



# Thin Film Chip Fuse

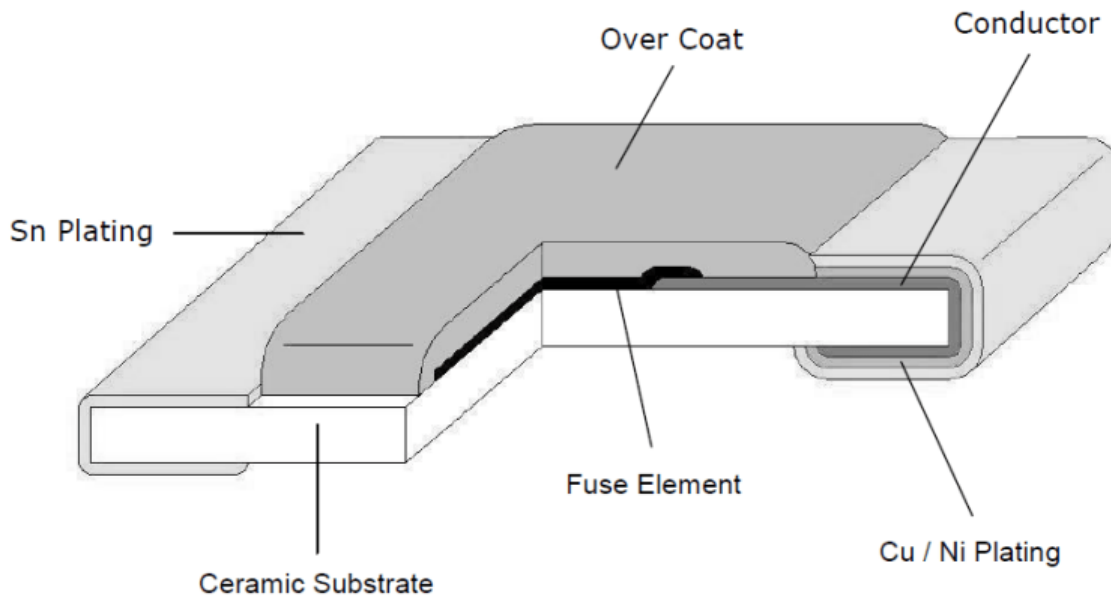
(AEC-Q200 tested/ )

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## 1. Scope

This specification applies for the fuse series of thin film chip fuse made by TA-I.

## 2. Construction



## 3. Type Designation

| CFS       | 06  | V5                         | T                         | R50                |
|-----------|---|----------------------------|---------------------------|--------------------|
|           | Size  | Rate Voltage               | Packaging                 | Rate Current       |
| Chip Fuse | 04:0402(1005)<br>06:0603(1608)<br>12:1206(3216) | V6:63V<br>V5:50V<br>V3:32V | T: Paper Tape<br>(5K/10K) | R50:0.5A<br>1R0:1A |

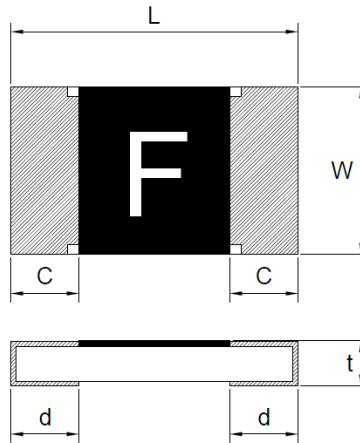


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## 4. Dimensions



Unit: mm

| Type<br>(Inch Size code) | Dimensions (mm) |           |         |          |           |
|--------------------------|-----------------|-----------|---------|----------|-----------|
|                          | L               | W         | C       | d        | t         |
| CFS04<br>(0402)          | 1.0±0.1         | 0.52±0.05 | 0.2±0.1 | 0.25±0.1 | 0.35±0.05 |
| CFS06<br>(0603)          | 1.6±0.1         | 0.80±0.10 | 0.3±0.2 | 0.35±0.2 | 0.45±0.10 |
| CFS12<br>(1206)          | 3.1±0.1         | 1.55±0.10 | 0.5±0.3 | 0.50±0.2 | 0.60±0.10 |

## 5. Applications and ratings

| Part Designation | Marking | Rated Current | Fusing Time                                 | Resistance (mΩ)<br>Tolerance±25% | Rated Voltage | Breaking Capacity | Body Temperature rising           |
|------------------|---------|---------------|---|----------------------------------|---------------|-------------------|-----------------------------------|
| CFS04V3TR50      | F       | 0.50A         | Open within<br>5sec.at250%<br>rated current | 300                              | DC 32V        | DC32V<br>35A      | <75°C at<br>100% rated<br>current |
| CFS04V3TR80      | K       | 0.80A         |   | 78                               |               |                   |                                   |
| CFS04V3T1R0      | L       | 1.00A         |   | 75                               |               |                   |                                   |
| CFS04V3T1R25     | M       | 1.25A         |   | 44                               |               |                   |                                   |
| CFS04V3T1R50     | P       | 1.50A         |   | 34.5                             |               |                   |                                   |
| CFS04V3T1R60     | N       | 1.60A         |   | 29.5                             |               |                   |                                   |
| CFS04V3T2R0      | S       | 2.00A         |   | 23                               |               |                   |                                   |
| CFS04V3T2R50     | T       | 2.50A         |   | 18                               |               |                   |                                   |
| CFS04V3T3R0      | 3       | 3.00A         |   | 15                               |               |                   |                                   |
| CFS04V3T3R15     | U       | 3.15A         |   | 14                               |               |                   |                                   |
| CFS04V3T4R0      | W       | 4.00A         | 10  |                                  |               |                   |                                   |

\*Resistance value was measured with less than 10% of rated current



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| Part Designation | Marking  | Rated Current | Fusing Time                                 | Resistance (mΩ)<br>Tolerance±25% | Rated Voltage | Breaking Capacity      | Body Temperature rising           |
|------------------|----------|---------------|---|----------------------------------|---------------|------------------------|-----------------------------------|
| CFS06V5TR40      | <u>E</u> | 0.4A          | Open within<br>5sec.at250%<br>rated current | 350                              | DC 50V        | 50A<br>DC50V/<br>AC35V | <75°C at<br>100% rated<br>current |
| CFS06V5TR50      | F        | 0.50A         |   | 232                              |               |                        |                                   |
| CFS06V3TR63      | I        | 0.63A         |   | 150                              | DC 32V        | 50A<br>DC32V/<br>AC35V |                                   |
| CFS06V3TR70      | J        | 0.70A         |   | 148                              |               |                        |                                   |
| CFS06V3TR80      | K        | 0.80A         |   | 113                              |               |                        |                                   |
| CFS06V3T1R0      | L        | 1.00A         |   | 67                               |               |                        |                                   |
| CFS06V3T1R25     | <u>M</u> | 1.25A         |   | 50                               |               |                        |                                   |
| CFS06V3T1R50     | P        | 1.50A         |   | 42                               |               |                        |                                   |
| CFS06V3T1R60     | N        | 1.60A         |   | 40                               |               |                        |                                   |
| CFS06V3T2R0      | S        | 2.00A         |   | 27                               |               |                        |                                   |
| CFS06V3T2R50     | T        | 2.50A         |   | 19.5                             |               |                        |                                   |
| CFS06V3T3R00     | 3        | 3.00A         |   | 16                               |               |                        |                                   |
| CFS06V3T3R15     | U        | 3.15A         |   | 15                               |               |                        |                                   |
| CFS06V3T4R0      | W        | 4.00A         |   | 11                               |               |                        |                                   |
| CFS06V3T5R0      | Y        | 5.00A         |   | 8                                |               |                        |                                   |
| CFS06V3T6R0      | <u>6</u> | 6.00A         |   | 6                                |               |                        |                                   |

