



CONQUER
功得電子

規格書

Specification For Approval

Spec NO. SFA018

型 號： UDL/UDL-A 系列 慢速型玻璃管保險絲

Model： UDL/UDL-A *Time-Lag (surge-proof) Enhanced Breaking Capacity Glass Tube Fuse Series*

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History of Change

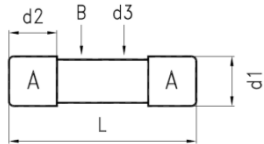
| REV. | Description | Date | Drawn | Designed | Checked | Approved |
|------|---|------------|-------|----------|---------|----------|
| 1 | (1)發出Issue | 2011.08.12 | 黃世宏 | 葉志強 | 蔡進義 | 蔡其湖 |
| 2 | (1)修正冷阻值 | 2012.02.09 | 黃世宏 | 葉志強 | 蔡進義 | 蔡其湖 |
| 3 | (1)新增14.建議生產參數 (2)VRQ UDL ___A ___V(PF)修正為 VUC UDL ___A ___V(PF) VRQ UDL-A ___A ___V(PF)修正為 VUC UDL-A ___A ___V(PF) | 2013.05.30 | 黃世宏 | 葉志強 | 蔡進義 | 蔡其湖 |
| 4 | (1)修改內文項次6： Surge Test → Pulse Test (2)新增內文項次10：整箱包裝數量 (3)新增內文項次12：冷阻值範圍 & I ² t (4)增加曲線圖與信賴性規範 | 2019.02.14 | 黃世宏 | 彭彥鳴 | 蔡進義 | 葉順益 |

～ 筒管狀保險絲 ～

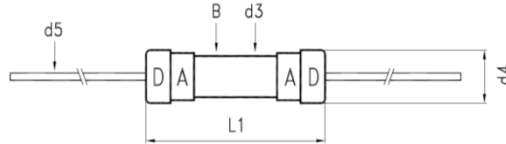
Fuses for Instrument, Power and Telephone (Non-indicating)

1 **適用範圍**: 本標準適用於保護儀器、電源供應器和電話機用之筒管式熔斷保險絲。
Available Range: For protecting instruments, power supplies and telephone sets.

2 **形狀及尺寸如下圖** 單位: mm
Shape & Size as following illustrations.



UDL Series



UDL-A Series

2.1 構造形狀 Structure & Shape : 如上圖 As shown in figure above

2.2 額定電壓 Rated Voltage: 250Vac

2.3 額定電流 Rated Current: 500mA~10A

3 **材料** Material:

3.1 筒管本體: 透明玻璃管不可破裂或變形。

Tube (Body): Transparent glass tube. No breaking or deformation is allowed.

3.2 兩端銅蓋: 需以導電率良好之黃銅為材料。

Two brass end caps: Made of brass of good conductivity.

3.3 銅蓋處理: 銅蓋部份鍍鎳，標示最後若加 "S" 者，表示須鍍銀。

Coating of brass caps: Plating the surface with nickel. If the indication is added with "S", it needs to be plated with silver.

| NO. | Part Name 部品名稱 | Volume 數量 |
|-----|--|-----------|
| A | Brass Cap - Nickel Plating 銅帽 - 鍍鎳 | 2 |
| B | Glass Tube - Transparent Glass 玻璃管 - 透明玻璃 | 1 |
| C | Fuse Element 可熔體 | 1 |
| D | Cap-on Lead-Cap - Tinned Copper Wire and Cap 銅帽附腳 - 銅蓋加鍍錫銅線 | 2 |
| d1 | Dia. of Cap - 5.2 ^{+0.1} / _{-0.2} mm 銅頭直徑 | |
| d2 | Height of Cap - 5.25±0.1mm 銅頭高度 | |
| d3 | Dia. of Glass - 4.56±0.2mm 玻璃管直徑 | |
| d4 | Dia. of Cap - 5.9±0.2mm 銅帽直徑 | |
| d5 | Dia. of Lead Wire - 0.8±0.05mm 附腳直徑 Length of Lead Wire - 38±2mm 長度 | |
| L | Body of Fuse - 20.00±0.5mm 本體尺寸 | |
| L1 | Total Length W/Cap-on on Both Ends 21.00±0.75mm | |

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4 電氣特性 Electrical Characteristics:

4.1 負載容量: 通過額定電流值 150% (亦即 $1.5 \times I_n A$) , 能繼續通電至少 1 小時無任何熔化現象。
(額定電流大於 6.3A 的則 30 分鐘)

Loading Capacity: Loading 150% Rated Current (i.e. $1.5 \times I_n A$) for flowing, and it's available to let current keep on flowing at least 1 hour without any melting. (Can keep 1 Hour minimum) (for rating above 6.3A 30 minutes)

4.2 壓降測量: 以額定電流, 通過保險絲, 其兩端壓降值不得超過最大值, 可參考 IEC60127-2 Sheet 6。

Voltage drop: Loading 100% of rated current.(ie $1.0 \times I_n$), the voltage drops across the fuse-links shall not exceed the maximum values given on the relevant standard sheet (IEC60127-2 Sheet 6)

4.3 過載熔斷: 請參照下表。Melting due to overloading: Details as follows Table.

※最大熔斷時限 Operating Characteristics

| 安培數 Rating | 150% Rating | | 210% Rating | | 275% Rating | | 400% Rating | | 1000% Rating | |
|---------------|-------------|------|-------------|-------|-------------|--------|-------------|-------|--------------|--------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 500mA~6.3A | 60 min | | | 2 min | 600 ms | 10 sec | 150 ms | 3 sec | 20 ms | 300 ms |
| 8A~10A | 30 min | | | 2 min | 600 ms | 10 sec | 150 ms | 3 sec | 20 ms | 300 ms |

5 機械特性 Mechanical Properties:

5.1 拉力強度: 當施加軸拉力 720g/cm (或 10 牛頓) 於兩端附腳 (或銅帽), 無鬆動或損壞現象發生。
Terminal Strength: Leads and/or caps are soldered (adhered) to withstand axial pulling force of 720g/cm (or 10N) without loosening or any harmfulness to firmly attachment.

5.2 彎折強度 Bending Strength:

(1) 銅帽附腳腳徑 1.0mm (含) 以下, 經過兩次反向之彎折後 (彎折 90 度再折回原位謂之一次彎折) 不發生損壞。

Diameter of lead wire ≤ 1.0 mm: After two bends of opposite directions (bending through an angle of 90° and back is defined as one bend) of lead, no damage is to be visualized.

(2) 銅帽附腳腳徑 1.2mm (含) 以上, 距離銅帽附腳卯合處 10mm 以上, 作一次 90 度之彎折, 不發生損壞。

Diameter of lead wire ≥ 1.2 mm: Only one bend of an angle of 90° without back shall be tested for each lead wire and the bending position shall be at least 10mm a way from the cap-on. After the test there shall be no damage to be visualized.

6 突波實驗 Pulse Test:

為適應電感或電容性電路所產之暫態電流, 本品於 10 倍額定電流的熔斷時間最少為 20ms。
In order to stand transient current caused by inductive or capacitive, the fuses are designed to have minimum clearing time of 20millisecond at 1000% rated current.

7 耐久實驗 Endurance(On-Off Test):

7.1 於額定電流 ($1.2 \times I_n$)，1小時ON，15分鐘OFF，共100次。

Loading 120% rated current ($1.2 \times I_n$), 1 hour ON, 15 minutes OFF. Keep 100 cycles.

7.2 接著以1.5倍之額定電流($1.5 \times I_n$) 通過1小時(額定電流大於6.3A的則30分鐘)。

Followed by 1 Hour at 1.5 times the rated current ($1.5 \times I_n$)(for ratings above 6.3A 30 minutes).

7.3 再以4.2之方式量測壓降值，所測得之壓降值不可比原值增加10%以上。

The voltage drop across the fuse-link after the test shall not have increased by more than 10% of the original value measured before the test

8 高溫環境試驗: 本品置於70°C之高溫中，能以額定電流 ($1.1 \times I_n$)通過1小時。

Derating Test: In an air circulating oven at 70°C, the fuses can load 110% rated current for 1 hour and they shall not operate.

