SMD CHIP FUSE

CATALOG (2009)

Shanghai Changyuan Wayon Circuit Protection CO., LTD.

CONTENTS

Surface Mount Fuses

1001# 7th Shiwan Road Pudong District Shanghai. 201202, P.R. China Tel: 86-21-50968320 Fax: 86-21-50968316

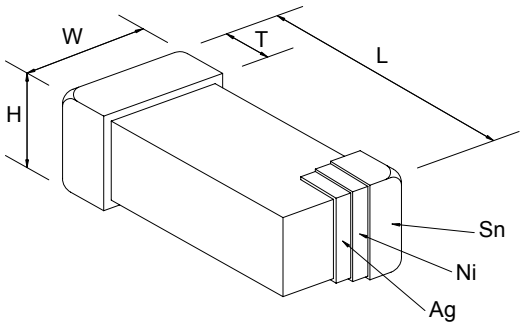
1206 fast blow series ***SMD chip fuse***

Features

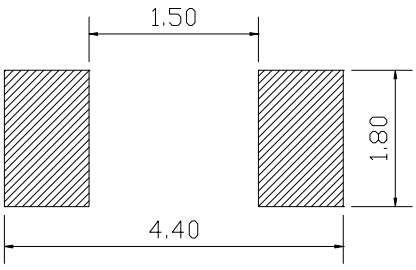
- Multilayer monolithic structure with glass ceramic body and silver fusing element
- Silver termination with nickel and pure-tin solder plating,
- providing excellent solderability
- Compatible with both wave and reflow soldering processes
- Operating temperature range: -55℃ to +125℃

Product Dimensions and Recommended Land Pattern (mm)

Part number	L	W	H	T
1206WCF100A063V	3.20±0.20	1.60±0.20	1.50max	0.20min



Dimensions



Recommended Land Pattern

Clear-Time Characteristics (Fast blow)

% of current rating Clear-time at 25 °C	Clear-time at 25 °C
100%	**4 hours min.**
250%	**5 seconds max.**
400%	**0.05 seconds max.**

Interrupting Ratings

1A---3A 50A at rated voltage

4 A---8A 45A at rated voltage

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Electrical Characteristic

Part Number	Current Rating (A)	Voltage Rating (VDC)	Cold DCR (Ω)
1206WCF100A063V	1.0	63	0.166
1206WCF200A063V	2.0	63	0.050
1206WCF300A032V	3.0	32	0.031
1206WCF400A032V	4.0	32	0.022
1206WCF500A032V	5.0	32	0.015
1206WCF600A024V	6.0	24	0.013
1206WCF700A024V	7.0	24	0.011
1206WCF800A024V	8.0	24	0.008