\*Resistance valve was measured with less than 10% of rated current

| Part Designation | Marking  | Rated Current | Fusing Time                                 | Resistance (mΩ)<br>Tolerance±25% | Rated Voltage | Breaking Capacity | Body Temperature rising           |
|------------------|----------|---------------|---|----------------------------------|---------------|-------------------|-----------------------------------|
| CFS12V6TR50      | F        | 0.50A         | Open within<br>5sec.at250%<br>rated current | 596                              | DC<br>63V     | DC63V<br>50A      | <75°C at<br>100% rated<br>current |
| CFS12V6TR80      | K        | 0.80A         |   | 165                              |               |                   |                                   |
| CFS12V6T1R0      | L        | 1.00A         |   | 132                              |               |                   |                                   |
| CFS12V6T1R25     | <u>M</u> | 1.25A         |   | 90                               |               |                   |                                   |
| CFS12V6T1R50     | P        | 1.50A         |   | 79                               |               |                   |                                   |
| CFS12V6T2R0      | S        | 2.00A         |   | 41                               | DC<br>32V     | DC32V<br>50A      |                                   |
| CFS12V3T2R50     | T        | 2.50A         |   | 33                               |               |                   |                                   |
| CFS12V3T3R00     | 3        | 3.00A         |   | 23                               |               |                   |                                   |
| CFS12V3T4R0      | W        | 4.00A         |   | 15.5                             |               |                   |                                   |
| CFS12V3T5R0      | Y        | 5.00A         |   | 13                               |               |                   |                                   |
| CFS12V3T7R0      | Z        | 7.00A         |   | 7                                |               |                   |                                   |

\*Resistance valve was measured with less than 10% of rated current



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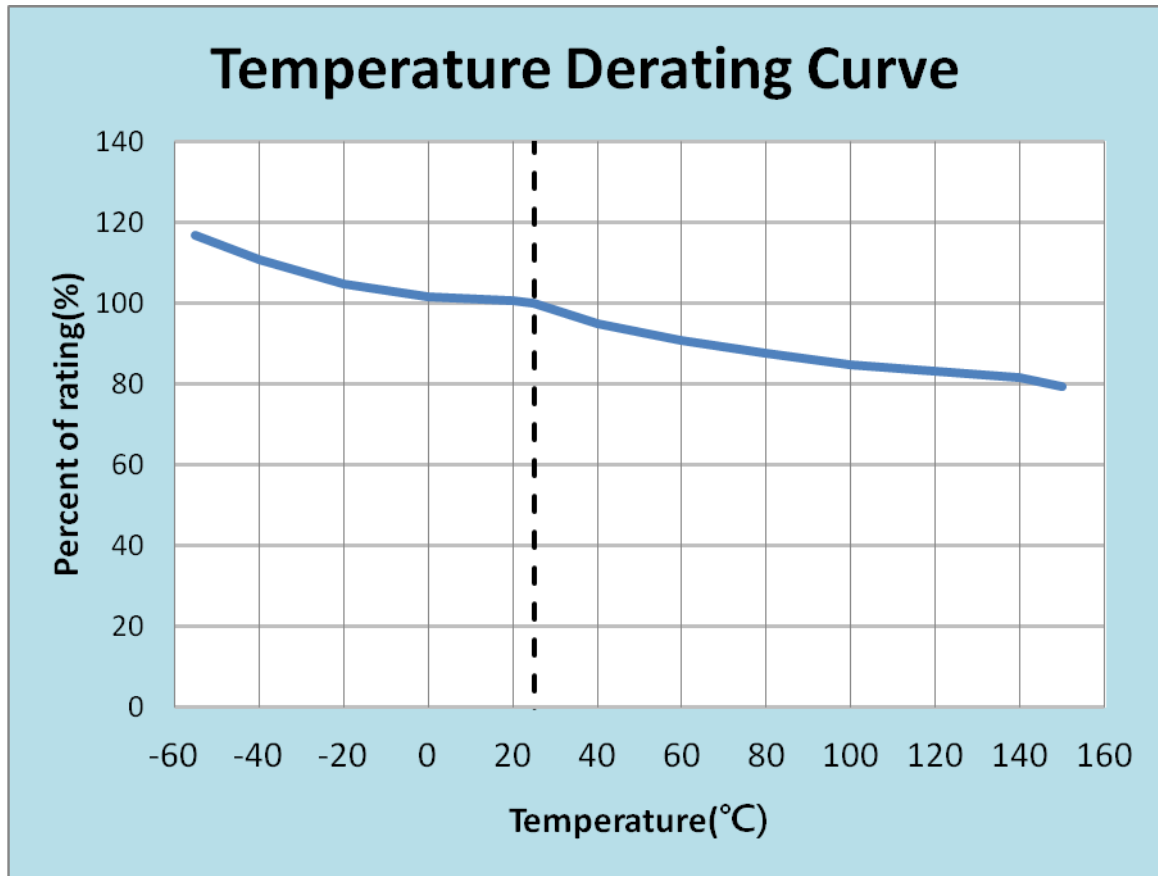
(AEC-Q200 tested/  US)

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## 6 Temperature Derating Curve

6.1 Normal Ambient Temperature: 25°C

6.2 Operating Temperature: -55°C ~150°C , with proper derating factor as below:





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## 7 Reliability Tests

| No. | Parameter                 | Test Method   | Requirement                              |
|-----|---------------------------|---|--|
| #1  | Solderability             | aging 4 hours at 150 °C dry heat Lead-free solder bath at 245±3 °C for 3±0.5 seconds.<br>260±3 °C for 7±0.5 seconds   | 95% coverage minimum                     |
| #2  | Resistance to solder Heat | Immerse the specimens in and eutectic solder at 260+5/-0°C for 10±1S .  | ±10%                                     |
| #3  | Moisture Resistance       | T=24 hours / Cycle ,10Cycles .<br>Notes: Steps 7a& 7b not required. Unpowered .   | ±10%                                     |
| #4  | Thermal Shock             | Temperature -55°C/+155°C.<br>Number of cycles required:300<br>Maximum transfer time-20 seconds,<br>Dwell time-15 minutes. Air-Air.  | ±10%                                     |
| #5  | Mechanical Shock          | Wave Form: Tolerance for half sine shock pulse.<br>Peak value is 100g's. Normal duration(D) is 6(ms)  | ±10%                                     |
| #6  | Vibration                 | 5 g's for 20 min., 12 cycles each of 3 orientations.<br>(Note: Test from 10-2000 Hz.)   | ±10%                                     |
| #7  | Terminal Strength         | Force of 1.8kg for 1206/0603<br>Force of 1.0kg for 0402   | ±10%                                     |
| #8  | High Temperature Storage  | with exemptions 1000 hrs. @ T=125°C. Unpowered.<br>Measurement at 24±2 hours after test conclusion.   | ±10%                                     |
| #9  | Temperature Cycling       | 1000 Cycles (-40°C to +125°C)<br>30min maximum dwell time at each temperature extreme.<br>1 min. Maximum transition time.<br>Measurement at 24±4 hours after test conclusion.   | ±10%                                     |
| #10 | Bias Humidity             | 1000 hours 85°C/85%RH.<br>Note: Specified conditions: 10% of operating current.<br>Measurement at 24±2 hours after test conclusion.   | ±10%                                     |
| #11 | Operational Life          | 1000 hours TA=85°C at 70% rated current.<br>Measurement at 24±2 hours after test conclusion   | ±10%                                     |
| #12 | Resistance to Solvent     | a:Isopropyl Alcohol : Mineral Spirits= 1 : 3<br>b:Terpene Defluxer (Bioact EC-7R)<br>c:Deionized water : Propylene Glycol :<br>Monomethyl Ether : monoethanolamine = 42 : 1 : 1 | No evident damages on protective coating |
| #13 | Board Flex(Bending)       | 3mm deflection  | ±10%                                     |
| #14 | Carrying capacity         | Rated current ,4hr  | ±10%                                     |
| #15 | Fusing Time               | 250% of its rated current   | < 5 sec                                  |
| #16 | Interrupting Ability      | After the fuse is interrupted ,rated voltage applied for 30sec again  | No mechanical damages                    |
| #17 | Temperature Rise          | 100% of its rated current, Measure of surface temperature   | Δ T<75°C                                 |
| #18 | Residual Resistance       | Measure DC resistance after fusing  | 10kΩ and more                            |
| #19 | Low Temperature Storage   | 1000 hrs. @ T=-55°C. Unpowered.<br>Measurement at 24±2 hours after test conclusion.   | ±10%                                     |



