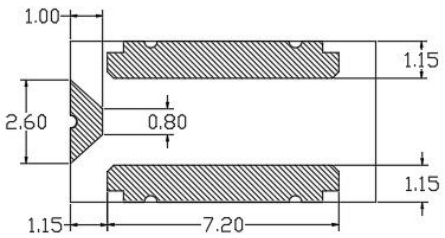
- 锂电池过电流与过充电双重保护
  Protect Li-ion battery from the overcurrent and the overcharge
- 无卤素 Halogen free
- 表面贴装保险丝 Surface mounted fuse
- 符合RoHS要求 RoHS compliance
- 快速动作 Fast response time

4.产品尺寸 / Dimensions（mm）

顶视图 Top View

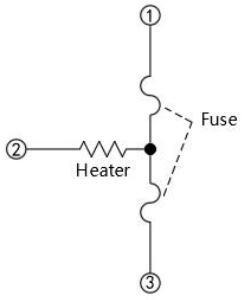


底视图 Bottom View



侧视图 Side View

等效电路图 Equivalent Circuit



5. 电气规格 / Electrical Specifications

Part Number	$I_{rated(A)}$	Cells in series	V_{max}(Vdc)	I_{break}(A)	V_{op}(V)	R_{fuse}(mΩ)	c UL us E503596
K955030A07V	30	2	62	120	5.6-9.0	1.0-2.5	●
K955030A15V	30	3-4	62	120	9.6-18.0	1.0-2.5	●
K955030A19V	30	5	62	120	16.0-22.5	1.0-2.5	●
K955030A22V	30	6	62	120	19.2-27.0	1.0-2.5	●
K955030A30V	30	7-8	62	120	22.4-36.0	1.0-2.5	●
K955030A37V	30	9-10	62	120	28.8-45.0	1.0-2.5	●
K955030A44V	30	11-12	80	120	35.2-54.0	1.0-2.5	●
K955030A52V	30	13-14	80	120	41.6-63.0	1.0-2.5	●
K955030A63V	30	15-17	80	120	48.0-76.5	1.0-2.5	●
K955030A67V	30	18	80	120	57.6-81.0	1.0-2.5	●
K955045A07V	45	2	62	120	6.4-9.0	0.5-1.5	●
K955045A11V	45	3	62	120	9.6-13.5	0.5-1.5	●
K955045A15V	45	4	62	120	12.8-18.0	0.5-1.5	●
K955045A22V	45	5-6	62	120	16.0-27.0	0.5-1.5	●
K955045A26V	45	7	62	120	22.4-31.5	0.5-1.5	●
K955045A30V	45	8	62	120	25.6-36.0	0.5-1.5	●
K955045A37V	45	9-10	62	120	28.8-45.0	0.5-1.5	●
K955045A41V	45	11	62	120	35.2-49.5	0.5-1.5	●
K955045A44V	45	12	80	120	38.4-54.0	0.5-1.5	●
K955045A48V	45	13	80	120	41.6-58.5	0.5-1.5	●
K955045A59V	45	14-16	80	120	44.8-72.0	0.5-1.5	●
K955045A67V	45	18	80	120	57.6-81.0	0.5-1.5	●
K955045A50V	45	15LFP	80	120	40.0-55.5	0.5-1.5	●
K955060A07V	60	2	62	120	7.0-10.0	0.5-1.5	●
K955060A15V	60	4	62	120	12.8-18.0	0.5-1.5	●
K955060A22V	60	6	62	120	19.2-27.0	0.5-1.5	●
K955060A26V	60	7	62	120	22.4-31.5	0.5-1.5	●
K955060A30V	60	8	62	120	25.6-36.0	0.5-1.5	●
K955060A33V	60	9	62	120	28.8-40.5	0.5-1.5	●
K955060A37V	60	10	62	120	32.0-45.0	0.5-1.5	●
K955060A41V	60	11	80	120	35.2-49.5	0.5-1.5	●
K955060A44V	60	12	80	120	38.4-54.0	0.5-1.5	●
K955060A52V	60	13-14	80	120	42.9-60.0	0.5-1.5	●
K955060A56V	60	15	80	120	48.0-67.5	0.5-1.5	●
K955060A63V	60	17	80	120	56.0-76.5	0.5-1.5	●

Current Capacity	100% x I_{rated} , No Melting, >4hr
Cut Time	200% x I_{rated} , < 1 min
Over Voltage Operation	In operation voltage range, the fusing time is <1min

- 名词解释Vocabulary

I_{rated} = 在25℃热平衡条件下测得的载流能力;
Current carrying capacity that is measured at 25℃ thermal equilibrium condition.