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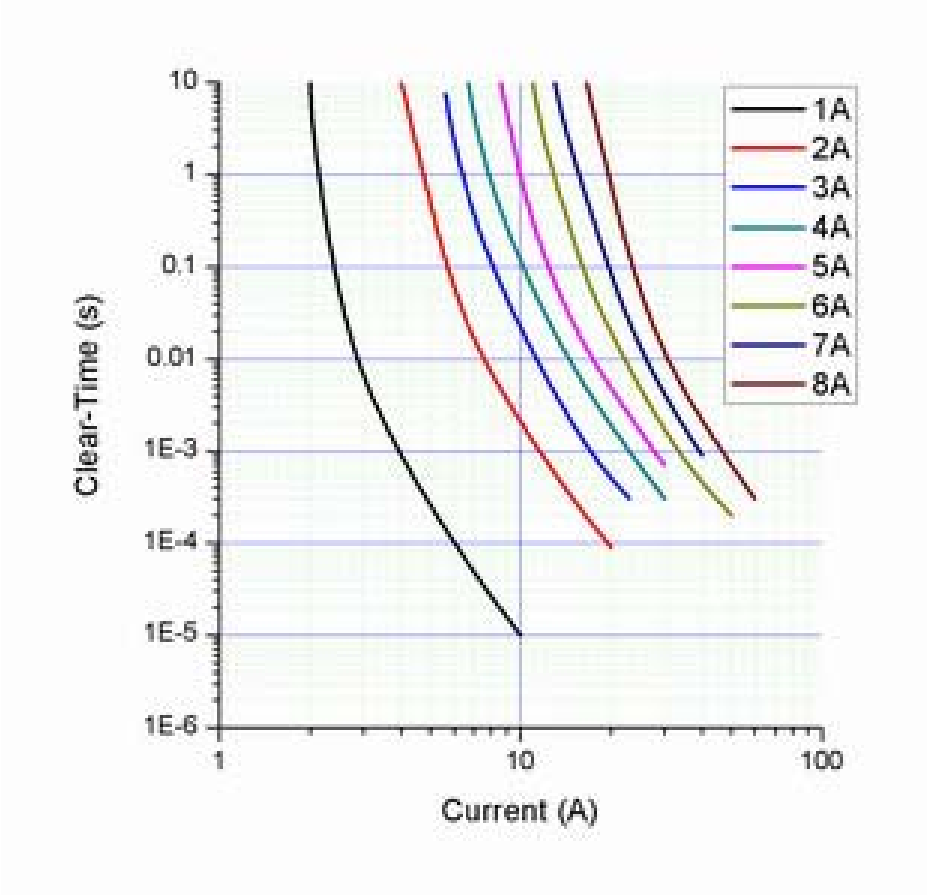
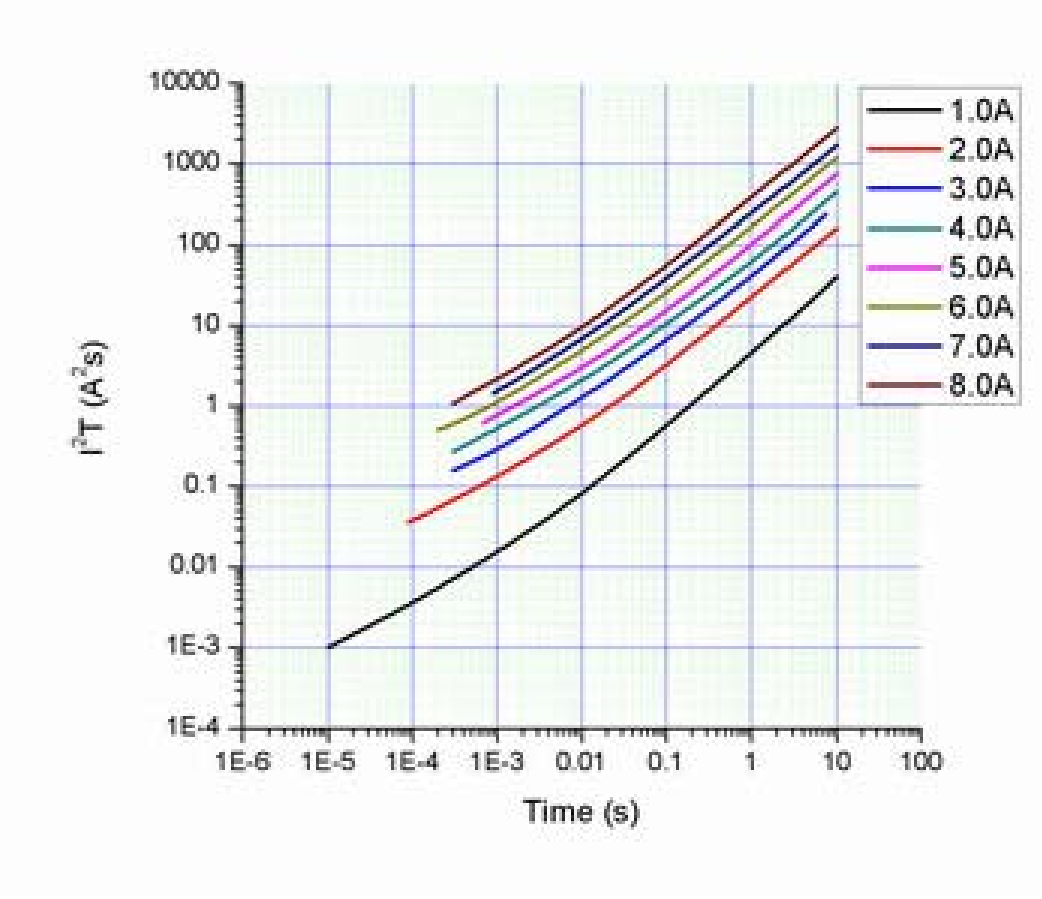
Average Clear-Time Curves and I^2t vs. t Curves





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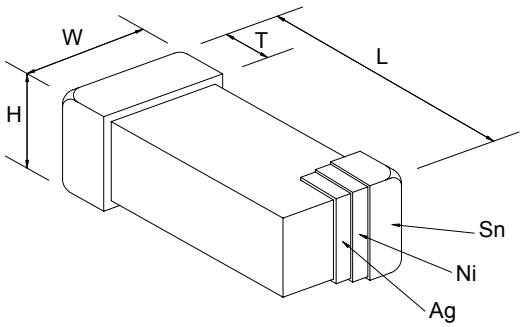
0603 fast blow series ***SMD chip fuse***

Features

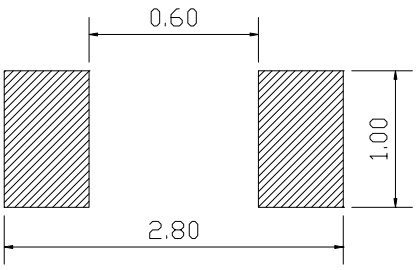
- Multilayer monolithic structure with glass ceramic body and silver fusing element
- Silver termination with nickel and pure-tin solder plating,
- providing excellent solderability
- Compatible with both wave and reflow soldering processes
- Operating temperature range: -55℃ to +125℃

Product Dimensions and Recommended Land Pattern

Part number	L	W	H	T
0603WCF100A032V	1.60±0.15	0.80±0.15	0.95max	0.10min



Dimensions



Recommended Land Pattern

Clear-Time Characteristics (Fast blow)

% of current rating Clear-time at 25 °C	Clear-time at 25 °C
100%	**4 hours min.**
250%	**5 seconds max.**
400%	**0.05 seconds max.**

Interrupting Ratings

1A	50A at rated voltage
1.5 A---6A	35A at rated voltage

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Electrical Characteristic

Part Number	Current Rating (A)	Voltage Rating (VDC)	Cold DCR (Ω)
0603WCF100A032V	1.0	32	0.131
0603WCF200A032V	2.0	32	0.044
0603WCF300A032V	3.0	32	0.025
0603WCF350A032V	3.5	32	0.023
0603WCF400A032V	4.0	32	0.018
0603WCF500A032V	5.0	32	0.013
0603WCF600A024V	6.0	24	0.010

