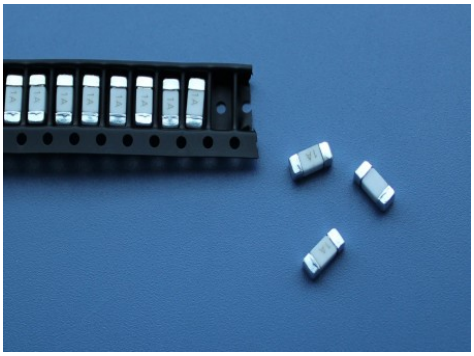
1140WLS Series

SMD chip fuse

特征/General Information



- **特点/Main Characteristics**

  贴片保险丝/SMD fuse，慢断/ Slow Blow(S)，1140

- **材料/Materials**

  本体/Body：陶瓷/Ceramic

  端子/Termination：铜镀银/ Copper plated with silver

- **环保标准/Environment Standard**

  无卤/Halogen-free，RoHS

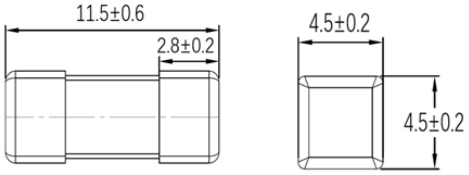
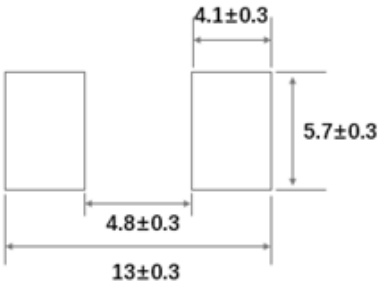
- **工作温度/Operating temperature**

  -55°C to +125°C (需降额/with de-rating)

- **产品认证/Certificates**

  UL

产品尺寸与推荐焊盘/Dimensions and Recommended Land Pattern(mm)

产品尺寸/Dimensions	推荐焊盘/ Recommended Land Pattern
	

动作时间特性/Clear-Time Characteristics

% of current rating	Clear-time at 25 °C	
	15-60A	70A-100A
100%	4 hours min	4 hours min
200%	120 seconds max	\
300%	\	10s max

● 命名规则/ Part Numbering

1140 W LS 1500A 072V (A)

(1) (2) (3) (4) (5) (6)

(1) 尺寸代码/Size code：标准 EIA 芯片尺寸/Standard EIA Chip Size

(2) 公司代码/Company code：维安贴片保险丝/Wayon Chip Fuse

(3) 系列代码/Series code: NS series

(4) 额定电流/Current rating code: 1500A-15A

(5) 额定电压/Voltage rating code: 072V-72VDC

(6) 补充编码/Supplementary Code：此处可以空白或者为数字、字母，代表客户代码或包装代码/The default is empty, alphabet and number denoting customer code or package code.

● 电气特性/Electrical Characteristics

产品代码 Part number	额定电流 Current Rating	额定电压 Voltage Rating	分断能力 Interrupting Rating	冷态电阻 Nominal Cold DCR	标称 I^2t Nominal I^2t	Marking Code
	A	V	A	mΩ	(A^2s)	
1140WLS1500A072V	15	250VAC 72VDC	150A@250VAC 600A@72V DC	3.3	400	15S
1140WLS2000A072V	20			2.3	750	20S
1140WLS2500A072V	25			2.0	1000	25S
1140WLS3000A072V	30			1.5	1700	30S
1140WLS4000A072V	40			1.0	3500	40S
1140WLS5000A060V	50	125V AC 72V DC 60V DC	250A@125V AC 600A@72V DC 600A@60V DC	0.66	2000	50S
1140WLS6000A060V	60			0.51	4300	60S
1140WLS7000A060V	70			0.44	7800	70S
1140WLS8000A060V	80			0.35	11000	80S
1140WLS10000A060V	100	72V 60V	600A@72V DC 600A@60V DC	0.23	90000	100S

