

# Product Specification

Number: L-KLS5-102-5ET-0500H-R

Name: Miniature fuse

Customer: D02

Date: 2022-12-12

Customer Signature:



**NINGBO KLS ELECTRONIC CO; LTD**

Tel : 0086-574-86828566

Fax : 0086-574-86824882

ADD : NO. 8-1, RONGXIA RD. XIAPU SHANQIAN  
INDUSTRIAL ZONE BEILUN NINGBO ZHEJIANG.

Compi	Check	Review	Approva
Jenny	Jack.C		

# NINGBO KLS ELECTRONIC CO; LTD

## 目录 CONTENTS

1. 适用范围/SCOPE .....	2
2. 相关标准/APPLICABLE STANDARDS .....	2
3. 公司地址/ADDRESS .....	3
4. 结构尺寸/ STRUCTURE AND DIMENSION .....	3
5. 机械特性/ MECHANICAL PERFORMANCES .....	3
6. 电气特性/ ELECTRICAL PERFORMANCES.....	4
7. 产品标志/MARKING .....	7
8. 包装要求/ PACKING DETAILS.....	8
9. 环境参数/ENVIRONMENTAL PARAMETERS .....	8
10. 规格书有效性THE SPECIFICATION FOR VALIDITY .....	9
11. 成品图/ FINISHED PRODUCT DRAWING .....	10
12. 履历/REVISION HISTORY .....	11

# NINGBO KLS ELECTRONIC CO; LTD

## 1. 适用范围/SCOPE

1.本规格书适用于公司生产并获得UR、CQC、VDE、KC、PSE安全标准认证的5ET(慢断/延时)系列“KLS”的微型保险丝管(符合欧盟环保要求)。

This specification defines the technical requirements of micro fuse type 5ET(slow blowing/time lag) series with “KLS” brand, which are approved by UR, CQC, VDE, KC and PSE (RoHS&pb Free).

产品部件号为:          型号          额定电流         

Construction of part no.: type rated current

例如/ Example: 5ET 0100

产品部件号/PART NUMBER









产品部件号 PART NUMBER	额定电流 RATED CURRENT	额定电压 RATED VOLTAGE	产品部件号 PART NUMBER	额定电流 RATED CURRENT	额定电压 RATED VOLTAGE
5ET-0100H	100mA	250V/300V/ 350V/400V	5ET-1250H	2.5A	250V/300V/ 350V/400V
5ET-0125H	125mA		5ET-1300H	3A	
5ET-0160H	160mA		5ET-1315H	3.15A	
5ET-0200H	200mA		5ET-1350H	3.5A	
5ET-0250H	250mA		5ET-1400H	4A	
5ET-0315H	315mA		5ET-1500H	5A	
5ET-0400H	400mA		5ET-1630H	6.3A	
5ET-0500H	500mA		5ET-1700H	7A	
5ET-0630H	630mA		5ET-1800H	8A	
5ET-0800H	800mA		5ET-2100H	10A	
5ET-1100H	1A		5ET-2125H	12.5A	
5ET-1125H	1.25A		5ET-2150H	15A	
5ET-1160H	1.6A		5ET-2160H	16A	
5ET-1200H	2A		5ET-2200H	20A	

## 2. 相关标准/APPLICABLE STANDARDS

2.1 5ET系列产品适用的相关标准是IEC60127.1、IEC60127.3、IEC60127.7、GB/T9364.1、GB/T9364.3、GB/T9364.7。

Applicable standards for 5ET series IEC60127.1, IEC60127.3, IEC60127.7, GB/T 9364.1, GB/T 9364.3, GB/T 9364.7.

