



Microfuse RoHS & Pb-free
好利® 保险丝管



产品规格书

PRODUCT SPECIFICATION

瓷管保险丝（慢断型）

CERAMIC TUBE FUSE (SLOW-BLOW)

65TS(P) RoHS SERIES

编码：A05 HLD-PSI-8118 2022/08/03

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1 适用范围/ SCOPE

本规格书适用于公司生产并获得 UL、CUL、PSE、KC、TUV 安全标准认证的 65TS(P) RoHS 系列 HOLLY® 商标的小型保险丝管。

This specification defines the technical requirements of miniature fuse type 65TS(P) RoHS series with HOLLY® brand, which are approved by UL, CUL, PSE, KC and TUV.

产品部件号为: 型号 额定电流 额定电压
 Construction of part no.: type rated current rated voltage
 例如/ Example: 65TS(P) 080 H

* 额定电压/ Rated Voltage: H - 250V L-125V

产品部件号/ PART NUMBER

零件目录 PART NUMBER	额定电流 RATED CURRENT	额定电压 RATED VOLTAGE	冷电阻 Nominal Cold Resistance(Ohms)	平均I ² T值/ Average I ² T Value(A ² ·sec.)
65TS(P)0500H/L	500 mA	250V/ 125V	3.5600	0.1752
65TS(P)010H/L	1.0 A		0.5350	0.5117
65TS(P)013H/L	1.25 A		0.5970	0.5002
65TS(P)015H/L	1.5 A		0.4500	0.7983
65TS(P)016H/L	1.6 A		0.3900	1.521
65TS(P)020H/L	2.0 A		0.2550	2.342
65TS(P)025H/L	2.5 A		0.1780	4.545
65TS(P)030H/L	3.0 A		0.0649	4.987
65TS(P)032H/L	3.15 A		0.0610	5.246
65TS(P)035H/L	3.5 A		0.0492	8.456
65TS(P)040H/L	4.0 A		0.0396	12.47
65TS(P)050H/L	5.0 A		0.0270	26.52
65TS(P)060H/L	6.0 A		0.0210	49.68
65TS(P)070H/L	7.0 A		0.0164	70.47
65TS(P)080H/L	8.0 A		0.0133	108.5
65TS(P)100H/L	10 A		0.0090	238.8
65TS(P)120H/L	12 A		0.0074	434.6
65TS(P)130H/L	13 A		0.0060	531.2
65TS(P)150H/L	15 A		0.0051	720.1
65TS(P)160H/L	16 A		0.0048	951
65TS(P)200H/L	20 A	0.0036	2008	
65TS(P)250H/L	25 A	0.0026	3511	
65TS(P)300H/L	30 A	0.0018	6658	

2 相关标准/ APPLICABLE STANDARDS

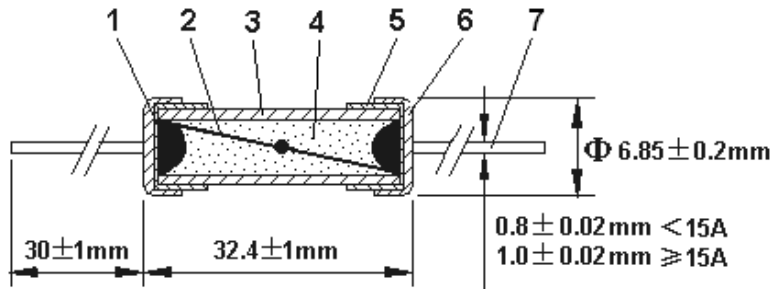
2.1 65TS(P) RoHS 系列产品适用的相关标准是 UL248-1、UL248-14、CSA C22.2 NO.248.1-00、CSA C22.2 NO.248.14-00、JIS C6575 (PSE) 和 02(K)。

Applicable standards for 65TS(P) RoHS series are UL248-1, UL248-14, CSA C22.2 NO.248.1-00, CSA C22.2 NO.248.14-00, JIS C6575 (PSE) and 02(K)。