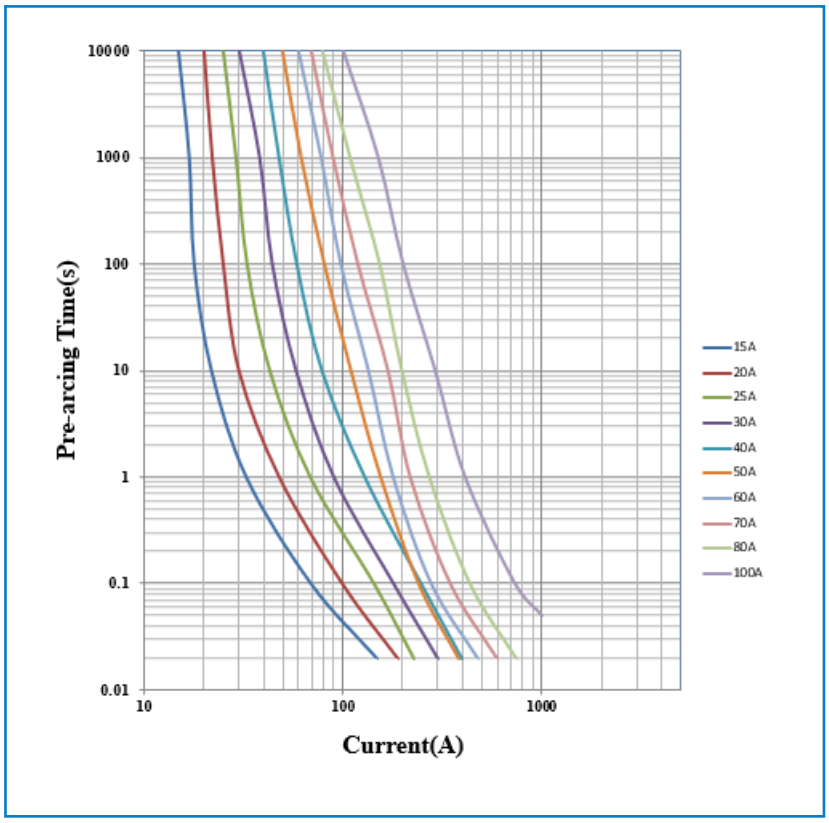
Notice:

1.冷态电阻是在环境温度为 25℃时，以<10%的额定电流测量的。/DC cold resistance are measured at <10% of rated current in ambient temperature of 25℃.

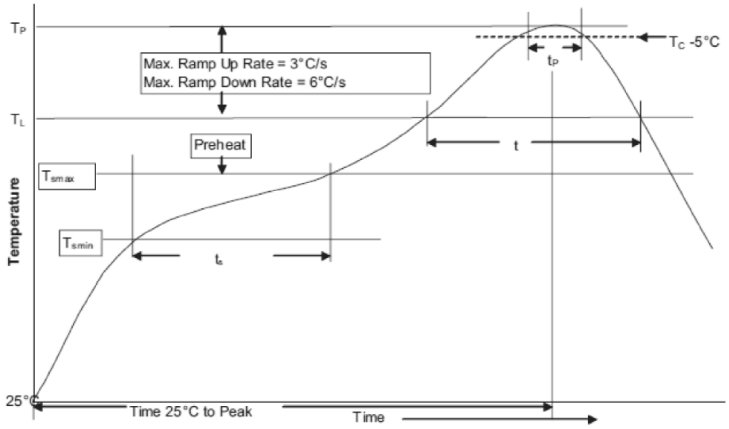
2. I^2T 的值是通过 8-10ms 熔断时的电流值计算得到的。/ The current values used for calculating I^2T should be within the standard range of 8ms ~ 10ms.

3. 70-100A 正在申请 UL 认证。/70-100A UL approval is pending.

动作时间曲线/Average Clear-Time Curves



回流焊条件/Solder Reflow Recommendations



曲线特征/Profile Feature		无铅焊接 Pb-Free Assembly
平均升温速率（从 Tsmax 到 Tp） Average Ramp-UP Rate(Tsmax to Tp)		3℃/s Max
预热 Preheat	最低温度/Temperature Min(Ts min)	150℃
	最高温度/Temperature Max(Ts max)	200℃
	时间（从 Tsmin 到 Ts max） Time(Tsmin to Ts max)	60sec～120sec
液相线温度/Liquidous temperature(T_L) 液相线停留时间/Time at liquidous(t_L)		217℃ 60～150s
封装体峰值温度 Peak package body temperature(Tp)		260℃
在规定等级温度（Tc）±5℃范围内的时间（tP） Time (tP) within 5℃ of the specified classification temperature (Tc)		30s
平均降温速率（从 Tp 到 Tsmax） Average ramp-down rate (T_p to T_{smax})		6℃/s Max
从 25℃升至峰值温度的时间 Time (25℃ to Peak Temperature)		8 minutes Max