## 2.2 认证情况/APPROVED DETAILS

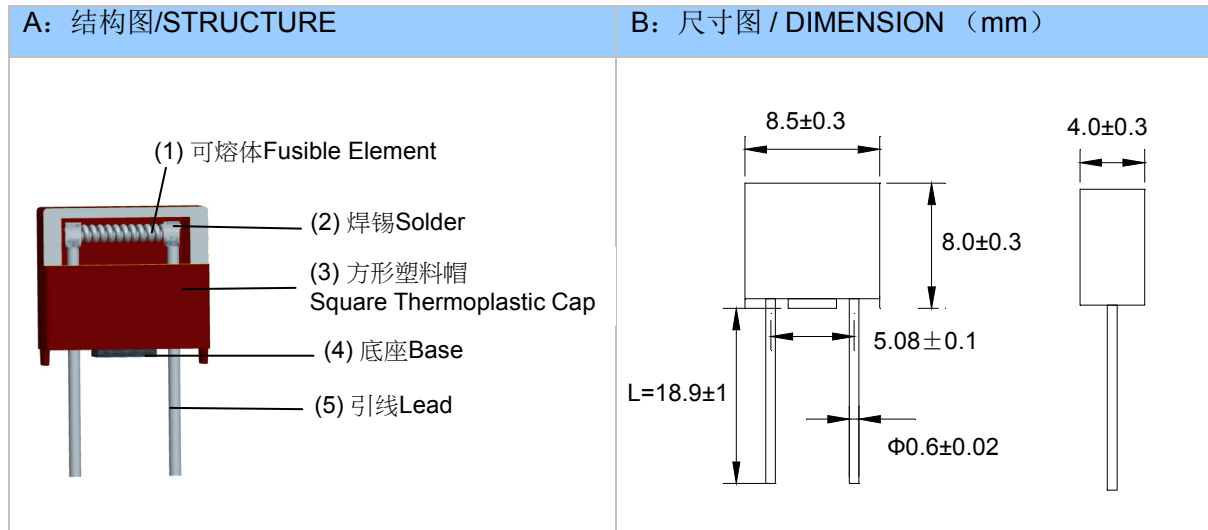
认证	证书编号	认证范围	额定电压
	E324232	100mA-20A	250V/300V/ 350V/400V
	40047916	100mA /125mA /160mA /200mA/250mA /315mA/400mA/500mA/630mA/800mA	250V
	40034107	1A/1.25A/1.6A/2A/2.5A/3.15A/4A/5A/6.3A/8A/10A	
	50564813	12.5A/15A/16A/20A	
	2020980207000039	100mA /125mA /160mA /200mA/250mA /315mA/400mA/500mA/630mA/800mA/1A/1.25A/ 1.6A/2A/2.5A/3.15A/4A/5A/6.3A/8A/10A	
	CQC19012215272	12.5A/15A/16A/20A	
	SU05032-13005A	1A/1.25A/1.6A/2A/2.5A	
	SU05032-13006A	3.15A/4A/5A/6.3A	
	JET6223-31007-1004A	1A-5A	
	JET6223-31007-1005A	6.3A-15A	

# NINGBO KLS ELECTRONIC CO; LTD

### 3. 公司地址/ADDRESS

Add: NO. 8-1, RONGXIA RD. XIAPU SHANQIAN INDUSTRIAL ZONE BEILUN NINGBO  
ZHEJIANG China 315800

### 4. 结构尺寸/ STRUCTURE AND DIMENSION



编号 NO	品名 PART	材料 MATERIAL	备注 REMARK	
1	可熔体 Fusible Element	玻璃纤维线+金属丝 Glass Fiber+ Metal Wire	/	
2	焊锡 Solder	无铅 Pb Free	/	
3	方形塑料帽 Square Thermoplastic Cap	工程塑料 Thermoplastic	棕色 Mahogany	黑色 Black
4	底座 Base	工程塑料 Thermoplastic	黑色 Black	
5	引线 Lead	镀锡铜线 Tin Plated Copper Wire	/	

#### 4.1 方形塑料帽/ SQUARE THERMOPLASTIC CAP

方形塑料帽无破裂、缺损或污染等现象。

Square Thermoplastic Cap shall have no defects such as crack, injury and contamination.

#### 4.2 塑料件阻燃性能/ FLAMMABILITY CIASSIFICATION: UL 94V-0.

### 5. 机械特性/ MECHANICAL PERFORMANCES

保险丝应能承受下列二项试验。Fuse shall withstand the following two tests.

#### 5.1 拉力试验/ TENSILE TEST

将保险丝保持在一个固定的位置，沿引线方向施加10N的拉力，引线、方形塑料帽不能松动并且方形塑料帽不应破裂。

When fuse is fixed and the tensile force 10N is applied in a direction to lead, no looseness of leads and square thermoplastic cap or damage of square thermoplastic cap shall occur.

#### 5.2 推力试验/ THRUST TEST

将保险丝保持在一个固定的位置，沿引线方向旋加2N的推力，引线、方形塑料不能松动并且方形塑料不应破裂。

When fuse is fixed and the thrust 2N is applied in a direction to lead, no looseness of leads and square thermoplastic cap or damage of square thermoplastic cap shall occur.