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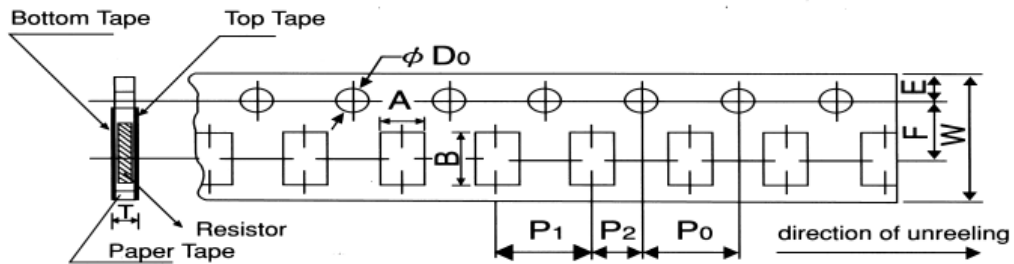
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## 8 Taping & Reel

### 8.1 Taping Dimensions

4mm pitch paper



| Packing    | Type  | A        | B        | W       | F        | E        | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | D <sub>0</sub>                                       | T        |
|------------|-------|----------|----------|---------|----------|----------|----------------|----------------|----------------|--|----------|
| Paper Tape | CFS04 | 0.7±0.05 | 1.2±0.05 | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 2.0±0.1        | 2.0±0.05       | 4.0±0.1        | $\phi \begin{matrix} +0.1 \\ 1.5 \\ 0 \end{matrix}$  | 0.45±0.1 |
| Paper Tape | CFS06 | 1.1±0.1  | 1.9±0.1  | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 4.0±0.1        | 2.0±0.05       | 4.0±0.1        | $\phi \begin{matrix} +0.1 \\ 1.5 \\ -0 \end{matrix}$ | 0.64±0.1 |
| Paper Tape | CFS12 | 2.0±0.15 | 3.6±0.2  | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 4.0±0.1        | 2.0±0.05       | 4.0±0.1        | $\phi \begin{matrix} +0.1 \\ 1.5 \\ -0 \end{matrix}$ | 0.84±0.1 |

Unit: mm

|     |    |            |  |
|-----|----|------------|--|
|     |    | Paper Tape |  |
|     |    | 2 mm pitch |  |
|     |    | 180mm/R    |  |
| CFS | 04 | 10000      |  |

|     |    |            |  |
|-----|----|------------|--|
|     |    | Paper Tape |  |
|     |    | 4 mm pitch |  |
|     |    | 180mm/R    |  |
| CFS | 06 | 5000       |  |
| CFS | 12 | 5000       |  |

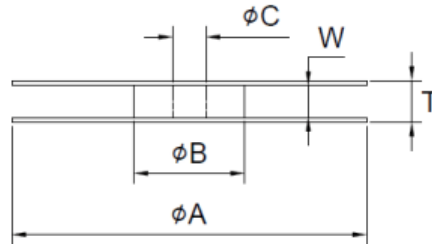


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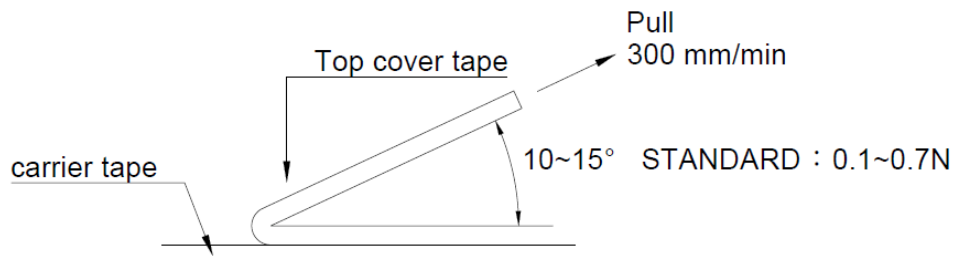
## 8.2 Reel Specifications



Unit: mm

| Series                  | $\phi A$      | $\phi B$       | $\phi C$       | W             | T              |
|-------------------------|---------------|----------------|----------------|---------------|----------------|
| CFS04<br>CFS06<br>CFS12 | $178 \pm 2.0$ | $60.0 \pm 1.0$ | $13.0 \pm 1.0$ | $9.0 \pm 1.0$ | $11.4 \pm 2.0$ |

## 8.3 Peel –off force:



## 9 Storage Conditions:

Temperature: 5°C~35°C, Humidity: 40%~75%

## 10 Shelf Life:

2 years from manufacturing date

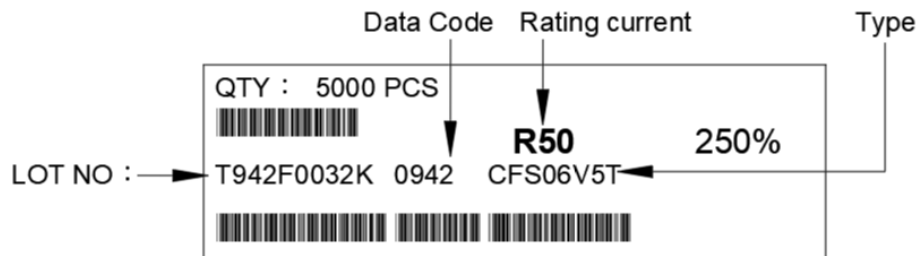


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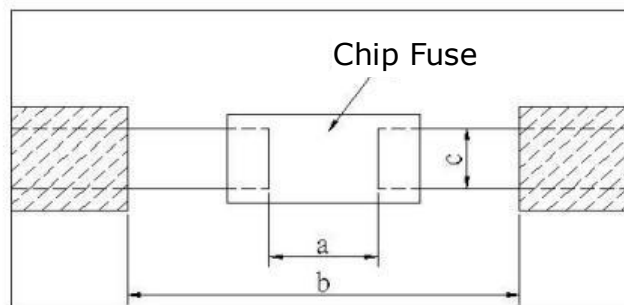
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## 11 Label



## 12 Recommended land patterns



| Land pattern |           | Dimension |           |           |
|--------------|-----------|-----------|-----------|-----------|
| Type         | Size      | a         | b         | c         |
| CFS          | 04 (0402) | 0.55~0.65 | 1.40~1.60 | 0.74~0.94 |
| CFS          | 06 (0603) | 0.85~0.95 | 2.00~2.20 | 1.50~1.70 |
| CFS          | 12 (1206) | 0.95~1.05 | 4.40~5.00 | 2.30~2.50 |



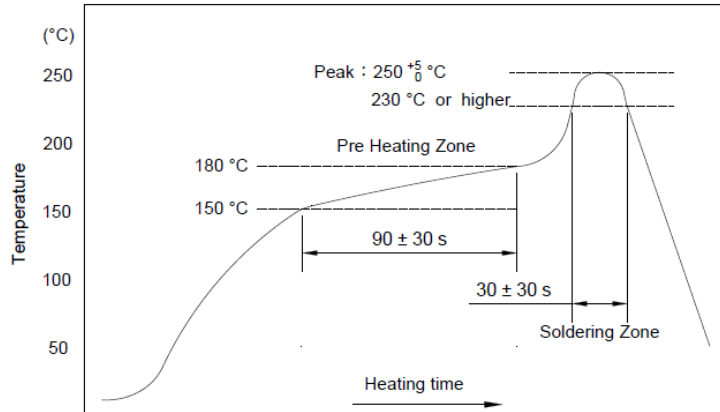


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### 13. Recommend IR – Reflow profile: (solder: Sn96.5 / Ag3 / Cu0.5)