2.2 认证情况/ APPROVED DETAILS

额定电压 RATED VOLTAGE	UL/CUL		UR/CUR		TUV	
	认证范围 APPROVED RANGE	认证号码 CERT. NO.	认证范围 APPROVED RANGE	认证号码 CERT. NO.	认证范围 APPROVED RANGE	认证号码 CERT. NO.
125V	500mA-15A	E156471	20A-30A	E156471	3A,3.15A,3.5A,4A,5A,6A,7A,8A,9A, 10A,12A,13A,15A,20A,25A,30A	J 50136250
250V						
额定电压 RATED VOLTAGE	PSE		KC		CQC	
	认证范围 APPROVED RANGE	认证号码 CERT. NO.	认证范围 APPROVED RANGE	认证号码 CERT. NO.	认证范围 APPROVED RANGE.	认证号码 CERT. NO
125V	1A~5A	JET2489-31003-1030	/	/	/	/
	5.1A~15A	JET2489-31003-1031				
250V	1A~5A	JET2489-31003-1032	500mA~2.5A	SU05008-3009D	10A、12.5A 16A、20A	CQC2001 2261388
	5.1A~15A	JET2489-31003-1033	3A~10A	SU05008-3030D		
	16A~30A	JET2489-31003-1022	12A, 15A	SU05008-8011C		
			20A, 25A, 30A	SU05008-8012C		

3 构造图/ CONSTRUCTION FIG. & DIMENSION



编号 No.	品名 PART	材料名 MATERIAL MODEL	备注 NOTE
1	焊锡 Solder	无铅焊锡/ Pb Free	额定电流 $I_n \leq 15A$
		含铅高温焊锡/ Pb Contained High Temperature Solder	额定电流 $I_n > 15A$
2	可熔体 Element	玻璃纤维 + 金属丝/ Glass Fiber + Metal Wire	额定电流 $I_n < 1A$
		金属丝/ Metal Wire	额定电流 $I_n = 1A$
		一个锡球+金属丝/ One Solder Blob+ Metal Wire	额定电流 $I_n > 1A$
3	管体 Tube	陶瓷管 Ceramic Tube	/
4	填充物/ Filler	石英砂/ Quartz Sand	/
5	铜帽/ Cap	黄铜/ Brass	镀镍/ Nickel Plated
6	尾线铜帽 Cap with Lead	黄铜 Brass	镀镍 Nickel Plated
7	尾线/ Pig Tail	镀锡铜线/ Tin Plated Copper	镀锡/ Tin Plated

3.1 陶瓷管/ CERAMIC TUBE

陶瓷管必须无缺陷破裂、缺损和污染。

The ceramic tube shall have no defects such as crack, injury and contamination.

3.2 铜帽/ CAP

铜帽应焊接牢固，以保证在未损坏熔断体时，铜帽不能被卸脱。样品在 15°C-35°C 水中浸 24 小时取出后，在每个端帽上，均匀地施加拉力至 10N，保持 1 分钟，铜帽不应脱落。

Cap should be firmly attached so that it is not possible to remove them without damaging the fuse itself. The samples are immersed in water for 24 hours at a temperature between 15°C and 35°C. After remove from the water, an axial pull steadily increasing to 10N is applied to each cap for 1 minute.

3.3 焊点/ SOLDERING JOINT

焊接铜帽端时，铜帽外表面不能有残留的助焊剂、焊锡、可熔体等异物。

Soldering joint in end cap shall not be melted during normal operation and shall not have solder chips on tube, element in view and outer surface of caps.

4 机械特性/ MECHANICAL PERFORMANCES

保险丝应能承受下列二项试验。/ Fuse shall be withstood following two testing.

4.1 拉力试验/ Tensile Strength

固定保险丝的一端铜帽，然后在另一端铜帽上，沿水平轴方向施加 10N 的拉力，两端铜帽不应松动且管体不应破碎。

When one end cap of the specimen is fixed and then the tensile force 10N is applied to the other end cap in a direction to separate the end caps, no looseness of end caps or damage of fuse-tube shall occur.

4.2 管体强度试验/ Strength of Fuse-tube

两端铜帽固定好后，在陶瓷管的中心位置施加 30N 的压力，管体不应破碎。

When middle parts of end caps at both ends of the specimen are supported and then the force 30N is applied to the middle part of the fuse-tube, no damage of the fuse-tube shall occur.

5 电气特性/ ELECTRICAL PERFORMANCES

5.1 测试条件/ TEST CONDITION

全部测试条件都应在环境温度 24°C ± 3°C 条件下进行，在此期间温度变化不允许达到 +5°C 和到极限范围

All electrical tests are conducted at an ambient temperature of 24 ± 3°C. The ambient temperature is not allowed to vary more than 5°C during the test, and must be within these limits.