I_{break} = 保险丝可以安全分断的电流;The current that the fuse element is able to interrupt.

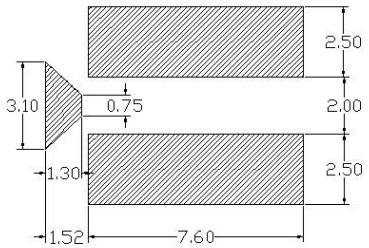
V_{max} = 保险丝可安全分断的最大电压;The maximum voltage that can be cut off by fuse.

V_{op} = 工作电压范围;Range of operation voltage.

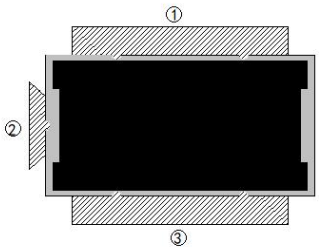
R_{fuse} = 熔断元件电阻值;The resistance of the fuse element.

Cells in series = 在K9550装置保护的电路中串联连接的电池个数。
Number of battery cells connected in series in the circuit for K9550 device to protect.

电路板焊盘布局建议
Board and Solder Layout Recommend (mm)



安装示意图
Installation diagram

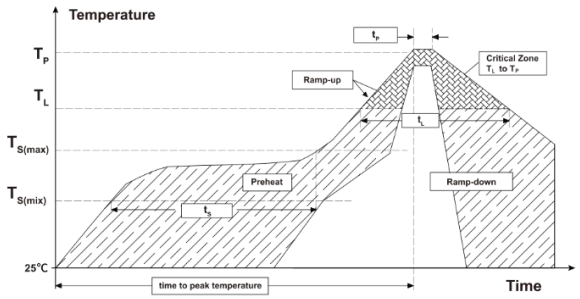


型号 Type	材料 Material	铜箔宽度 Copper width	基板厚度 Base Thickness	铜箔厚度 Copper hickness	导线规格 Covered Wire
30A	FR-4	15mm	1.6mm	2 OZ	AWG10
45A	FR-4	15mm	1.6mm	3 OZ	AWG8
60A	FR-4	25mm	1.6mm	3 OZ	AWG8

When the patch on the PCB board printed solder paste steel mesh thickness is best not more than 0.12 mm.

6. 焊接参数 Soldering Parameters

Average Ramp-Up Rate (Ts_{max} to TP)		3℃/second max.
Preheat	**Temperature Min (Ts_{min})**	150℃
	Temperature Max (Ts_{max})	200℃
	Time (Ts_{min} to Ts_{max})	60-120 seconds
Time maintained above:	**Temperature (T_L)**	217℃
	Time (t_L)	60-105 seconds
Peak Temperature (T_P)		255℃
Time within 5℃ of actual Peak Temperature (t_P)		5 seconds max.
Ramp-Down Rate		6℃/second max.
Time 25ºC to Peak Temperature		8 minutes max.



—All temperature refer to topside of the package, measured on the package body surface

—If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements

6. 熔断时间特性Clear-Time Characteristics

通电容量测试 Current Capacity	100% x I_{rated}	Min. 4 hours
过载电流测试 Cut Time	200% x I_{rated}	Fusing Time≤1min
过载电压测试 Over Voltage Operation	In operation voltage range	Fusing Time≤1min