Peak :  $250 \pm \frac{+5}{0} \text{ } ^\circ\text{C}$ , 5 sec.  
 Pre-heat Zone : 150 to 180 °C , 90±30 sec  
 Soldering Zone : 230°C or higher , 30±10 sec

### 14. Approval by UL248-14

The fuses have been approved by UL.  
 File No. of UL Recognition is E241710

### 15. ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

### 16. Manufacturing Country & City:

TA-I TECHNOLOGY CO., LTD. (Taiwan– Tao Yuan)

Tel: (+886) 3-3246169 Fax: (+886) 3-3246167

#### Associated companies:

(1) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Su Zhou)

Tel: (+86) 512-63457879 Fax: (+86) 512-63457869

(2) TA-I TECHNOLOGY ELECTRONIC (DONGGUAN) CO., LTD. (China –Dongguan)

Tel: (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

(3) FORTUNE TASK RESISTOR FACTORY (China – Dongguan)

Tel: (+86) 769-8339-4790~3 Fax : (+86) 769-8339-4794

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Tel: (+60) 4- 3900480 Fax: (+60) 4-3901481

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## 17. Selection Guideline of Fuse:

### ■ Checklist of selection factors

- ⊙ Normal operating current
- ⊙ Normal operating voltage ( AC or DC )
- ⊙ Ambient Temperature
- ⊙ Overload current and length of time in which the fuse must open .
- ⊙ Type of fuse ( SMD or Tube ) and physical size limitation ( 0603 or 1206 )
- ⊙ Agency Approval required ( e.g., UL248-14)

### ■ Normal operating current

e.g., Rectangular Wave, If  $I_p = 1.5 \text{ A}$ , Normal operating current = 1.5 A

| No. | Type                   | Waveform | Formula                                  |
|-----|------------------------|----------|--|
| 1   | Sinusoidal Waveform    |          | $\frac{1}{\sqrt{2}} I_m \cong 0.707 I_m$ |
| 2   | All Wave Rectification |          | $\frac{1}{\sqrt{2}} I_m \cong 0.707 I_m$ |
| 3   | Half Wave              |          | $0.5 I_m$                                |
| 4   | Triangle Waveform      |          | $\frac{1}{3} I_m \cong 0.577 I_m$        |
| 5   | Rectangular Waveform   |          | $I_m$                                    |
| 6   | Trapezoidal Waveform   |          | $I_m \sqrt{1 - \frac{8\alpha}{3T}}$      |



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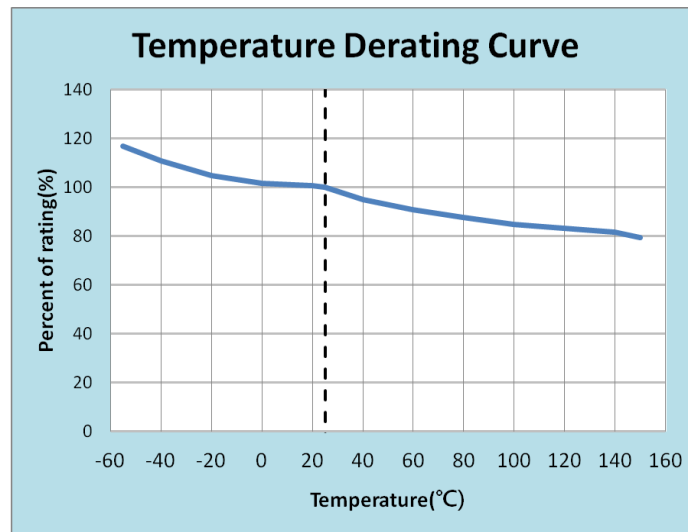
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| No. | Type              | Waveform | Formula                      |
|-----|-------------------|----------|------------------------------|
| 7   | Rectangular Pulse |          | $I_m \sqrt{\frac{\tau}{T}}$  |
| 8   | Triangle Pulse    |          | $I_m \sqrt{\frac{\tau}{3T}}$ |

■ Derating ratio for different ambient Temperature

- ⊙ Referring to bottom figure and select the appropriate derating ratio:  
e.g., Ambient temperature is 60 degree C  
the derating ratio ≈ 0.95



■ Calculating the required rating of fuse needed.

- ⊙ Safety coefficient: 70% is safety coefficient from practical experience
- ⊙  $\frac{\text{Normal Operating Current}}{0.7 \times \text{derating ratio}} < \text{rating current of fuse}$
- ⊙ e.g.  
Condition: Normal operating current = 1.5 A  
Ambient temperature 40 °C : Derating ratio ≈ 0.95



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$$\frac{1.5}{0.7 \times 0.95} < \text{rating current of fuse}$$

|   |
|---|
| $2.255 < \text{rating current of fuse}$ |
|---|

■ Determination of the type of fuse

e.g.Condition:

- ◆ Calculating value =2.255 A , 2.255A < rating current of fuse
- ◆ Normal operating voltage : DC 12 V
- ◆ Following bottom index-table: suggesting use CFS06V3T2R50.

| Part Designation | Marking  | Rated Current | Rated Voltage | Part Designation | Marking  | Rated Current | Rated Voltage | Part Designation | Marking  | Rated Current | Rated Voltage |
|------------------|----------|---------------|---------------|------------------|----------|---------------|---------------|------------------|----------|---------------|---------------|
| CFS04V3TR50      | F        | 0.5A          | 32V           | CFS06V5TR40      | <u>E</u> | 0.40A         | 50V           | CFS12V6TR50      | F        | 0.50A         | 63V           |
| CFS04V3TR80      | K        | 0.80A         | 32V           | CFS06V5TR50      | F        | 0.5A          | 50V           | CFS12V6TR80      | K        | 0.80A         | 63V           |
| CFS04V3T1R0      | L        | 1.00A         | 32V           | CFS06V3TR63      | I        | 0.63A         | 32V           | CFS12V6T1R0      | L        | 1.00A         | 63V           |
| CFS04V3T1R25     | <u>M</u> | 1.25A         | 32V           | CFS06V3TR70      | J        | 0.7A          | 32V           | CFS12V6T1R25     | <u>M</u> | 1.25A         | 63V           |
| CFS04V3T1R50     | P        | 1.50A         | 32V           | CFS06V3TR80      | K        | 0.80A         | 32V           | CFS12V6T1R50     | P        | 1.50A         | 63V           |
| CFS04V3T1R60     | N        | 1.60A         | 32V           | CFS06V3T1R0      | L        | 1.00A         | 32V           | CFS12V6T2R0      | S        | 2.00A         | 63V           |
| CFS04V3T2R0      | S        | 2.00A         | 32V           | CFS06V3T1R25     | <u>M</u> | 1.25A         | 32V           | CFS12V3T2R50     | T        | 2.50A         | 32V           |
| CFS04V3T2R50     | T        | 2.50A         | 32V           | CFS06V3T1R50     | P        | 1.50A         | 32V           | CFS12V3T3R00     | 3        | 3.00A         | 32V           |
| CFS04V3T3R0      | 3        | 3.00A         | 32V           | CFS06V3T1R60     | N        | 1.60A         | 32V           | CFS12V3T4R0      | W        | 4.00A         | 32V           |
| CFS04V3T3R15     | U        | 3.15A         | 32V           | CFS06V3T2R0      | S        | 2.00A         | 32V           | CFS12V3T5R0      | Y        | 5.00A         | 32V           |
| CFS04V3T4R0      | W        | 4.00A         | 32V           | CFS06V3T2R50     | T        | 2.50A         | 32V           | CFS12V3T7R0      | Z        | 7.00A         | 32V           |
|                  |          |               |               | CFS06V3T3R00     | 3        | 3.00A         | 32V           |                  |          |               |               |
|                  |          |               |               | CFS06V3T3R15     | U        | 3.15A         | 32V           |                  |          |               |               |
|                  |          |               |               | CFS06V3T4R0      | W        | 4.00A         | 32V           |                  |          |               |               |
|                  |          |               |               | CFS06V3T5R0      | Y        | 5.00A         | 32V           |                  |          |               |               |
|                  |          |               |               | CFS06V3T6R0      | <u>G</u> | 6.00A         | 32V           |                  |          |               |               |