9 遮斷能力 Breaking Capacity(Interrupting rating):

150 amperes at 250Vac

10 包裝 Packing :

UDL 1000 PCS/盒、一箱數量：10,000 PCS

UDL-A 500 PCS/盒、一箱數量：5000 PCS

內盒印明下列標示:料號、額定(電壓、電流、遮斷能力)及安規名稱。

包裝材料均符合RoHS或者HF的環保要求,且包裝材料不會和零件發生化學反應，造成不良。

UDL 1000 pcs in an inner box, Outer box Q'ty:10,000 pcs.

UDL-A 500 pcs in an inner box, Outer box Q'ty:5000 pcs.

The following items indicated on the box.

Mark: Catalog number; ratings (voltage, current, interrupting capacity),and safety mark.

The packing material conforms to RoHS or the HF environmental protection request.

And the packing material can't have the chemical reaction with the components.

11 其他 Other:

11.1 除非另有指定，上述機械、電器特性，係於常溫，標準狀況下測試之。




Unless otherwise, specified, all tests to be performed at $25 \pm 5^\circ\text{C}$ and 35-75% RH.

11.2 於標準狀況下儲放一年，本品乃確保上述機械與電氣之特性。

After one year's storage under normal condition, this item is guaranteed to meet the requirements mentioned above.

12 標記/安規認證 Mark/ Safety certification:

UDL/UDL-A Series

| Mark Approvals |  |  |  | Nominal Resistance Cold Ohms Range | Nominal Melting I ² t A ² Sec |
|----------------|---|---|---|------------------------------------|---|
| 500 mA | ** | ** | * | 0.220~0.408 | 5.2500 |
| 630 mA | ** | ** | * | 0.147~0.273 | 8.3500 |
| 800 mA | ** | ** | * | 0.102~0.189 | 8.4609 |
| 1 A | ** | ** | * | 0.074~0.137 | 21.940 |
| 1.25 A | ** | ** | * | 0.057~0.105 | 35.419 |
| 1.6 A | ** | ** | * | 0.041~0.077 | 51.963 |
| 2 A | ** | ** | * | 0.029~0.053 | 68.508 |
| 2.5 A | ** | ** | * | 0.023~0.043 | 144.09 |
| 3.15 A | ** | ** | * | 0.015~0.029 | 198.16 |
| 4 A | ** | ** | * | 0.011~0.021 | 308.74 |
| 5 A | ** | ** | * | 0.009~0.017 | 459.14 |
| 6.3 A | ** | ** | * | 0.007~0.013 | 743.71 |
| 8 A | ** | | ** | 0.005~0.009 | 1163.9 |
| 10 A | ** | | ** | 0.004~0.007 | 1584.0 |

*: 有安規認證 Have safety certify

** : 有安規認證及銅帽上有安規印字標記 Have safety and safety mark on the cap

13 系列品名列表 series model list :

| 品名 | 安培數 |
|--|------------|
| VUC UDL ___A ___V(PF) VUC UDL-A ___A ___V(PF) | 500mA~6.3A |
| VQ UDL ___A ___V(PF) VQ UDL-A ___A ___V(PF) | 8A/10A |

例: VUC UDL A 250V (PF)
 1 2 3 4 5

- 1 安規認證 Safety Approval : VUC / VQ
- 2 系列品名 Series Model : UDL/UDL-A
- 3 安培數 Ampere Rating : 500mA~10A
- 4 伏特數 Voltage : 250V
- 5 無鉛標示 Pb Free : (PF)