# NINGBO KLS ELECTRONIC CO; LTD

## 6. 电气特性/ ELECTRICAL PERFORMANCES

### 6.1 测试条件/ Test conditions

1) 全部测试条件都应在环境温度 $24^{\circ}\text{C}\pm 3^{\circ}\text{C}$ 条件下进行, 在此期间温度变化不允许达到 $+5^{\circ}\text{C}$ 和到极限范围。

All electrical tests are conducted at a ambient temperature of  $24\pm 3^{\circ}\text{C}$ . The ambient temperature is not allowed to vary more than  $5^{\circ}\text{C}$  during the test, and must be within these limits.

2) 每个保险丝支架, 水平安装在非导电的胶木测试板上, 以便被测的保险丝在测试板上能保持水平。  
Each fuse-holder is to be mounted horizontally on a test board of non-conducting bakelite, so that each fuse under test is held in a horizontal position above the board

### 6.2 电压降/Voltage drop

熔断体在额定电流条件下, 其两端的电压降不应超过下表规定的最大值。

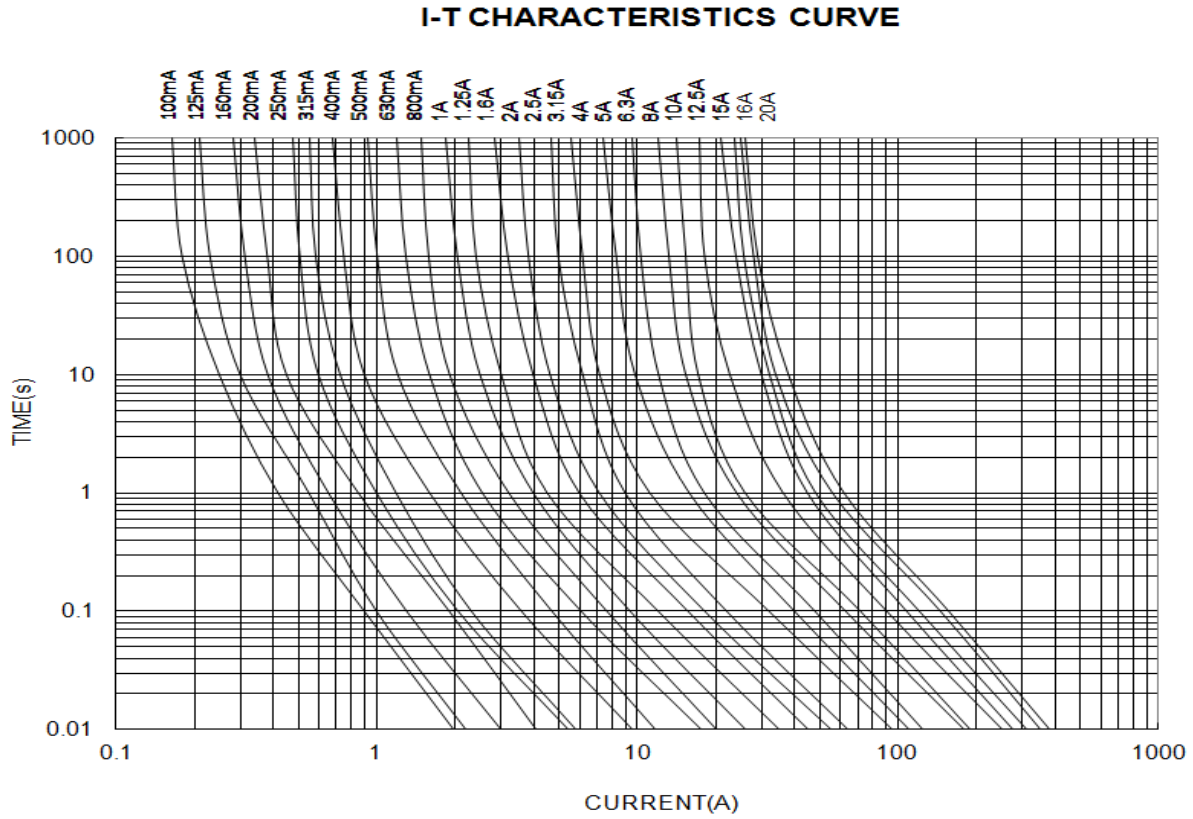
The voltage drop across the fuse-link at their rated current shall not exceed the maximum values is in follows:

额定电流 Rated current(A)	额定电压 Rated Voltage(V)	最大电压降 Maximum Voltage drop(mV)	最大维持功耗 Maximum sustained Power dissipation (mW)	I <sup>2</sup> T参考值 $\pm 20\%$ Reference (A <sup>2</sup> Sec) $\pm 20\%$
100mA	250V/ 300V/ 350V 400V	350	170	0.035
125mA		300	180	0.07
160mA		280	190	0.12
200mA		260	200	0.12
250mA		240	220	0.30
315mA		220	250	0.70
400mA		200	280	0.70
500mA		190	310	1.38
630mA		180	360	2.30
800mA		160	430	3.65
1A		140	500	7.40
1.25A		130	600	11
1.6A		120	730	20
2A		100	870	31
2.5A		100	1000	44
3.15A		100	1200	90
4A		100	1400	109
5A		100	1680	236
6.3A		100	2000	324
8A		100	2500	350
10A	100	3000	583	
12.5A	100	3000	602	
15A	100	3000	900	
16A	100	3000	1200	
20A	100	3000	1400	

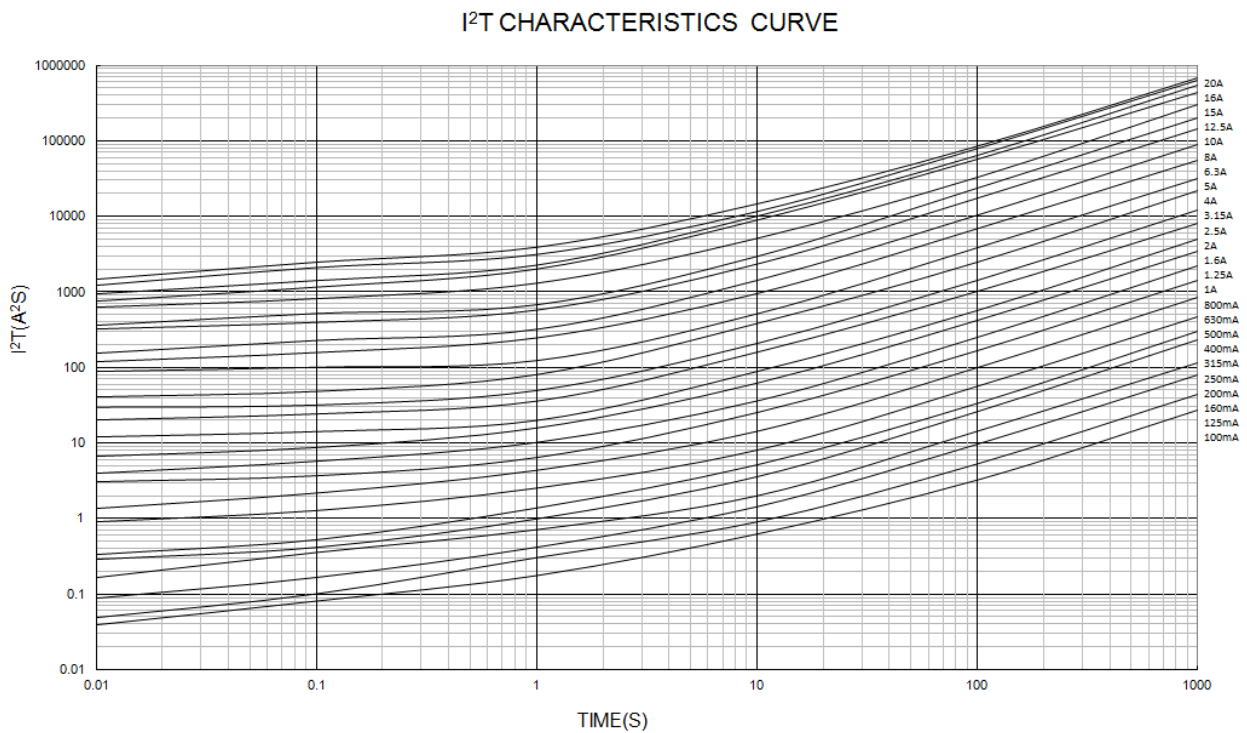
Note: I<sup>2</sup>T values stated for 8ms--10 ms opening time.