■ Inrush current:

- ◆ Considering inrush waveform & calculate  $I^2t$  (A<sup>2</sup>s) value
- ◆ Choosing fuse's  $I^2t$  (A<sup>2</sup>s) value > calculate  $I^2t$  (A<sup>2</sup>s) value
- ◆ Considering Ratio of  $I^2t$  repeat numbers to blowing .
- ◆ Confirm with us.

e.g., choosing 0603 Fuse

Condition:



# Thin Film Chip Fuse

(AEC-Q200 tested/ <sup>®</sup>)

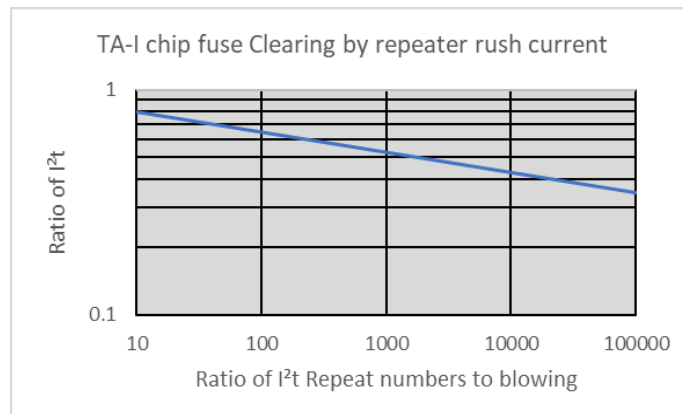
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1. Rectangular Wave,  $I_p = 4 \text{ A}$ ,  $t = 1 \text{ ms}$ , calculate  $I_p^2 t = 4^2 \times 1 \times 10^{-3} = 0.016 \text{ (A}^2\text{s)}$
2. Choosing CFS06V3T1R25,  $I^2 t = 0.057 \text{ (A}^2\text{s)}$  → Page 13 index-table
3. Inrush shock : 100,000 times ( $\approx 0.35$ ) → inrush ratio
4. Choosing fuse's  $I^2 t \text{ (A}^2\text{s)}$  value X Derating ratio (inrush 100000 times) > calculate  $I^2 t \text{ (A}^2\text{s)}$  value
5.  $0.057 \times 0.35 = 0.01995 \text{ (A}^2\text{s)} > 0.016$  → CFS06V3T1R25 is able to meet circuit's application

| TA-I FUSE $I^2 t \text{ (A}^2 \text{ s)}$ |   |              |   |              |   |
|---|---|--------------|---|--------------|---|
| Part Number                               | Typical $I^2 t \text{ (A}^2 \text{ s)}^*$ | Part Number  | Typical $I^2 t \text{ (A}^2 \text{ s)}^*$ | Part Number  | Typical $I^2 t \text{ (A}^2 \text{ s)}^*$ |
| CFS04V3TR50                               | 0.00370                                   | CFS06V5TR40  | 0.004                                     | CFS12V6TR50  | 0.030                                     |
| CFS04V3TR80                               | 0.00947                                   | CFS06V5TR50  | 0.009                                     | CFS12V6TR80  | 0.068                                     |
| CFS04V3T1R0                               | 0.01479                                   | CFS06V3TR63  | 0.017                                     | CFS12V6T1R0  | 0.098                                     |
| CFS04V3T1R25                              | 0.02310                                   | CFS06V3TR70  | 0.023                                     | CFS12V6T1R25 | 0.155                                     |
| CFS04V3T1R50                              | 0.02400                                   | CFS06V3TR80  | 0.024                                     | CFS12V6T1R50 | 0.236                                     |
| CFS04V3T1R60                              | 0.03734                                   | CFS06V3T1R0  | 0.026                                     | CFS12V6T2R0  | 0.339                                     |
| CFS04V3T2R0                               | 0.04040                                   | CFS06V3T1R25 | 0.057                                     | CFS12V3T2R50 | 0.605                                     |
| CFS04V3T2R50                              | 0.06760                                   | CFS06V3T1R50 | 0.081                                     | CFS12V3T3R00 | 0.933                                     |
| CFS04V3T3R0                               | 0.09860                                   | CFS06V3T1R60 | 0.086                                     | CFS12V3T4R0  | 1.537                                     |
| CFS04V3T3R15                              | 0.10868                                   | CFS06V3T2R0  | 0.115                                     | CFS12V3T5R0  | 2.533                                     |
| CFS04V3T4R0                               | 0.11450                                   | CFS06V3T2R50 | 0.200                                     | CFS12V3T7R0  | 5.684                                     |
|   |   | CFS06V3T3R00 | 0.210                                     |              |   |
|   |   | CFS06V3T3R15 | 0.279                                     |              |   |
|   |   | CFS06V3T4R0  | 0.326                                     |              |   |
|   |   | CFS06V3T5R0  | 0.622                                     |              |   |
|   |   | CFS06V3T6R0  | 2.700                                     |              |   |

Note\*: Typical  $I^2 t$  value is measured at 10x-rated current, application with surge over 10x-rated current.

Please confirm with us.

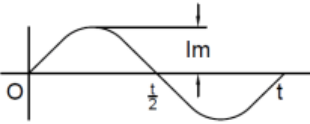
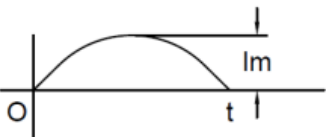
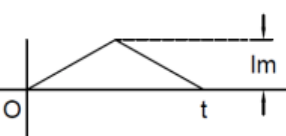
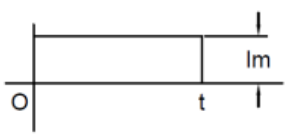
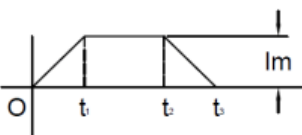
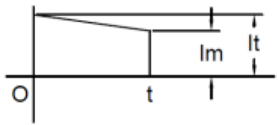
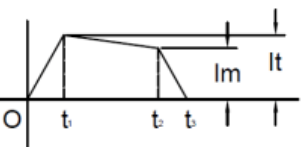
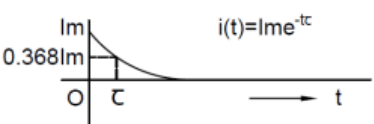
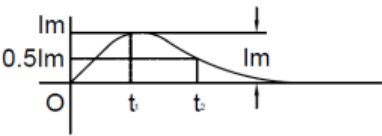




# Thin Film Chip Fuse

(AEC-Q200 tested/ **TAI**® US)