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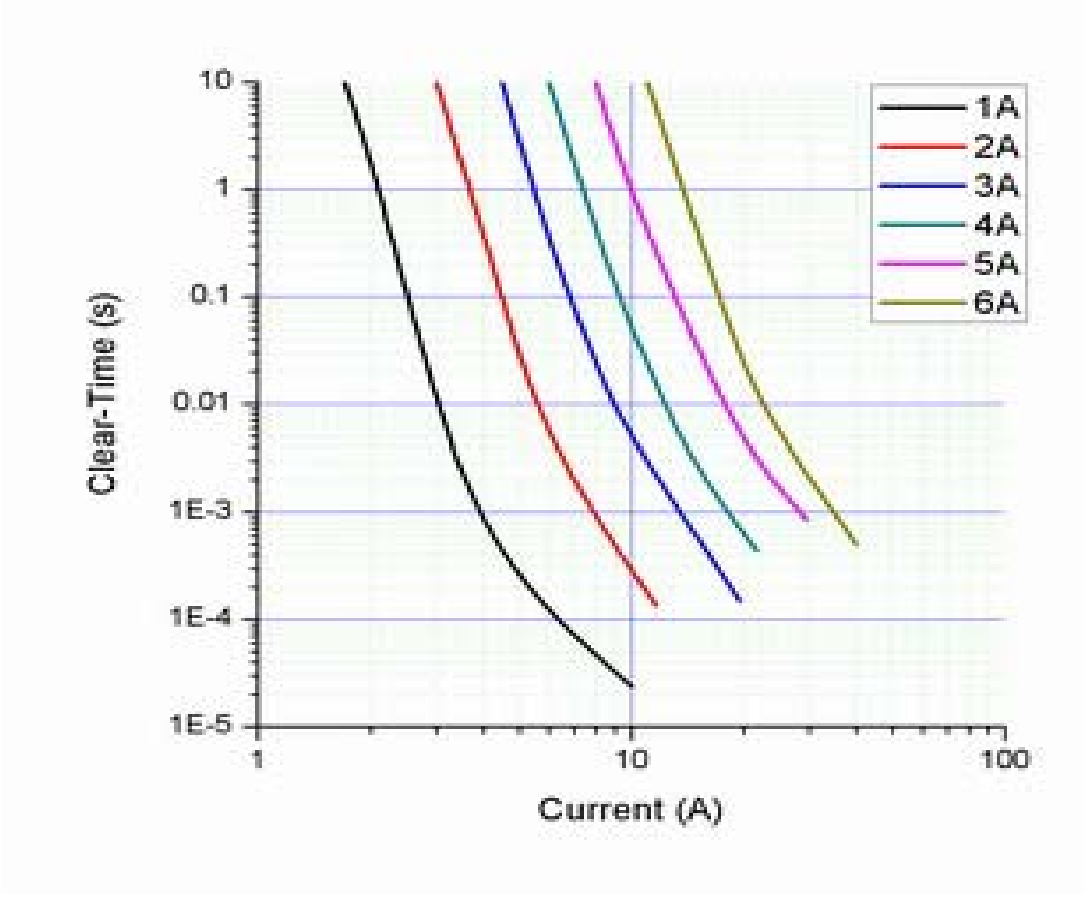
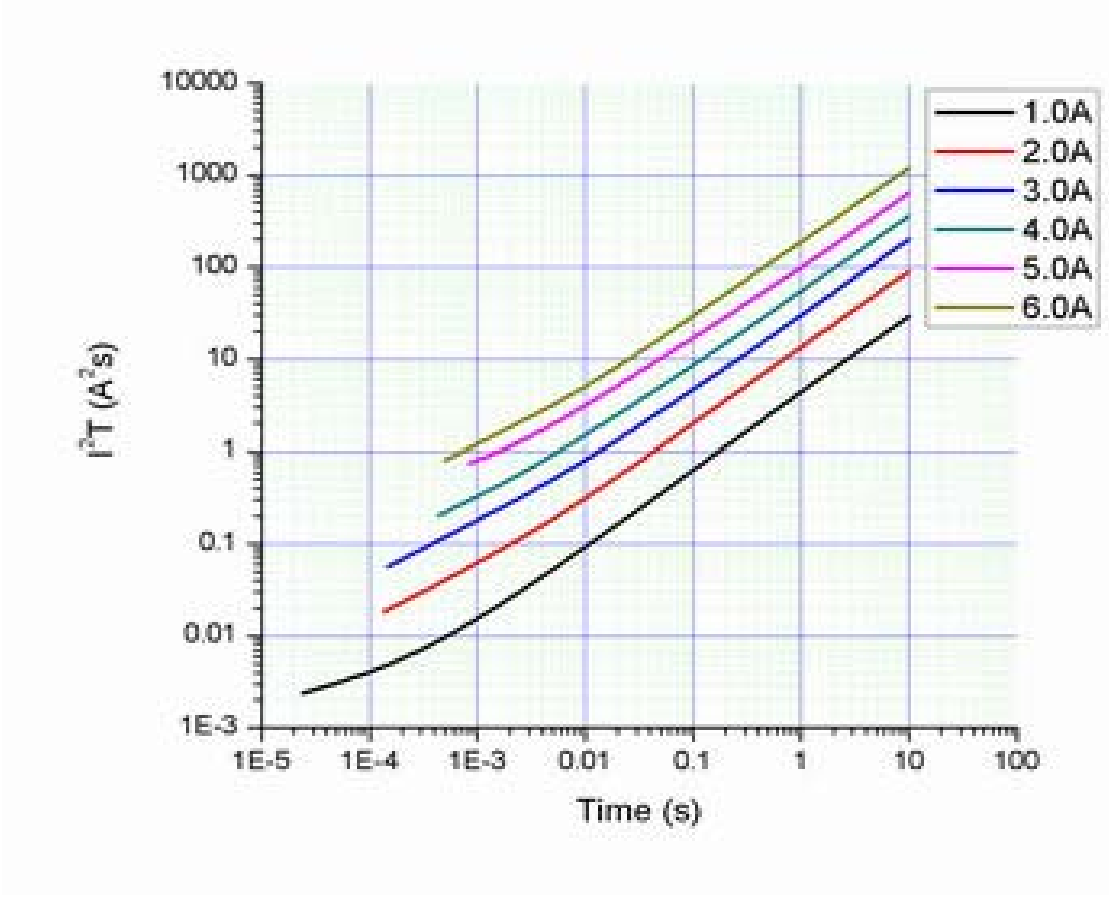
Average Clear-Time Curves and I^2t vs. t Curves