# NINGBO KLS ELECTRONIC CO; LTD

## 6.3 平均时间电流(I-T)曲线 (供参考) / AVERAGE TIME CURRENT (I-T) CURVES (FOR REFERENCE ONLY)



## 6.4 $I^2t$ 特性曲线 (供参考) / $I^2t$ CHARACTERISTICS CURVE (FOR REFERENCE ONLY)



# NINGBO KLS ELECTRONIC CO; LTD

## 6.5 预飞弧时间电流-特性/ Pre-arcing time-current characteristics

Rated Current	1.5I <sub>n</sub>	2.1I <sub>n</sub>	2.75I <sub>n</sub>		4I <sub>n</sub>		10I <sub>n</sub>	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
100mA-10A	60min.	2min.	400ms	10sec.	150ms	3sec.	20ms	150ms
12.5A—20A	/	5min.	400ms	15sec.	150ms	3sec.	20ms	150ms

## 6.6 分断能力/ BREAKING CAPACITY

保险丝分断测试后，方形塑料帽不应飞脱、损坏。

After the fuse break test, there shall be not damaged or shattered of the square thermoplastic cap.

安规认证/Safety Certification	分断能力/Breaking capacity
VDE	35 amperes or 10 × rated current; whichever is greater at 250V AC.
CQC	
KC	
PSE	100 amperes at 250V AC.
cUR <sub>Us</sub>	130 amperes at 250V AC.
	50 amperes at 300V AC.
	50 amperes at 350V AC.
	50 amperes at 400V AC.

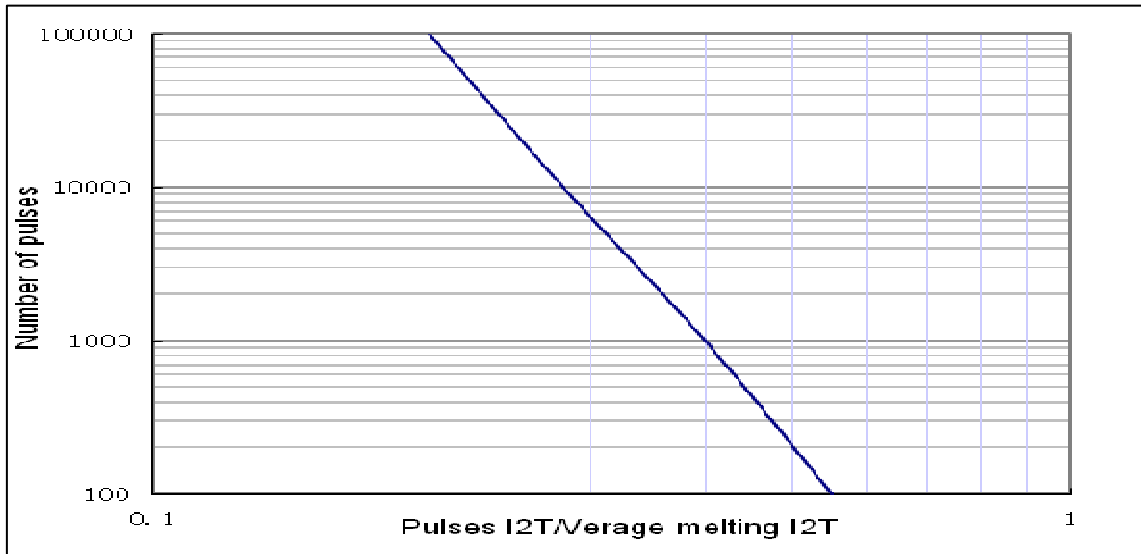
## 6.7 脉冲/PULSE

脉冲产生热循环，从而产生机械疲劳影响保险丝管寿命。设计时应使脉冲I<sup>2</sup>T远远小于保险丝管标称熔化热能I<sup>2</sup>T。保险丝管寿命（可承受的脉冲循环次数）与U（U=脉冲I<sup>2</sup>T值与保险丝管I<sup>2</sup>T值之比率）的关系参照下表。

Pulse can produce thermal cycling and mechanic fatigue which could affect the life of fuse. In design the selected fuse should have a I<sup>2</sup>T value much greater than the I<sup>2</sup>T value of pulse. Refer to follow table showing the relationship between the life of fuse (the endurable times of pulse shock) and U (ratio between pulse I<sup>2</sup>T value and fuse I<sup>2</sup>T value).