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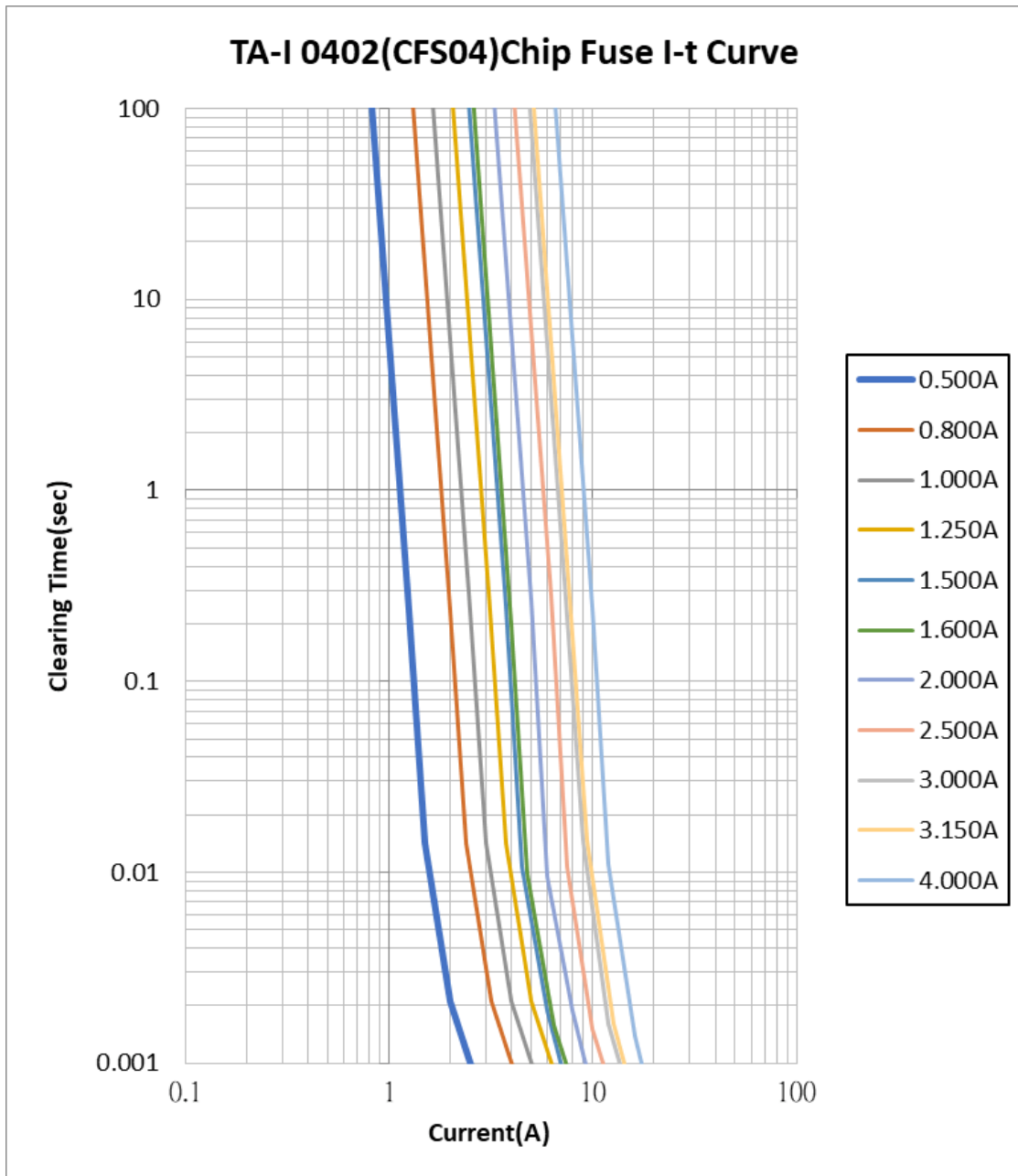
| No. | Type                                       | Waveform   | Formula  |
|-----|--|--|--|
| 1   | <b>Sinusoidal Waveform<br/>(1 Cycle)</b>   |     | $\frac{1}{2} I_m^2 t$  |
| 2   | <b>Sinusoidal Waveform<br/>(1/2 Cycle)</b> |     | $\frac{1}{2} I_m^2 t$  |
| 3   | <b>Triangle Waveform</b>                   |     | $\frac{1}{3} I_m^2 t$  |
| 4   | <b>Rectangular Waveform</b>                |    | $I_m^2 t$  |
| 5   | <b>Trapezoidal Waveform</b>                |   | $\frac{1}{3} I_m^2 t + I_m^2 (t_1 - t_2) + \frac{1}{3} I_m^2 (t_2 - t_3)$  |
| 6   | <b>Various Waveform 1</b>                  |   | $I_1 I_2 t + \frac{1}{3} (I_1 - I_2)^2 t$  |
| 7   | <b>Various Waveform 2</b>                  |   | $I_1 I_2 t + \left[ I_1 I_2 t + \frac{(I_1 - I_2)^2}{3} \right] * (t_2 - t_1) + \frac{1}{3} (I_2)^2 (t_3 - t_2)$ |
| 8   | <b>Charge/Discharge Waveform</b>           |  | $\frac{1}{2} (I_m^2 \tau)$   |
| 9   | <b>Lightning Surge Waveform</b>            |  | $I_m^2 \left[ \frac{t_1}{3} + 0.721(t_2 - t_1) \right]$  |



# Thin Film Chip Fuse

(AEC-Q200 tested / )

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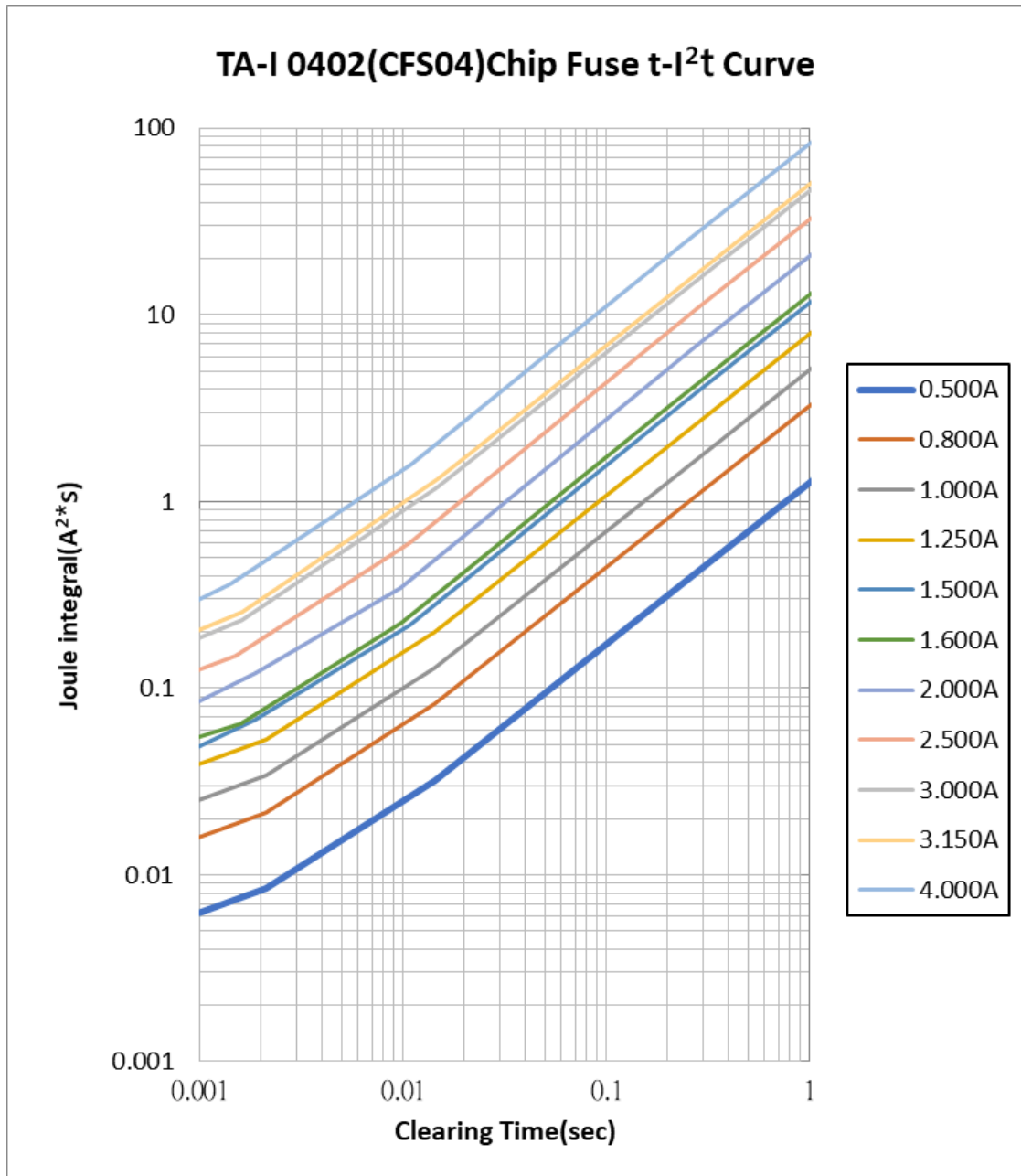