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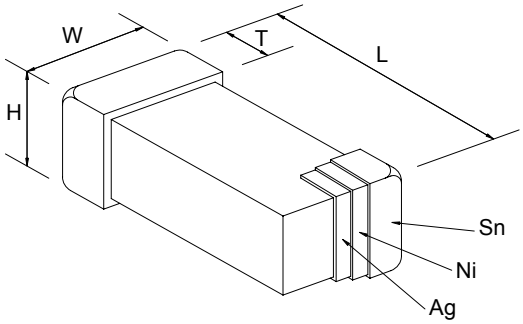
1206 Slow blow series ***SMD chip fuse***

Features

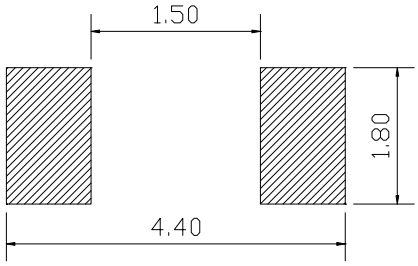
- ✧ High inrush current withstanding capability
- ✧ Multilayer monolithic structure with glass ceramic body and silver fusing element
- ✧ Sliver termination with nickel and pure-tin solder plating,
- ✧ providing excellent solderability
- ✧ Compatible with both wave and reflow soldering processes
- ✧ Operating temperature range: -55℃ + 125℃ (with de-rating)

Product Dimensions and Recommended Land Pattern

Part number	L	W	H	T
1206WCS100A063V	3.20±0.20	1.60±0.20	1.50max	0.20min



Dimensions



Recommended Land Pattern

Clear-Time Characteristics (Slow blow):

% of current rating	Clear-time at 25° C	
100%	4 hours (Min)	
200%	1second(Min)	120seconds(Max)
300%	0.1seconds(Min)	3 seconds (Max)
800%	0.002seconds(Min)	0.05seconds(Max)

Interrupting Ratings:

1A---5A 50A at rated voltage
6A---8A 60A at rated voltage

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Electrical Characteristic:

Part Number	Current Rating (A)	Voltage Rating (V)	Nominal Cold DCR (Ω)
1206WCS100A063V	1.0	63	0.170
1206WCS200A063V	2.0	63	0.082
1206WCS300A032V	3.0	32	0.032
1206WCS400A032V	4.0	32	0.024
1206WCS500A032V	5.0	32	0.016
1206WCS600A024V	6.0	24	0.011
1206WCS700A024V	7.0	24	0.010
1206WCS800A024V	8.0	24	0.009