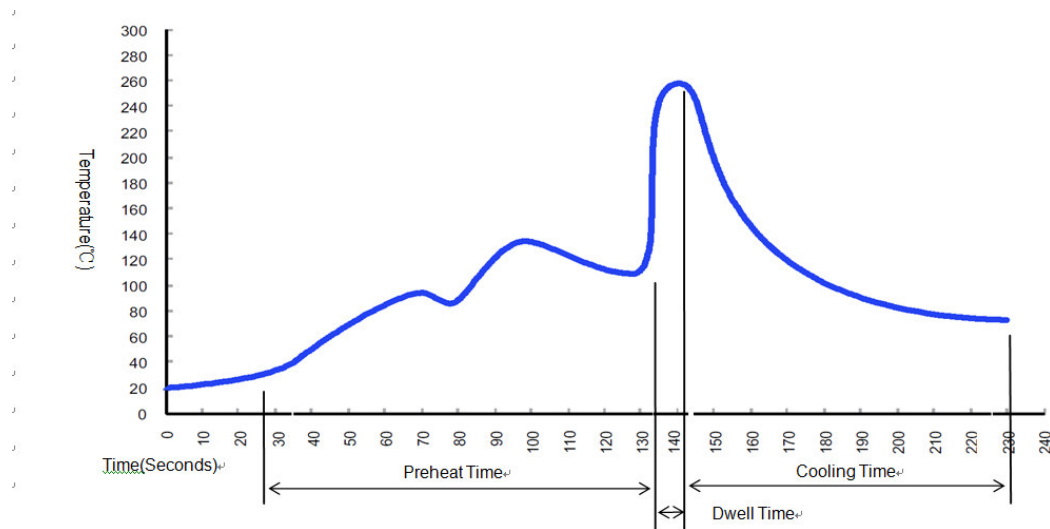
可承受脉冲次数/Endurable times of pulse shock	U（比率）/U(ratio)
100, 0000次/100,000times	22%
10, 000次/10,000times	29%
1, 000次/1,000times	38%
100次/100times	48%

# NINGBO KLS ELECTRONIC CO; LTD



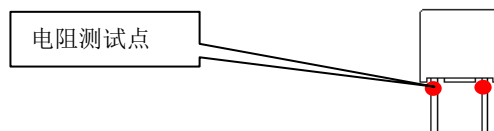
## 6.8 焊接参数/ SOLDERING PARAMETERS

- 1) 波峰焊接/ Wave soldering: 260°C, 10sec. Max.
- 2) 手工焊接/ Manual soldering: 300°C, 3sec. Max.



## 6.9 冷态电阻测试/ COLD RESISTANCE TEST

环境温度为 $25\pm 2^{\circ}\text{C}$ ，测试电流不大于保险丝额定电流的10%。



## 7. 产品标志/MARKING

### 7.1 保险丝上的标志应易于看清。

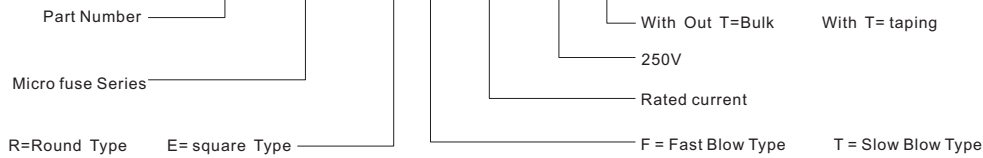
The relevant markings shall be marked on the caps of the fuse and shall be easily visible.

### 7.2 每个保险丝应标有下列标记：

The markings for every fuse shall be prescribed as below according to the types:

# NINGBO KLS ELECTRONIC CO; LTD

Product NO.: L-KLS5-102-5 E T-0500 H -T



## 8. 包装要求/ PACKING DETAILS

### 8.1 包装方式A/ PACKING MODE A

#### 8.1.1 编带式包装:

8.1.1.1 内盒参考尺寸Inner Box Size: 长×宽×高length × width × height=325×195×39mm.

8.1.1.2 外箱参考尺寸External Carton Size: 长×宽×高length × width × height=440×342×215mm.

8.1.1.3 包装要求Packing Details: 1000个/盒; 10 盒/箱。

1000EA/Box; 10 Boxes / Exported Carton.

### 8.2 包装方式B/ PACKING MODE B

#### 散装包装/ BULK PACKING:

#### 8.2.1 长引线/ Long lead(18.9mm)

8.2.1.1 内盒参考尺寸Inner Box Size: 长×宽×高length × width × height= 150×130×80mm.

8.2.1.2 外箱参考尺寸External Carton Size: 长×宽×高length × width × height=440×283×175mm.

8.2.1.3 包装要求Packing Details: 200个/袋; 5袋/盒; 10 盒/箱。

200EA/ Bag; 5 Bags / Box; 10 Boxes / Exported Carton.