● 焊接推荐条件/Recommended conditions for soldering

1. 红外回流焊/Infrared Reflow

温度/Temperature: 260℃

时间/Time: 5sec Max

2. 波峰焊/Wave Soldering

熔锡槽温度/Reservoir Temperature: 260℃

熔锡槽停留时间/Time in Reservoir: 10sec Max

可靠性测试/Reliability Tests

No.	测试/Test	要求/Requirement	测试条件/Test condition	测试参考 Test reference
1	耐焊接热性能 Resistance to Solder Heat	直流电阻（DCR）变化量≤±10%; 无机械损伤 DCR change ≤±10% No mechanical damage	260℃下浸泡 1 次， 60 s One dip at 260℃ for 60 sec	MIL-STD-202 Method 210
2	可焊性 Solderability	最小覆盖面积≥95% Minimum95%coverage	235℃下浸泡 1 次， 5 s One dip at 235℃ for 5sec	MIL-STD-202 Method 208
3	湿热偏压 Humidity Bias	直流电阻（DCR）变化量≤±10%; 无机械损伤 DCR change ≤±10% No mechanical damage	1000 小时，温度 85℃/ 相对湿度 85% 1000 hours 85°C/85%RH	MIL-STD-202 Method 103
4	热冲击 Thermal shock	直流电阻（DCR）变化量≤±10%; 无机械损伤 DCR change ≤±10% No mechanical damage	在-55℃和+125℃之间循环 300 次 300 cycles between -55 ℃ and +125℃	MIL-STD-202 Method 107
5	高温暴露 High Temperature Exposure	直流电阻（DCR）变化量≤±10%; 无机械损伤 DCR change ≤±10% No mechanical damage	供电状态下，在 C℃温度下放置 1000 小时 degree C without power, 1000h	MIL-STD-202 Method 108

● 电气规格/Electrical Specifications

分断后特性/Clear-Time Characteristics:

与简式规格书中规定的内容一致。/Same as specified on the Short Form Data Sheet.

分断后绝缘电阻/Insulation Resistance after Opening:

施加额定电压分断时,绝缘电阻最小值为 20,000 欧姆。Fuse在低压条件下分断,可能导致分断后的绝缘电阻值降低。/20,000 ohms minimum when cleared with rated voltage applied. Fuse clearing under low voltage conditions may result in lower after clearing insulation resistance values. (注：在正常故障条件下（低压或额定电压条件），WAYON贴片Fuse的分断后绝缘电阻值足以满足电路保护需求。/Note: Under normal fault conditions (low or rated voltage conditions), WAYON chip fuses provide sufficient after clearing insulation resistance values for circuit protection.)

载流能力/Current Carrying Capacity:

依据 MIL-PRF-23419 标准评估，在环境温度为 + 25℃的条件下，能承受 100% 额定电流，且持续时间不低于 4 小时。/100% Rated current at +25℃ ambient for 4 hours minimum when evaluated per MIL-PRF-23419.

分断能力/Interrupt Ratings:

与简式规格书中规定的内容一致。/Same as specified on the Short Form Data Sheet.

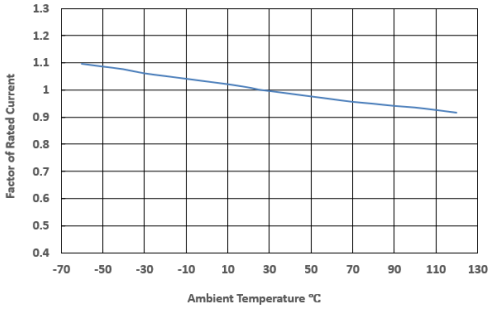
保险丝选型与温度降额指南/Fuse Selection and Temperature De-rating Guideline:

环境温度会影响熔断器的载流能力。当熔断器在高于 25℃的温度下工作时，需进行 “降额”（de-rated）使用。/The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25℃, the fuse shall be "de-rated".

从产品目录中选型时,可遵循以下规则:目录fuse额定电流 = 标称工作电流/0.75/最高工作温度下的降额百分比。/To select a fuse from the catalog, the following rule may be followed: Catalog Fuse Current Rating = Nominal Operating Current / 0.75 / % De-rating at the maximum operating temperature.

示例：在 100℃温度下，降额百分比为 80%，标称工作电流为4A，则从产品目录中选取的fuse额定电流应为：/Example: At 100℃, % De-rating is 80%. The nominal operating current is 4A. The current rating for fuse selected from the catalog shall be:

4 / 0.75 / 80% =6.67A



● 包装与储存/Packaging and Storage

储存/Storage

环境最高温度不得超过 40℃。超过 40℃的储存温度可能导致包装材料变形。建议的储存最高相对湿度为 70%。高温高湿环境会加速端子上镀层的氧化，降低元器件的可焊性。应使用含干燥剂的密封塑料袋储存，以减少端子氧化，且仅在使用前打开密封袋。产品不得储存在含有硫或氯的有害气体环境中。

The maximum ambient temperature shall not exceed 40℃. Storage temperatures higher than 40℃ could result in the deformation of packaging materials. The maximum relative humidity recommended for storage is 70%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components. Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.