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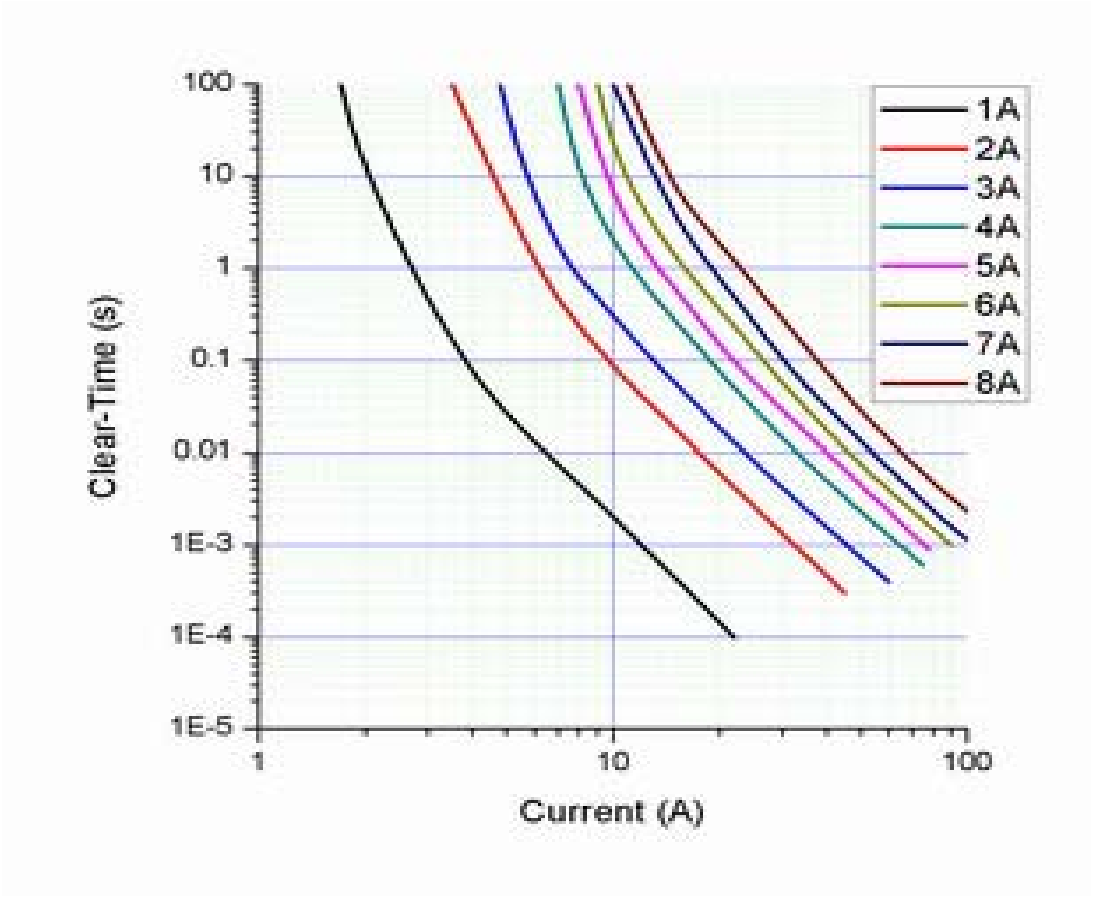
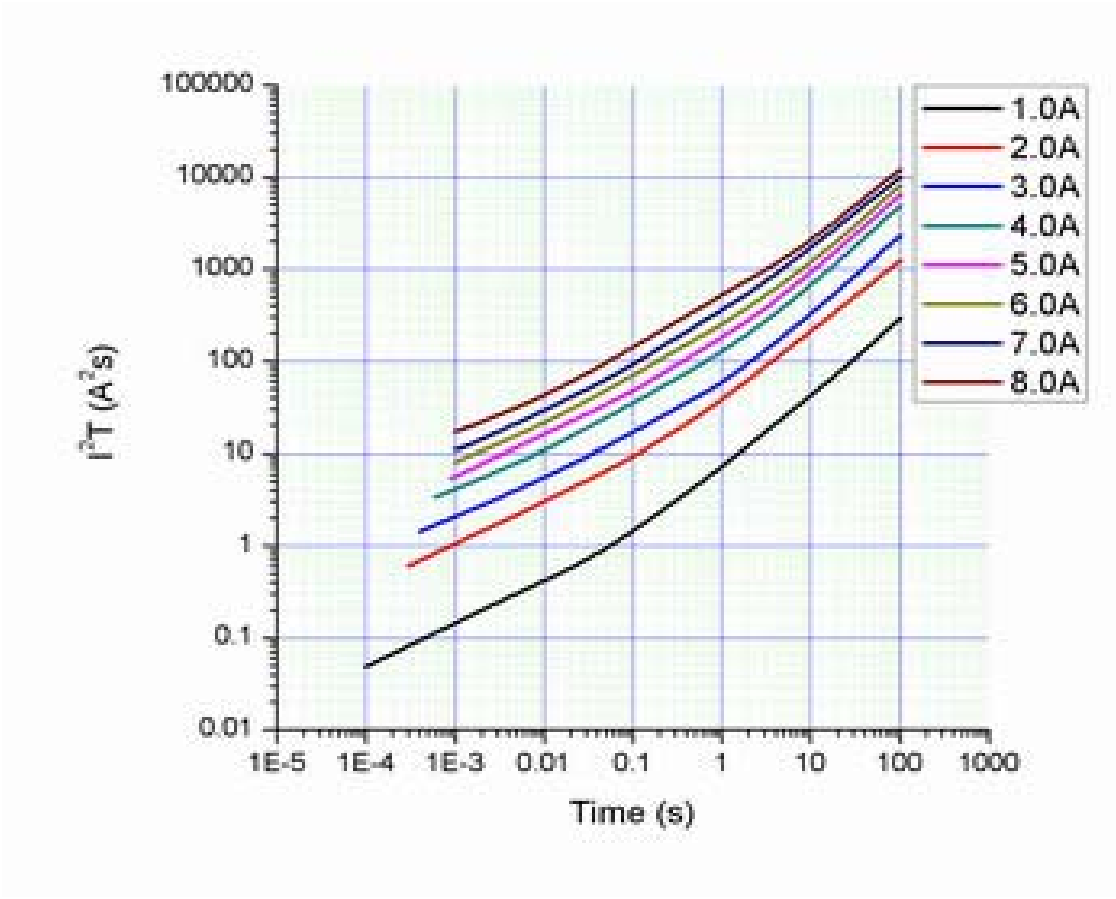
Average Clear-Time Curves and I^2t vs. t Curves:





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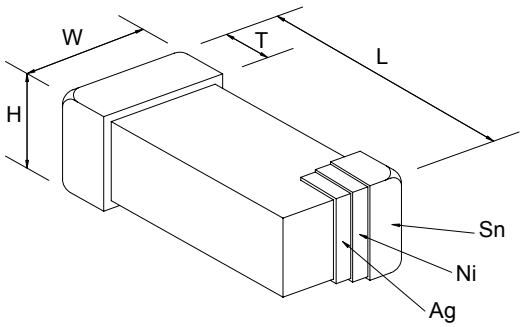
0603 slow blow series ***SMD chip fuse***