#### 8.2.2 短引线/ Short Lead(3--7mm)

8.2.2.1 内盒参考尺寸Inner Box Size: 长×宽×高length × width × height= 150×130×80mm.

8.2.2.2 外箱参考尺寸External Carton Size: 长×宽×高length × width × height=440×283×175mm.

8.2.2.3 包装要求Packing Details: 1000个/袋; 2袋/盒; 10 盒/箱。

1000EA/ Bag; 2 Bags / Box; 10 Boxes / Exported Carton.

### 8.3 所有产品的包装应能达到防潮、抗振的作用，以防在运输或贮存过程中产品受潮或损坏

Packing should meet the requirements of anti-moisture and anti-shaking so that the products will not absorb moisture or be damaged during transportation or storage.

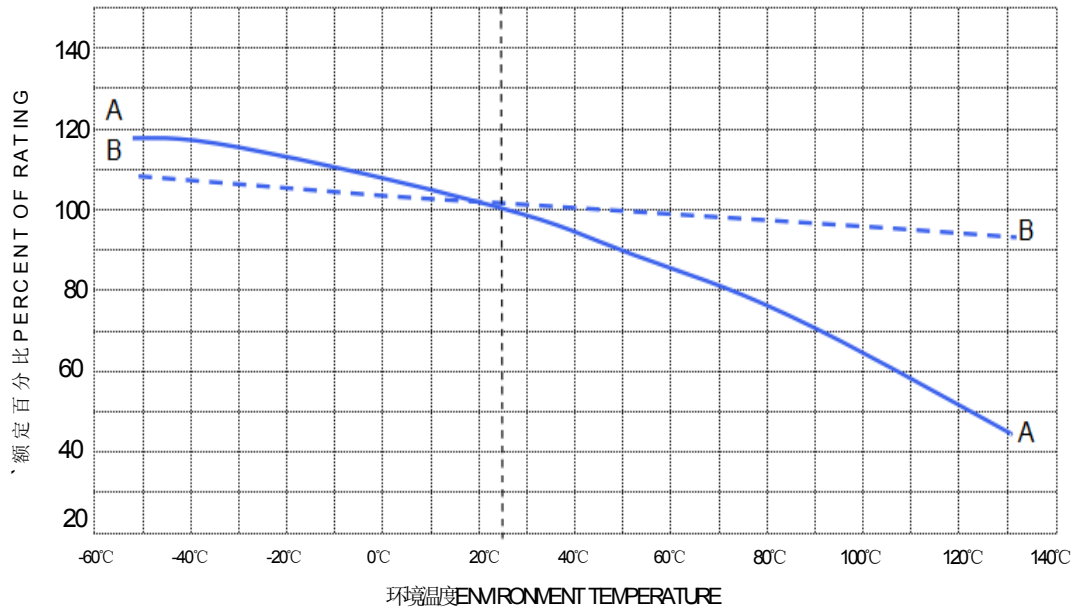
## 9. 环境参数/ENVIRONMENTAL PARAMETERS

### 9.1 工作温度/Operating Temperature: -55℃~125℃.

保险丝管的电流承载能力测试是在环境温度25℃条件下进行的，而保险丝管的电流承载能力是受环境温度影响的。环境温度越高，保险丝管的寿命越短，承载能力就越低，所以选用保险丝管时应考虑保险丝管周边的环境温度，环境温度对各类保险丝管承载能力的影响如下图所示：

The current carrying capacity tests of a fuse are performed at 25℃ and will be effected by changes with the ambient temperature. The higher the ambient temperature, the shorter fuse life will be, and the lower the current carrying capacity will be. So the ambient temperature shall be considered for proper fuse selection. Refer to the following chart showing the effect on the current carrying capacity of all kinds of fuse..

# NINGBO KLS ELECTRONIC CO; LTD



Curve A: Time-lag fuse      Curve B: Time-fast fuse

9.2在温度+10~60°C、相对湿度≤75%的密闭条件下可存放3年。

Under airtight in temperature +10~60°C `relative humidity ≤75% can store 3 years.

在温度+10~60°C、相对湿度为95%的非露天下最多可存放30天。

Without dew in temperature +10~60°C `relative humidity be 95% maximum value for 30days.

## 10. 规格书有效性 The specification for validity

### 10.1 修订协议 Agreement of revision

规格书因需要修订时，须由两公司协议后执行。

Specifications for need revision, must be performed after both companies agreement.