Clearing Time at 25℃

7. 信赖性测试规范 RELIABILITY TEST STANDARD

测试项目 Test Item	项目 Project	条件 Condition	技术要求 Requirements
电气性能 Electrical performance	电流过载 Over current	200% of Rated current	Fusing Time≤1min
	电压过载 Over voltage	Operating voltage shall be applied to heater	Fusing Time≤1min
	通电容量 Carrying Capacity	100% of rated current, 4hr	No Melting
	绝缘阻抗 Insulation	@100Vdc after OV operating voltage test	>0.2MΩ
可靠性能 Reliability performance	高温 High temperature	100℃±5℃@250hr	Without deformation of case or excessive looseness of caps. Electrical characteristics shall be satisfied.
	高湿 High humidity	60℃±2℃@90%~95%@250hr	
	低温 Keeping cold	-20℃±3℃ @ 500hr	
安装特性 Mounting Characteristics	可焊性 Solder ability	Solder: Pb-free (Sn96.5/Ag3/Cu0.5[%]) Flux: 25wt%Rosin Ethanol solution Dipping depth: 2～2.5mm Temperature: 245±5℃ Dipping time: 3±0.5s Dipping and drawing speed: 25±2.5mm/s	A new uniform coating of solder shall cover a minimum of 95% of the surface being immersed.
	耐焊接热 Resistance to Soldering heat	Reflow soldering method Peak temp: 255℃±5℃ 5S 230℃±5℃ 30s At electrode temperature of the specimen.(Solder temperature) The specimen shall be passed through the reflow furnace with the condition shown in the above profile for 2times. The specimen shall be stored at standard atmospheric conditions for 24h after which the measurement shall be made.	Without deformation of case or excessive looseness of caps. Electrical characteristics shall be satisfied.

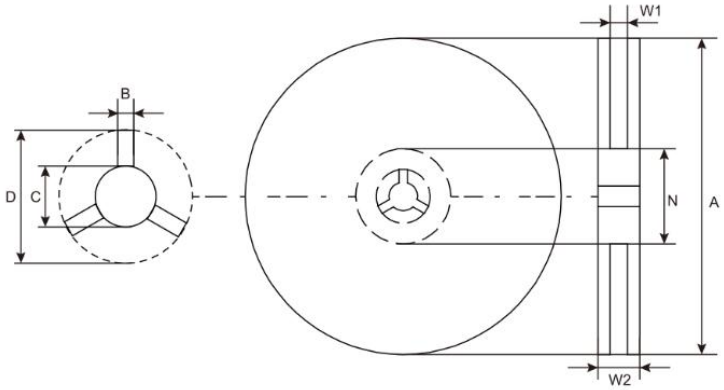
电气特性会因为 PCB 基板热容量等条件的变化而发生特性变动。所以需要在客户实际线路板上进行确认。
Electrical characteristics are influenced by thermal capacity of PCB, parts, pattern width, etc.Therefore you should check them on your PCB.

8. 环境规格Environmental Specifications

#	项目Item	内容Contain
1	存储条件 Storage Conditions	温度40℃以下、相对湿度≦60%的密闭条件下可存放12个月 The temperature is below 40℃、relative humidity ≦60% can store 12 months
2	工作温度 Operating Temperature	-10ºC to +65 ºC

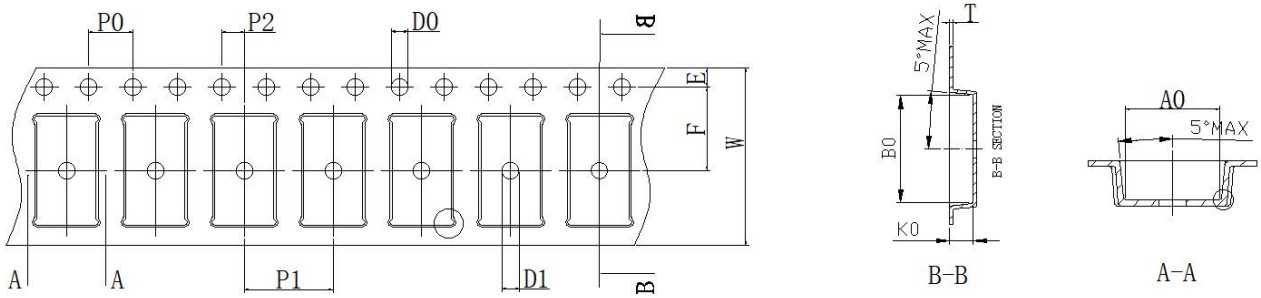
9. 包装规格 / PACKING SPECIFICATION

卷轮规格 / Reel & Tape specifications



系列 Series	数量Quantity
K9550	2000pcs/Reel

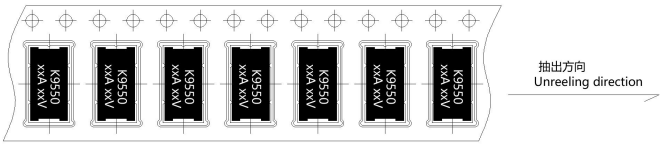
Item	A	B	C	D	N	W1	W2
Spec.(mm)	Φ330±0.1	2.5±0.05	13.6±0.05	22.60±0.05	φ99±0.05	17.00±0.1	20.8±0.1



Item	A0	B0	K0	P0	P1	P2	T
Spec.(mm)	5.40±0.1	9.85±0.1	Φ2.48±0.1	4.00±0.10	8.00±0.10	2.00±0.10	0.30±0.05
Item	**E**	**F**	**D0**	**D1**	**W**		
Spec.(mm)	1.75.00±0.10	7.50±0.10	1.50±0.10	1.50±0.10	16.00±0.30		

10. 编带方向Direction of Taping

The direction shall be seen from the top cover tape side.