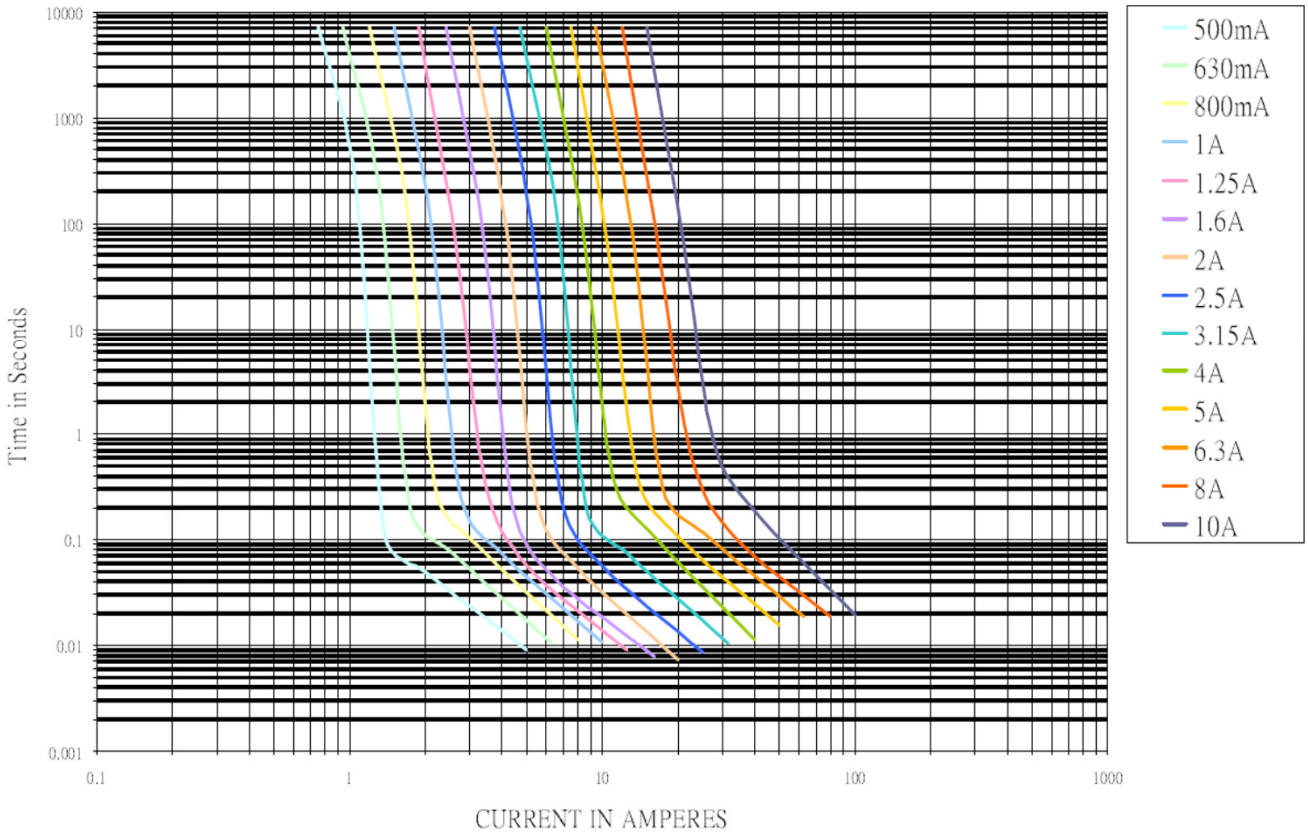
14 建議生產參數(無鉛焊錫使用)：

Recommended Process Parameters(for the action to Lead-free solder alloy)：

| | | |
|---|---|--|
| <p>14.1 波峰參數 Wave Parameter</p> | <p>預熱溫度 Preheat temperature 最低溫度：100度 Temperature Minimum：100℃ 最高溫度：150度 Temperature Maximum：150℃</p> | <p>錫槽溫度 Solder Pot Temperature 260度 Maximum 260℃ Maximum 焊接時間 2~5 seconds Solder Dwell Time: 2~5 seconds</p> |
| <p>14.2 建議手持烙鐵焊接參數 Recommended Hand-Solder Parameters</p> | <p>烙鐵溫度：350℃+/-5℃ Solder Iron Temperature：350℃ +/-5℃ 加熱時間：5 seconds max. Heating Time：5 seconds max.</p> | |