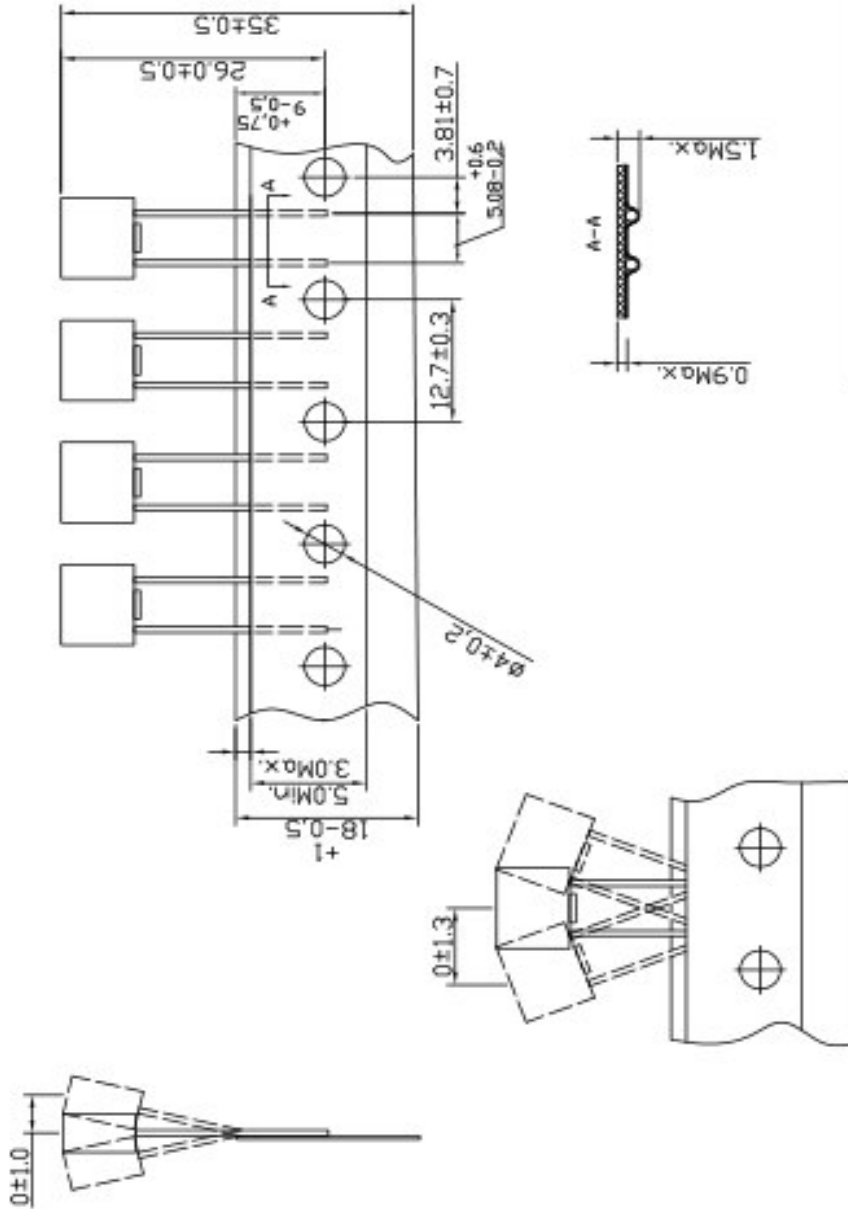
### 10.2 有效性 Validity

本承认书提出后，于贵司承认期间，可暂时使用，若经过1个月无异议或无签回，则视同有效件。

The specifications can be used temporarily during the period of approval .If you have no any objection or not return one hard copy to us within one month. This specification will be operated as a valid document.

# NINGBO KLS ELECTRONIC CO; LTD

## 11.成品图/ FINISHED PRODUCT DRAWING



TITLE	DRAWN BY	CHECKED BY	APPROVED BY	SCALE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM				1:1
DWG NO.	<div style="display: flex; justify-content: space-between;"> <span>2017.11.25</span> <span>2017.11.25</span> <span>2017.11.25</span> </div>			QUANTITY
MATERIAL				TREATMENT
TREATMENT				QUANTITY
QUANTITY				QUANTITY

MATCH HERE ON IS THE PROPERTY OF THE COMPANY. ALL RIGHTS RESERVED. FOR REPRODUCTION OR TRANSMISSION WITHOUT PERMISSION OF THE COMPANY AUTHORITY.

文件受控章

修改时间	修改记录
1	2017.11.25 文件改版
2	