Features

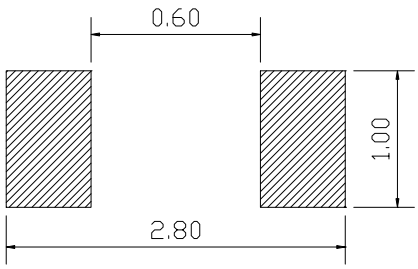
- Multilayer monolithic structure with glass ceramic body and silver fusing element
- Silver termination with nickel and pure-tin solder plating,
- providing excellent solderability
- Compatible with both wave and reflow soldering processes
- Operating temperature range: -55℃ to +125℃

Product Dimensions and Recommended Land Pattern

Part number	L	W	H	T
0603WCS100A032V	1.60±0.15	0.80±0.15	0.95max	0.10min



Dimensions



Recommended Land Pattern

Clear-Time Characteristics (Slow blow)

% of current rating	Clear-time at 25 ° C	
100%	4 hours (Min)	
200%	1second(Min)	120seconds(Max)
300%	0.1seconds(Min)	3 seconds (Max)
800%	0.002seconds(Min)	0.05seconds(Max)

Interrupting Ratings

1A---5A 50A at rated voltage

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Electrical Characteristic

Part Number	Current Rating (A)	Voltage Rating (VDC)	Cold DCR (Ω)
0603WCS100A032V	1.0	32	0.200
0603WCS200A032V	2.0	32	0.052
0603WCS300A032V	3.0	32	0.031
0603WCS400A032V	4.0	32	0.017
0603WCS500A032V	5.0	32	0.013

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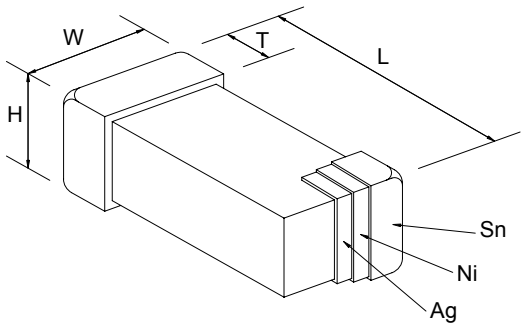
0402 fast blow series ***SMD chip fuse***

Features

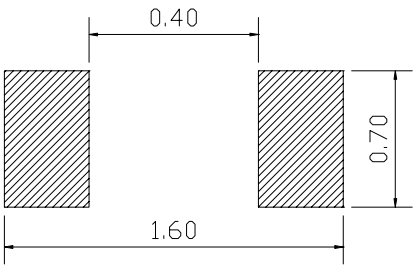
- ✧ Multilayer monolithic structure with glass ceramic body and silver fusing element
- ✧ Silver termination with nickel and pure-tin solder plating,
- ✧ providing excellent solderability
- ✧ Compatible with both wave and reflow soldering processes
- ✧ Operating temperature range: -55℃ to +125℃

Product Dimensions and Recommended Land Pattern

Part number	L	W	H	T
0402WCF100A024V	1.00±0.10	0.50±0.10	0.65max	0.10min



Dimensions



Recommended Land Pattern

Clear-Time Characteristics (Fast blow)

% of current rating Clear-time at 25 °C	Clear-time at 25 °C
100%	**4 hours min.**
250%	**5 seconds max.**
400%	**0.05 seconds max.**

Interrupting Ratings

35A at rated voltage

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Electrical Characteristic

Part Number	Current Rating (A)	Voltage Rating (VDC)	Cold DCR (Ω)
0402WCF100A024V	1.0	24	0.120
0402WCF200A024V	2.0	24	0.035
0402WCF300A024V	3.0	24	0.021
0402WCF400A024V	4.0	24	0.014

Applications:

Circuit Protecting in LCD monitors, PC cards, disk drives, portable communication products, PDAs, digital cameras, DVDs, TVs, cell phones, rechargeable battery packs, battery chargers, etc.

Product Identification:

0603 WC F 300A 032V
(1) (2) (3) (4) (5)

(1) Size code: Standard EIA Chip Size

(2) Company code: Wayon Chip Fuse

(3) Action code: F-Fast blow, S-Slow blow

(4) Current rating code:300A-3.0A

(5) Voltage rating code:032V-32VDC

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Reliability Tests:

No.	Test	Requirement	Test condition	Test reference
1	Soldering heat resistance	DCR change ≤±10% No mechanical damage	One dip at （260±5）℃ for （5±1）S sec	MIL-STD-202 Method 210
2	Solderability	Minimum95%coverage	One dip at （235±5）℃ for （5±1）sec	MIL-STD-202 Method 208
3	Thermal shock	DCR change ≤±10% No mechanical damage	1000 cycles between -40 ℃ and +125℃	Refer to WAYON Standard
4	Moisture resistance	DCR change ≤±15% No mechanical damage	10 cycles	MIL-STD-202 Method 106
5	Mechanical vibration	DCR change ≤±10% No mechanical damage	0.4" D.A. or 30 G between 5- 3000 Hz	MIL-STD-202 Method 204
6	Mechanical shock	DCR change ≤±10% No mechanical damage	Fall from 1 m height of the floor 10 times	Refer to WAYON Standard
7	Terminal strength	DCR change ≤±10% No mechanical damage	30 sec. hanging for 1206 (1.0kg) and 0603 (0.5KG)	Refer to WAYON Standard
8	Life	No electrical "opens" during testing voltage drop change shall be less than±20% of initial value	80% Rated current ambient temperature +25℃ to +28 ℃,2000 hours	Refer to WAYON Standard
9	Bending	No electrical "opens" during testing	2 mm bending ,more than 5 seconds	Refer to WAYON Standard