包装/Packaging

维安（WAYON）贴片保险丝采用卷带包装，适用于自动贴片机；特殊应用场景下也提供散装包装。卷带包装和散装包装的产品均采用含干燥剂的塑料袋密封。

WAYON's chip fuse are provided on tape-and-reel for use in pick-and-place machines or in bulk for special applications. Both tape-and-reel and bulk products are sealed in plastic bags with desiccant.

包装数据/Packaging Data

每卷数量/Quantity per reel　　1500pcs/Reel

● 注意事项与警告/Cautions and warnings

1、操作处理/Handling

- 贴片保险丝严禁掉落。在保险丝操作处理过程中，不得造成芯片破损。/CHIP FUSE must not be dropped. Chip-offs must not be caused during handling of FUSEs.
- 严禁用徒手接触元器件，建议佩戴手套操作。/Components must not be touched with bare hands. Gloves are recommended.
- 操作处理期间，应避免保险丝表面受到污染。/Avoid contamination of fuse surface during handling.

2、焊接/Soldering

- 应使用树脂型助焊剂或非活性助焊剂。/Use resin-type flux or non-activated flux.
- 预热不充分可能导致陶瓷开裂。/Insufficient preheating may cause ceramic cracks.
- 不建议通过浸入溶剂的方式进行快速冷却。/Rapid cooling by dipping in solvent is not recommended.
- 建议彻底清除助焊剂。/Complete removal of flux is recommended.

3、安装/Mounting

- 在安装前、安装过程中及安装后，均不得刮伤电极。
  Electrode must not be scratched before/during/after the mounting process.
- 用于与保险丝组装的触点和外壳，在安装前必须保持清洁。
  Contacts and housings used for assembly with fuses have to be clean before mounting.
- 工作过程中，保险丝表面温度可能会非常高。需确保相邻元器件与保险丝保持足够距离，以保证保险丝能正常散热。
  During operation, the fuse's surface temperature can be very high (ICL). Ensure that adjacent components are placed at a sufficient distance from the fuse to allow for proper cooling of the fuses.
- 需确保相邻材料的设计工作温度与保险丝表面温度相匹配，且周围部件及材料必须能够承受该温度。
  Ensure that adjacent materials are designed for operation at temperatures comparable to the surface temperature of the fuse. Be sure that surrounding parts and materials can withstand this temperature.
- 加工过程中，应避免保险丝表面受到污染。
  Avoid contamination of fuse surface during processing.

4、使用/Operation

- 保险丝仅可在规定的工作温度范围内使用。
  Use fuses only within the specified operating temperature range.
- 环境条件不得对保险丝造成损害，保险丝仅可在正常大气环境下使用。
  Environmental conditions must not harm the fuses. Use fuses only in normal atmospheric conditions.
- 应防止贴片保险丝接触任何液体和溶剂。必须确保没有水分进入贴片保险丝内部（例如，通过插头端子进入）。若用于测量（如检测规定的电阻 - 温度特性），不得将元器件浸入水中，而应使用适宜的液体（如氟化液 ）。
  Contact of chip fuses with any liquids and solvents should be prevented. It must be ensured that no water enters the chip fuse (e.g. through plug terminals). For measurement purposes (checking the specified resistance vs. temperature), the component must not be immersed in water but in suitable liquids.
- 应避免结露和凝露现象。
  Avoid dewing and condensation.

Contact Information

No.1001, Shiwan(7) Road, Pudong District, Shanghai, P.R.China.201207
Tel: 86-21-50310888 Fax: 86-21-50757680 Email: market@way-on.com
WAYON website: http://www.way-on.com
For additional information, please contact your local Sales Representative.
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Product Specification Statement

1.The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

2.The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.

3.WAYON strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, WAYON cannot guarantee that the information provided in the product specification is entirely accurate and error-free. WAYON shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications. WAYON reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with WAYON to ensure that the product specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult WAYON in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

4.Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

5.The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. WAYON shall assume no responsibility for any consequences resulting from such usage.

6.Users should also comply with relevant laws, regulations, policies, and standards when using the product specification. Users are responsible for the risks and liabilities arising from the use of the product specification and must ensure that it is not used for illegal purposes. Additionally, users should respect the intellectual property rights related to the product specification and refrain from infringing upon any third-party legal rights. WAYON shall assume no responsibility for any disputes or controversies arising from the above-mentioned issues in any form.