# Thin Film Chip Fuse

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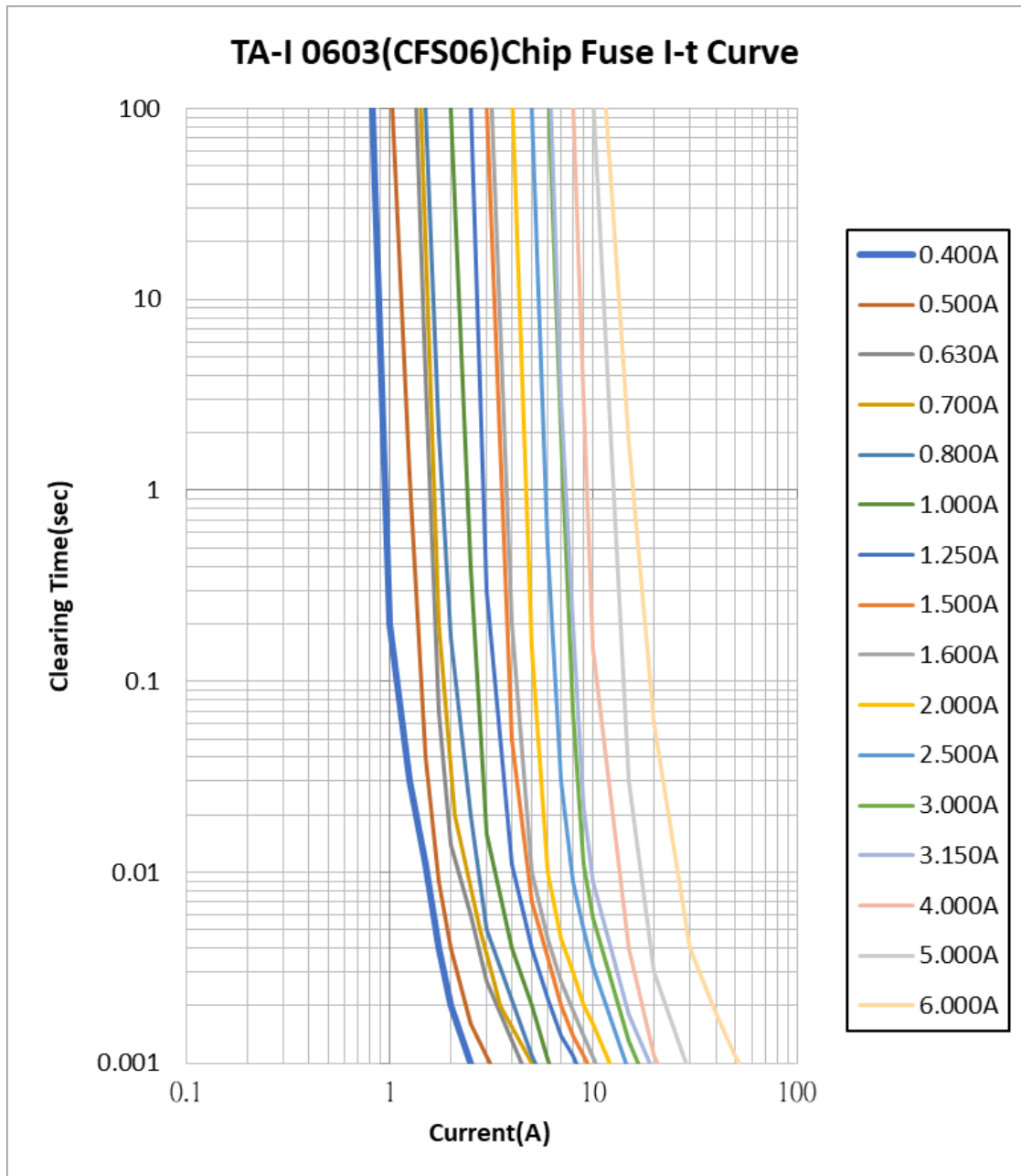




# Thin Film Chip Fuse

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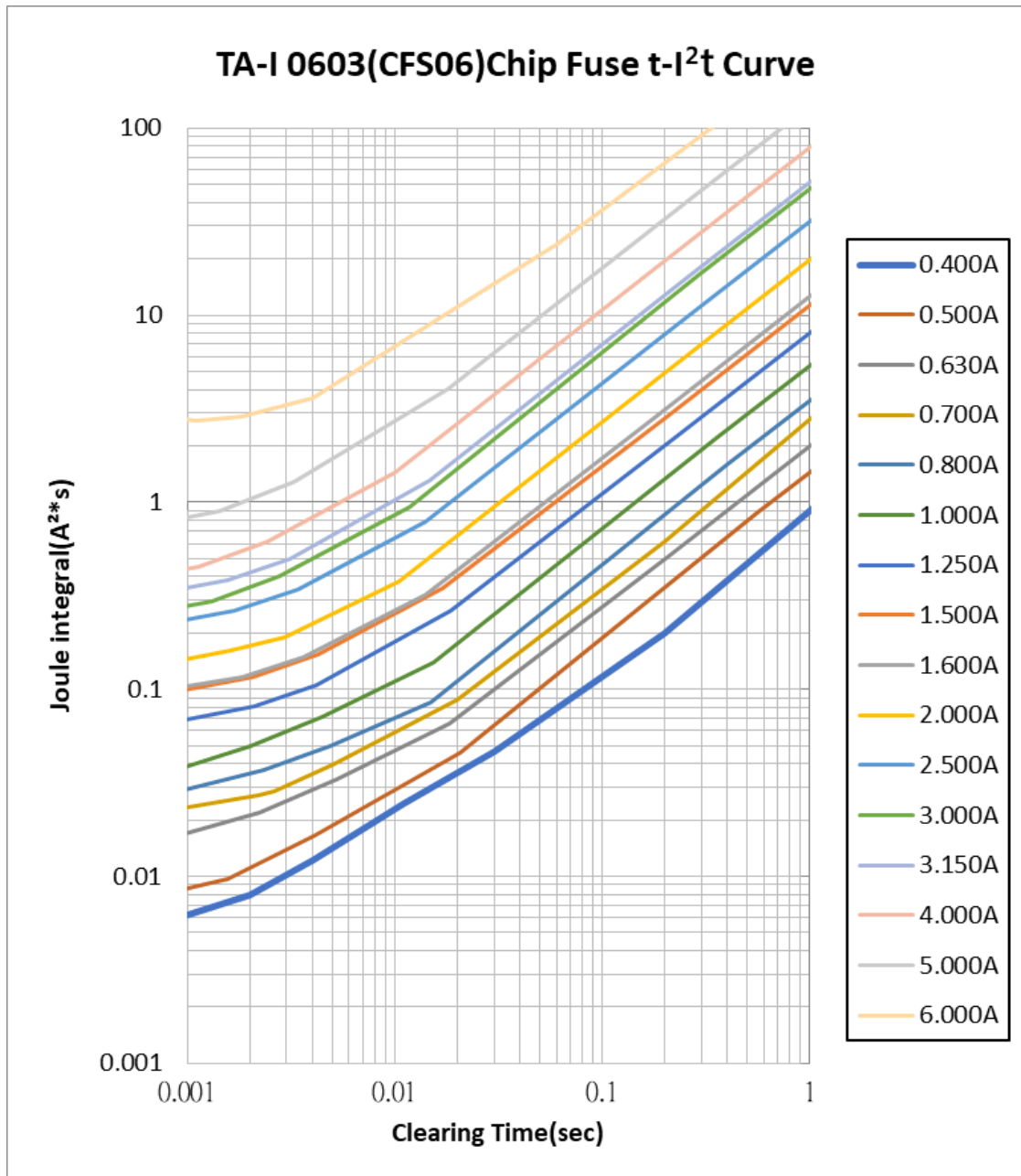