5.2 负载能力测试/ CURRENT-CARRYING CAPACITY TEST

当保险丝通以 100% 倍额定电流的条件下进行测试时，在 4 小时内电路不应断开，保险丝不被电流熔化，管体不破裂。

When a fuse is carrying 100% of rated current for continuing 4 hours and more, no open circuit, melt fusible element, or ruptured tube shall occur in any manner during this test.

5.3 温度上升试验/ TEMPERATURE RISE TEST

当保险丝通以 100% 倍额定电流的条件下进行测试时，在达到热量平衡后，测量保险丝表面的温度，保险丝表面的温度上升必须等于或低于 75°C (额定电流 $I_n < 15A$) 或 130°C (额定电流 $I_n \geq 15A$)。注：温度上升 = 保险丝表面的温度 - 环境温度。

Measure the temperature of the surface of the fuse under the 100% rated current, when the thermal equilibrium reaches. The temperature rise on the surface of each fuse shall be 75°C ($I_n < 15A$) or 130°C ($I_n \geq 15A$) or less. Note: Temp. rise = fuse temp. - room temp..

5.4 预飞弧时间-电流特性/ PRE-ARCING TIME-CURRENT CHARACTERISTICS

当保险丝通以下表规定的电流时，其熔断时间必须符合下表的要求，且铜帽不能飞脱、管体不应破裂、损坏。

When the current in the following table is passing the fuse, its opening time must be in accordance with the requirements in the following table, that is, the pre-arcing time. Moreover, neither damage of the fuse-tube nor shattering of the cap shall occur.

熔断电流/ % of Rated Current	熔断时间/ Open Time
135%	1 hour Max.
200%	120 Sec. Max.
1000% (10A/12.5A/16A/20 A)	300ms Max.

5.5 分断能力/ INTERRUPTING CAPACITY

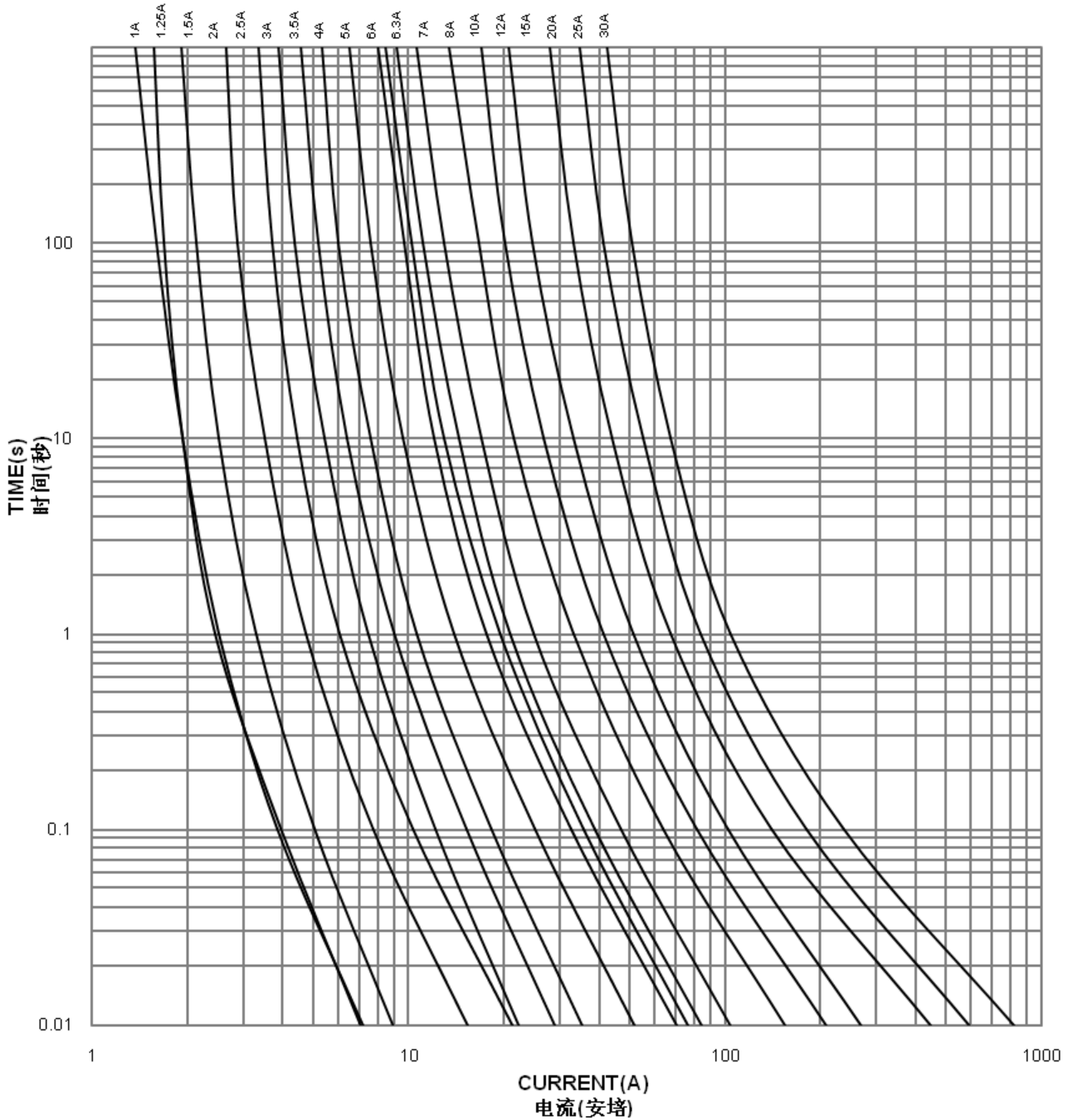
这些型号的保险丝的分断能力应能达到下表规定的相应的各种安全认证的分断能力要求。保险丝分断电路后，保险丝管不应破裂、铜帽飞脱、且铜帽两端的绝缘电阻不小于 0.1MΩ。