15 IT 曲線圖 IT Curve :

Average Melting IT Curves



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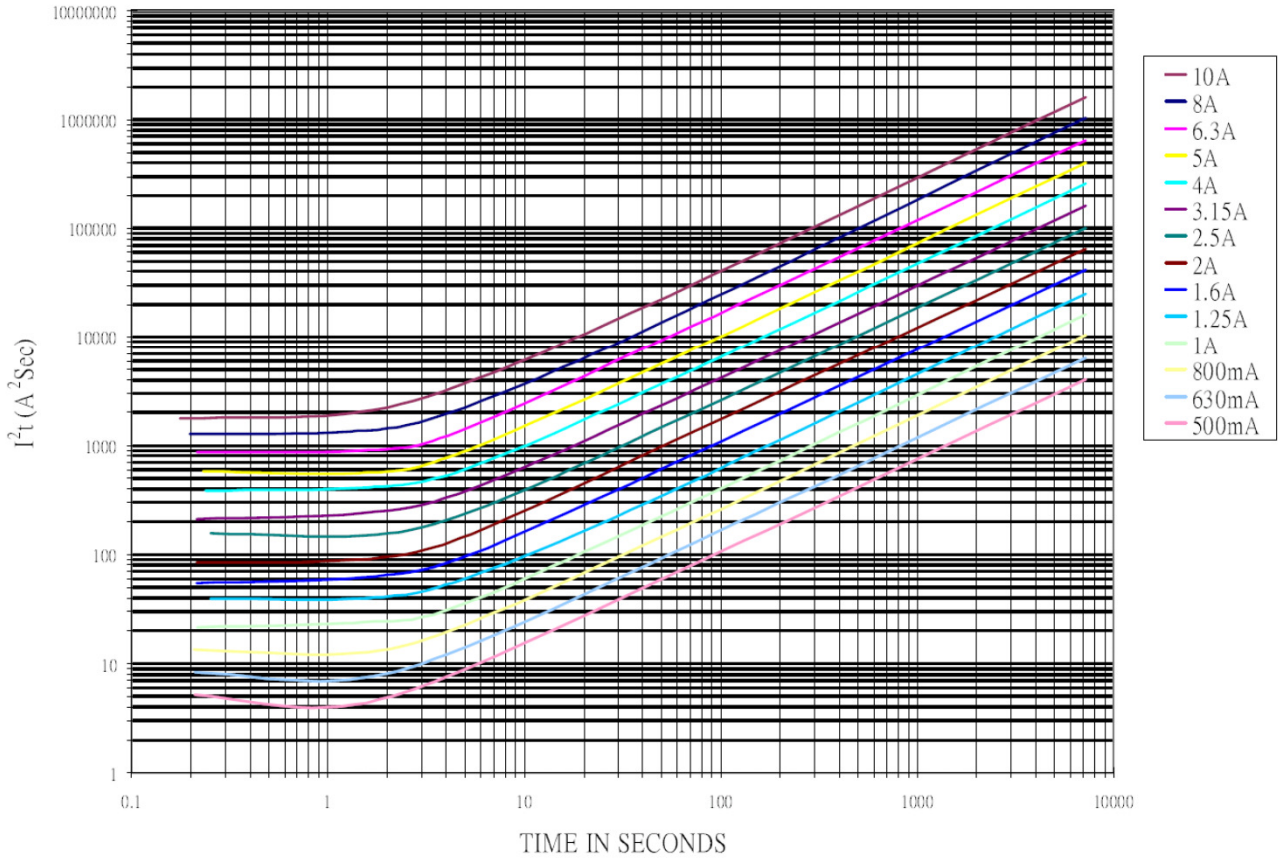
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16 I^2t 曲線圖 I^2t Curve :

Average Melting I^2t Curves



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17 信賴性作業規定 Product Characteristics & Reliability Tests :

| Test item | Test Description & Reference |
|--------------------------------|---|
| Humidity unload test | MIL-STD-202G , Method 103B , Test Condition A Heat (85±0.5°C) & High Humidity (85±1% RH), 240 hours , ΔR<15% |
| Thermal shock test | MIL-STD-202G, Method 107g , Test Condition B Temperature setup : 25°C ~ -65°C ~ 25°C ~ 125°C Time setup : -65°C(30min)~25°C(5min)~125°C(30min)~ 25°C(5min) 5 cycles , ΔR<15% |
| Vibration test | MIL-STD-202G , Method 201A Frequency setup : 10 ~ 55 ~ 10 Hz Time setup : 1 Minutes/cycle (X-Y-Z,120 Cycles) 6hrs, ΔR<15% |
| Salt spray Test | MIL-STD-202G , Method 101E , Test Condition A Salt spray concentration : 5 ± 1% Test liquid temperature : 35 ± 0.5°C 96hrs, ΔR<15% |
| Solderability test | Reference IEC 60068-2-20 Temperature setup : 250 ± 3°C, 3 ± 0.3 sec After test terminal electrode wetting area must be greater than 95% |
| Resistance to Solder Heat Test | Reference IEC 60068-2-20 Temperature setup : 260± 5°C, 10± 1 sec ΔR<15% |