11. 环保性能 Environmental Characteristics

（1）产品中使用的各种材料的卤素含量如下表所示。

Contents of halogens used in each material for the product are as follows.

卤素 Halogen substance	含有量 Content
氯 Chlorine（CL）	≤ 900ppm (0.09%)
溴 Bromine（Br）	≤ 900ppm (0.09%)
总和（氯(CL)＋溴(Br)） Total concentration of chlorine (CL) + bromine (Br)	≤ 1500ppm (0.15%)

（2）本规范中描述的产品符合ROHS指令。BOM表中的合金、焊料、一些电子浆料含有铅，但都符合ROHS指令的高铅豁免相关规定。

The product described in this specification complies with the ROHS Directive. BOM table contains the alloy, solder, some electronic slurry, including lead, but these are exempted from ROHS requirements.

12. 使用注意事项Cautions for using

(1) 通电容量和熔断时间受基板热容量等条件的变化而变动。因此，请在实际使用的基板上焊接产品再确认特性。基板层数越多、铺铜越宽越厚、基材越厚等热容量增加的因素，会导致通电容量变大，熔断时间变长。

It is necessary to foresee there are possibilities that “Current-Carrying Capacity” and “Heater Operation Characteristic” may be varied along with the condition change in the substrate thermal capacity, etc. Therefore you should check it on your PCB. Generally, when thermal capacity of PCB increases, Current-carrying capacity will increase accordingly and Clearing-time will be longer.

(2) 本规格书中记载的规格是在UL标准基板(1.6mm厚度的单面覆铜玻璃环氧基板)上安装并确认的。由于所使用的基板的热容量不同，特性也会发生变化，使用时请在贵公司产品所使用的基板上确认。

The data on this specification is measured with UL standard PCB (1.6mm Glass Epoxy single-sided copper laminated). The characteristics are influenced by thermal capacity of PCB, so it is recommended checking it on actual PCB.

(3) 本产品在安装前和安装后，如果进行清洗（如超声波及浸渍清洗等），合金上的助焊剂会流动，可能不满足规格要求。另外，本产品与清洗液接触也会产生同样的症状。请避免清洗本产品。请注意，清洗后的产品不属于品质保证对象。

Ultrasonic-cleaning or immersion-cleaning and so on must not be done to SC-Protector before and after mounted. When cleaning is done, flux on element would flow, and it would not be satisfied its specification. Moreover, a similar influence happens when the product comes in contact with cleaning-solution. These products after cleaning will not be guaranteed.

(4) 如果对本产品进行树脂密封，树脂会进入产品内部，可能不满足规格要求，请避免树脂密封。树脂密封后的产品不属于品质保证对象。

Please avoid contacting SC-Protector and resin-mold. The resin might infiltrate into the product, and it doesn’ t meet the specification when the resin-mold is done to this product. These products after resin-mold will not be guaranteed.

(5) 请不要再次使用因焊接修正而取下的产品。
Please do not re-use of the product removed by the solder correction.

(6) 关于本产品在基板上的安装，请确认端子是否正确连接在焊盘上，端子在②～①之间以及②～③之间的直流电阻为加热器的电阻值。
Make sure that the terminals of this product are connected property on the land of circuit board, and the value falls in the rated heater resistance between Terminal ②～① and ②～③.

(7) 本产品是为了一般电子设备标准用途而设计制造的。因此，不要在可能危及生命或财产的用途（如军事、医疗用途等）中使用。
This product is designed and produced for only general-use of electronics devices. Therefore, we do not suppose that it is used for the applications [Military, Medical and so on] which may cause direct damages on life,bodies or properties of third party.

(8) 本规格书需要变更或产生疑义时，应事先联系，在双方协商后进行修改。
It is amended in conference with the supplier and the customer when the necessity of the change or doubt occurs in this specification