The interrupting capacity should reach the interrupting rated current given in the following table. And after this test, there should be no damage of the fuse-tube or shattering of the caps. After this test, the insulation resistance between the end caps shall be not less than 0.1MΩ.

额定电压 RATED VOLTAGE	分断电流/ INTERRUPTING CURRENT						
	UL/CUL	UR/CUR	PSE	KC	CQC	TUV	
125V	10000A (500mA~15A)	400A (20A~30A)	500A (1A~15A)	/	/	400A (20A~30A)	35A or 10I _n Whichever is greater (3A~15A)
250V	35A (500mA~1A)	100A (20A~30A)	100A (1A~30A)	100A (500mA~30A)	1500A (10A、12.5A、 16A、20A)	100A (20A~30A)	
	100A (1.1A~3.5A)						
	200A (3.6A~10A)						
	750A (10A~15A)						

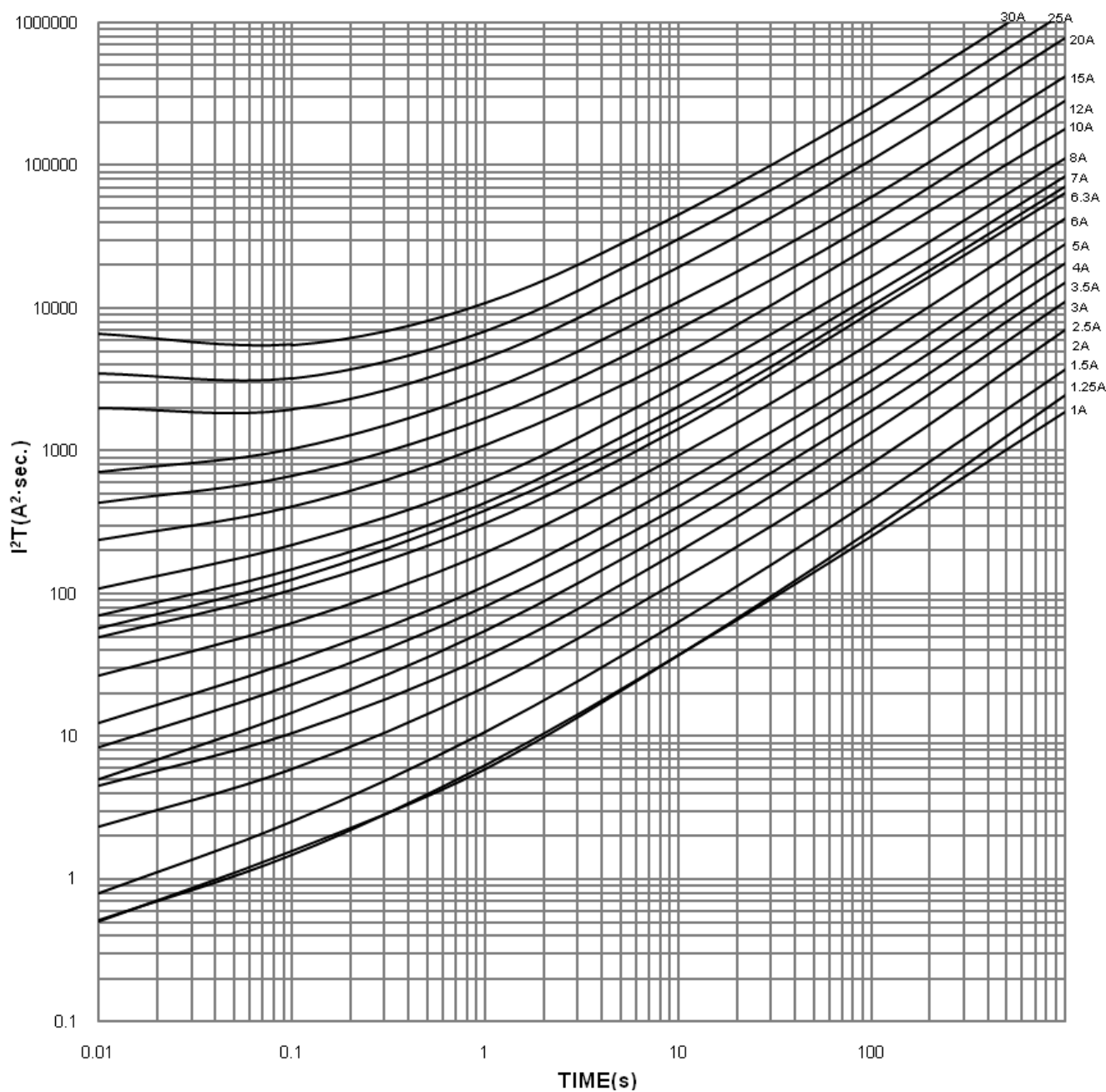
5.6 平均 I-T 特性曲线图(仅供参考)/ THE AVERAGE I-T CHARACTERISTICS CURVE(FOR REFERENCE ONLY)

65TS(P) AVERAGE I-T CHARACTERISTICS CURVE(FOR REFERENCE ONLY)
65TS(P) 平均I-T曲线图(仅供参考)



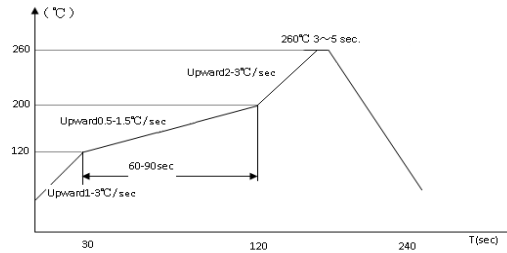
5.7 平均I²T-T特性曲线图(仅供参考)/ THE AVERAGE I²T-T CHARACTERISTICS CURVE(FOR REFERENCE ONLY)

65TS(P) RoHS Average I²T-T Characteristics Curve(For Reference Only)



5.8 焊接参数/ SOLDERING PARAMETERS

1) 波峰焊---260℃，最大 10 秒。 / Wave soldering---260℃, 10 seconds Maximum.



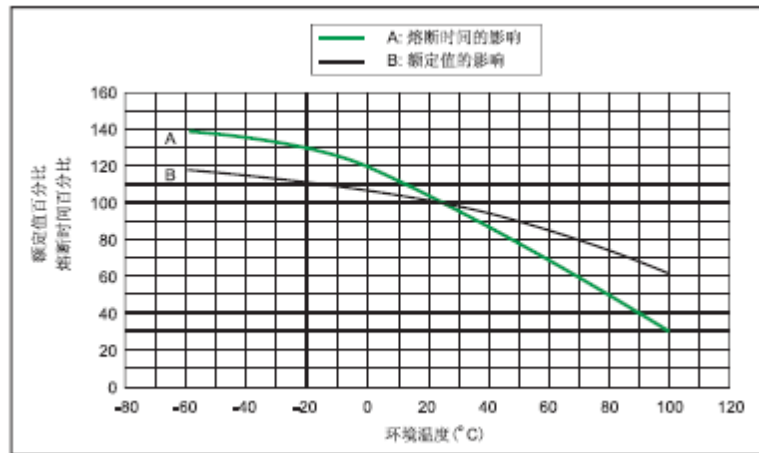
2) 手工焊接/ Manual soldering: 350℃, 3sec. Max..