Electrical Specifications:

Clear-Time Characteristics: Same as specified on the Short Form Data Sheet

Insulation Resistance after Opening: 10,000 ohms minimum when cleared with rated voltage applied. Fuse clearing under low voltage conditions may result in lower after clearing insulation resistance values. (Note: Under normal fault conditions (low or rated voltage conditions), WAYON chip fuses provide sufficient after clearing insulation resistance values for circuit protection.)

Current Carrying Capacity: 100% rated current at +25℃ ambient for 4 hours minimum when evaluated per MIL-PRF-23419

Interrupt Ratings: Same as specified on the Short Form Data Sheet

Fuse Selection and Temperature De-rating Guideline:

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".

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.

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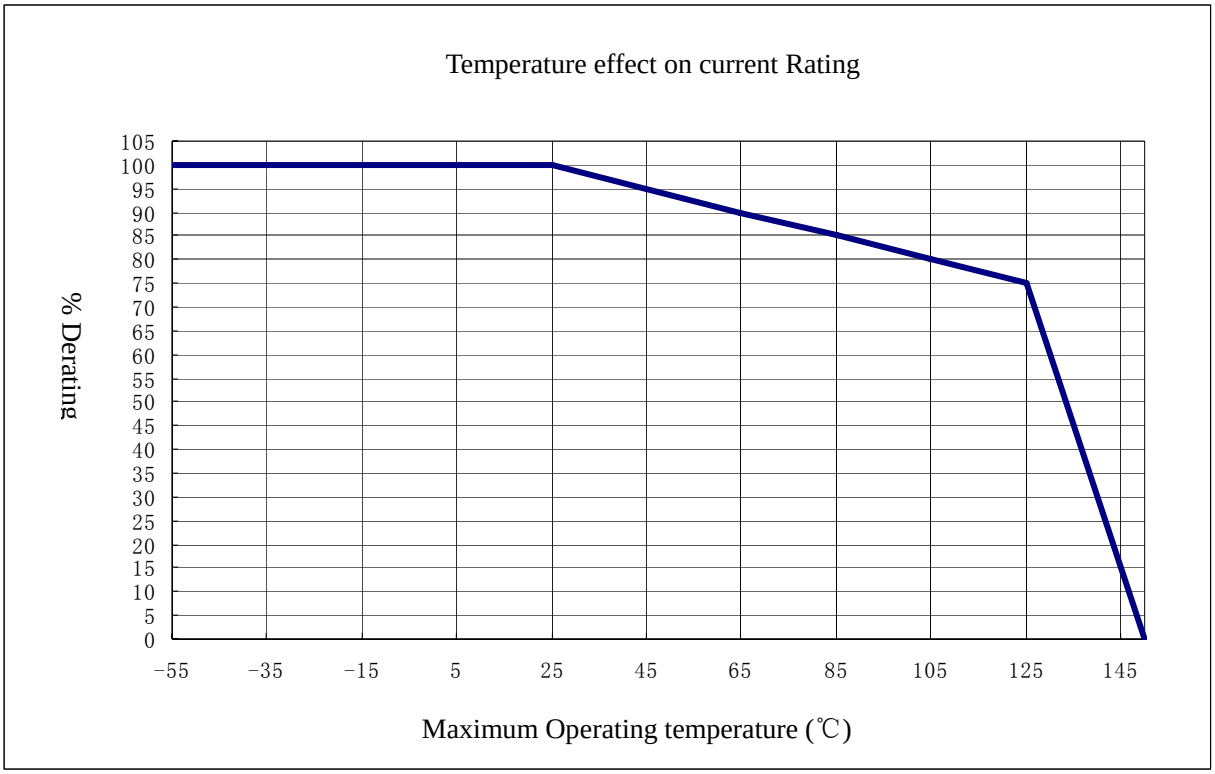
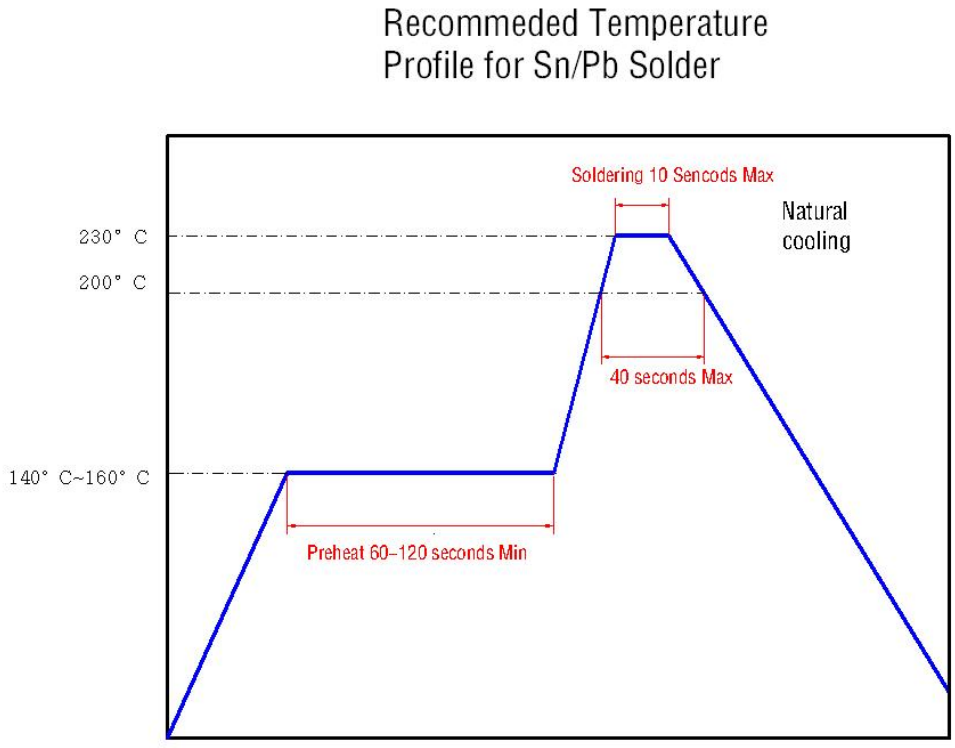
Example: At maximum operating temperature of 65℃, % De-rating is 90%. The nominal operating current is 4A. The current rating for fuse selected from the catalog shall be:

4 / 0.75 / 90% = 5.9 or 6A.



Soldering Temperature Profiles



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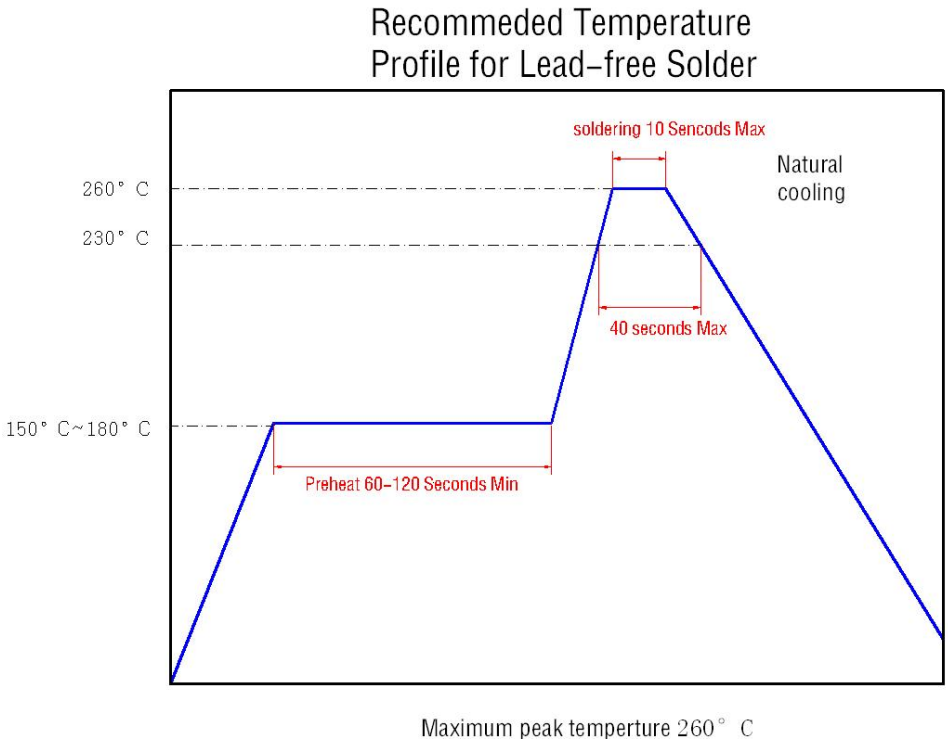

Recommended conditions for hand soldering:

1. Preheating: 150℃, 60s (min) Appropriate temperature (max) of soldering iron tip/soldering time (max): 280℃ /10s or 350℃ / 3s Maximum temperature of soldering iron tip/soldering time : 350℃ /9s or 400℃ / 8s

2. Using hot air rework station with tip that can melt the solder on both terminations of the same time is strongly recommended, don't directly contact the chip termination with the tip of soldering iron

Packaging and Storage

Packaging

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. The reel size can be 7 inches or 13 inches, depending on customers' preference.

Packaging Data

Chip Size	Parts on 7 inch (178 mm) Reel
0603	4,000pcs
1206	3,000pcs

Storage

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.

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Cautions and warnings:

1、Handling

- CHIP FUSE must not be dropped. Chip-offs must not be caused during handling of FUSEs.
- Components must not be touched with bare hands. Gloves are recommended.
- Avoid contamination of fuse surface during handling.

2、Soldering

- Use resin-type flux or non-activated flux.
- Insufficient preheating may cause ceramic cracks.
- Rapid cooling by dipping in solvent is not recommended.
- Complete removal of flux is recommended.

3、Mounting

- Electrode must not be scratched before/during/after the mounting process.
- Contacts and housings used for assembly with fuses have to be clean before mounting.
- 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.
- 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.
- Avoid contamination of fuse surface during processing.

4、Operation

- Use fuses only within the specified operating temperature range.
- Environmental conditions must not harm the fuses. Use fuses only in normal atmospheric conditions.
- 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 (e.g. Galden).
- Avoid dewing and condensation.

Notice:

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