# Thin Film Chip Fuse

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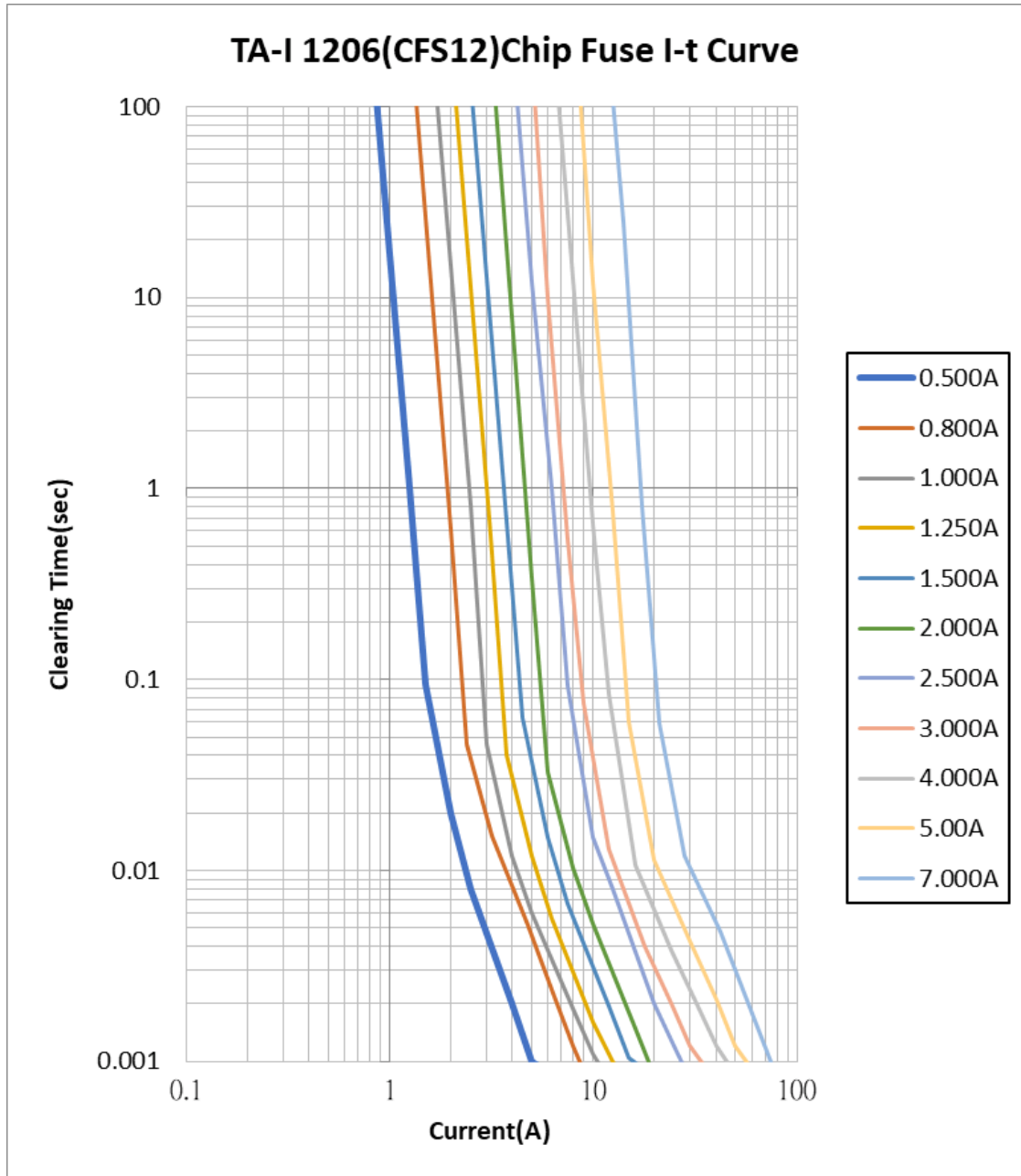




# Thin Film Chip Fuse

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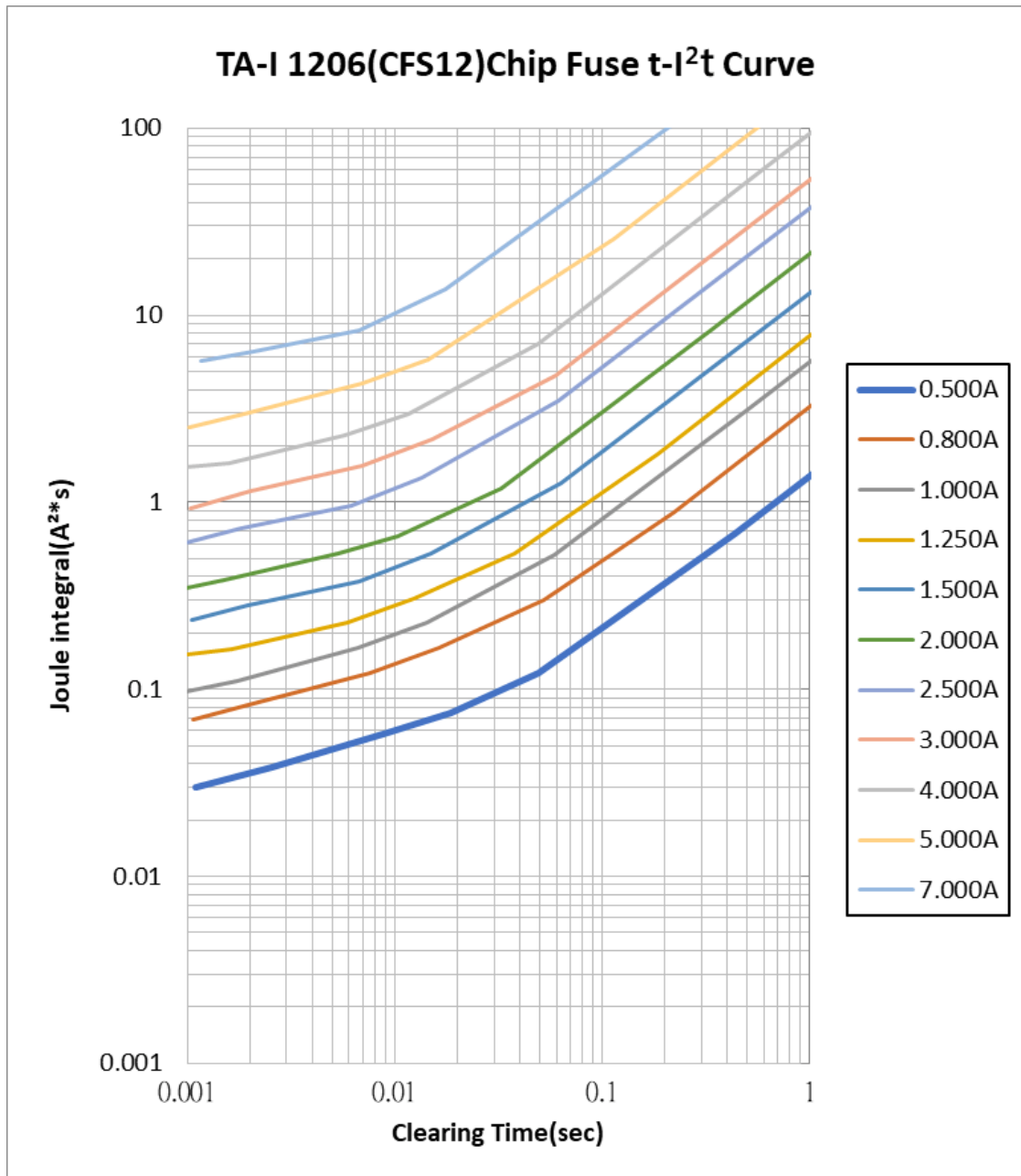




# Thin Film Chip Fuse

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单击下面可查看定价，库存，交付和生命周期等信息

[>>TA-I\(大毅\)](#)