3) 耐热焊接/ Resistance to soldering heat: 260℃, 10sec. Max..

5.9 环境温度/Ambient Temperature

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 is, 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 charts showing its effect on the current carrying capacity of all kinds of fuse.



5.10 电阻测试/ COLD RESISTANCE TEST

环境温度为 25±2℃，测试电流不大于保险丝额定电流的 10%。

Input 10% of fuse rated current to fuse for cold resistance test at surrounding temperature of 25±2℃.

6 产品标志/ MARKING

6.1 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.

6.2 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.

- 1) 安全认证标志/ Safety approval logo:
- 2) 型号名称/ Type: 65TS or TS (仅有 认证时型号名称为 TS/ only denotes for 65TS)

- 3) 商标/ Trademark: \oplus
- 4) 额定电压/ Rated Voltage
- 5) 额定电流/ Rated Current

注: 1)、2) 和 3)应标注在保险丝管一端铜帽的侧面。

Note: 1), 2) and 3) should be marked on the one side cap of the fuse.

4) 和 5)应标注在保险丝管另一端铜帽的侧面。

4) and 5) should be marked on the other side cap of the fuse.

7 包装要求/ PACKING DETAILS

7.1 包装方式 A(尾线<40mm)/ EXTERNAL CARTON PACKING A(Pig Tail<40mm)

7.1.1 参考尺寸: 长×宽×高=470×400×230mm。

Reference Dimension: length×width×height=470×400×230mm.

7.1.2 包装细节: 50 个/袋; 4 袋/盒; 25 盒/箱。

Packing Details: 50EA/ bag; 4 bags/ box; 25 boxes/ Carton.

7.2 包装方式 B (尾线≥40mm) / EXTERNAL CARTON PACKING A(Pig Tail≥40mm)

7.2.1 参考尺寸: 长×宽×高=470×400×230mm。

Reference Dimension: length×width×height=470×400×230mm.

7.2.2 包装细节: 50 个/袋; 2 袋/盒; 25 盒/箱。

Packing Details: 50EA/ bag; 2 bags/ box; 25 boxes/ Carton.

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。

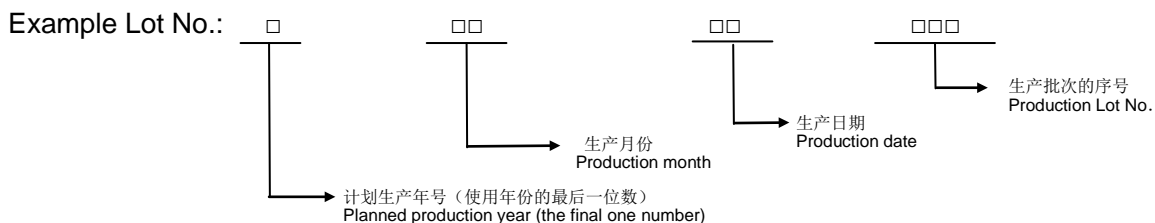
Packing shall be so carried out that the products will not absorb moisture or be damaged during transportation or storage.

7.2 标签/ LABEL

标签应包括型号、额定电流、额定电压、分断电流、商标、安全标志、批量号码、公司名称、RoHS 标志、绿色“G”和“QA”标志。

The label in the smallest package in which the fuses are put shall contain the Type, Rated current, Rated voltage, Interrupting current, Trademark, Safety approval logo, Lot. No., Company name, “RoHS” mark, green “G” and “QA” mark.

例批量号:



8 环境参数/ ENVIRONMENTAL PARAMETERS

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

8.2 储存温度/ Storage Temperature: -55℃~85℃.

9 信赖性试验/ RELIABILITY TEST

项目/ Item	试验要求/ Test Requirement	试验条件/ Test Condition
高温试验 High Temperature Test	试验后保险丝管的电阻符合范围; 电气特性符合: 200%≤2 分钟、135%≤1 小时、100%≥4 小时。 After high temperature test, the resistance value of the fuses shall be in range. Electrical Characteristics: 200%≤2minutes, 135%≤1hour, 100%≥4hours.	测试温度: 105±2℃, 测试时间: 1000 小时。 Test Temperature: 105 ± 2 °C , Test Time: 1000hours.

<p>低温试验 Low Temperature Test</p>	<p>试验后保险丝管的电阻符合范围；电气特性符合： 200%≤2 分钟、135%≤1 小时、100%≥4 小时。 After low temperature test, the resistance value of the fuses shall be in range. Electrical Characteristics: 200%≤2minutes, 135%≤1hour, 100%≥4hours.</p>	<p>测试温度：-20±2℃，测试时间：1000 小时。 Test Temperature: -20 ± 2 °C , Test Time: 1000hours.</p>
<p>高湿试验 High Humidity Test</p>	<p>试验后保险丝管的电阻符合范围；电气特性符合： 200%≤2 分钟、135%≤1 小时、100%≥4 小时。 After high humidity test, the resistance value of the fuses shall be in range. Electrical Characteristics: 200%≤2minutes, 135%≤1hour, 100%≥4hours.</p>	<p>测试温度：40 ± 2 °C，测试湿度：90%~95%，测试时间：96 小时。 Test Temperature: 40 ± 2 °C , Test Humidity: 90%~95%, Test Time: 96hours.</p>
<p>热冲击试验 Thermal Shock Test</p>	<p>试验后保险丝管的电阻符合范围；电气特性符合： 200%≤2 分钟、135%≤1 小时、100%≥4 小时。 After thermal shock test, the resistance value of the fuses shall be in range. Electrical Characteristics: 200%≤2minutes, 135%≤1hour, 100%≥4hours.</p>	<p>每个循环：-40℃放置 30 分钟后 85℃放置 30 分钟，测试 10 循环。 -40 °C / 30mins → 85 °C / 30mins, 10 cycles.</p>
<p>落下、冲击试验 Falling Shock Test</p>	<p>铜帽应固定牢固,以保证在未损坏熔断体时,铜帽不能被卸下。铜帽表面镀层应牢固不易脱落，每个端帽应能经受专用的设备外加的轴向拉力 10N，保持 1 分钟。陶瓷管必须无缺陷破裂、缺损和污染。试验后保险丝管的电阻符合范围；电气特性符合： 200%≤2 分钟、135%≤1 小时、100%≥4 小时。 Cap should be firmly attached so that it is not possible to remove them without damaging the fuse itself. The means of attachment shall be sufficient to withstand an axial pull of 10N applied to each cap for 1 minute. The cap shall be nickel plated firmly. The ceramic tube shall have no defects such as crack and injury. After falling shock test, the resistance value of the fuses shall be in range. Electrical Characteristics: 200%≤2minutes, 135%≤1hour, 100%≥4hours.</p>	<p>一箱 5,000 个保险丝管从一米高自由落下，跌落 20 次。 5,000EA fuses/ one external carton, Falling Height: 1 meter, Falling Times: 20.</p>
<p>可焊性试验 Solderability Test</p>	<p>试验后尾线表面的焊锡覆盖率>95%。 After solderability test, solder coverage of fuse's pig tail will be no more than 95%.</p>	<p>预涂助焊剂 5±1 秒后，浸入 245±5℃的无铅焊锡 5±0.5 秒。 Immerse to flux 5±1sec. then dip in solder bath 245±5°C, 5±0.5sec..</p>

X-ON Electronics

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[FHC16322ADTP](#) [0308001.UR](#) [FCC16202ABTP](#) [7010.9962.63](#) [SEF 12A 65V \(G\)](#) [MST 250mA 250V](#) [TB60](#) [06 100.4](#) [TBF50](#) [TBF40](#)
[2010T315mA250V](#) [06 110.7](#) [12 100.1.5](#) [06 110.5](#) [1206FA-R250](#) [R06.100.6](#) [R12.100.15](#) [R06.000.0.375](#) [R06.000.6](#) [R06.100.0.25](#) [R12.000.8](#)
[R06.000.0.5](#) [R06.000.0.75](#) [R06.000.8](#) [R06.100.0.75](#) [R06.100.8](#) [R06.100.0.375](#) [R06.100.0.5](#) [R06.000.7](#) [R06.100.7](#) [S0603-S-2.0A](#) [F06F3.5](#)
[F12F20](#) [TA3VT2](#) [F12F1](#) [F06F7](#) [F06T3.5](#) [F06F0.375](#) [F06T8](#) [F12F30](#) [4T2A250V](#) [R12.100.7](#) [R12.100.30](#)