AirMatrix® Surface Mount Fuses

AF101 Series (High Inrush, 4012 & 4818 Size)

Features:

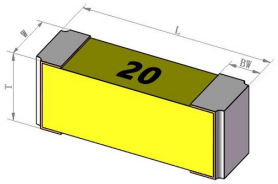
- Excellent inrush current withstanding capability
- Fiberglass enforced epoxy fuse body
- Copper or copper alloy composite fuse link
- Copper termination with nickel and tin plating

Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100%	4 hours	-
200%	-	60 seconds

Shape and Dimensions:

Unit	4012	4818	Unit
L	0.398 ± 0.012 (10.10 ± 0.30)	0.480 ± 0.012 (12.20 ± 0.30)	Inch (mm)
T	0.129 ±0.012 (3.30 ± 0.30)	0.175 ±0.012 (4.50 ± 0.30)	Inch (mm)
W	0.129 ±0.012 (3.30 ± 0.30)	0.129 ±0.012 (3.30 ± 0.30)	Inch (mm)
B	0.061 ± 0.012 (1.55 ± 0.30)	0.061 ± 0.012 (1.55 ± 0.30)	Inch (mm)



Applications:

- Server systems
- Blade servers
- UPS & Routers
- Fan & E-bike
- Power tools
- BMS of Li-ion battery

Ordering Information:

Part Number	Current Rating (A)	Voltage Rating (V DC)	Interrupting Ratings	Nominal DCR (mΩ)[1]	Nominal I^2t (A^2s)[2]	Marking[3]
AF4012H20A0T	20	75	1,000A @75V DC	2.24	240	20
AF4012H25A0T	25			1.68	350	25
AF4012H30A0T	30			1.35	570	30
AF4818H40A0T	40			1.26	1100	40
AF4818H50A0T	50			1.12	1370	50
AF4818H60A0T	60			0.83	1800	60

1. Measured at ≤10% rated current and 25 °C ambient
2. Melting I^2t at 1ms pre-arcing time .
3. Marking current rating code.

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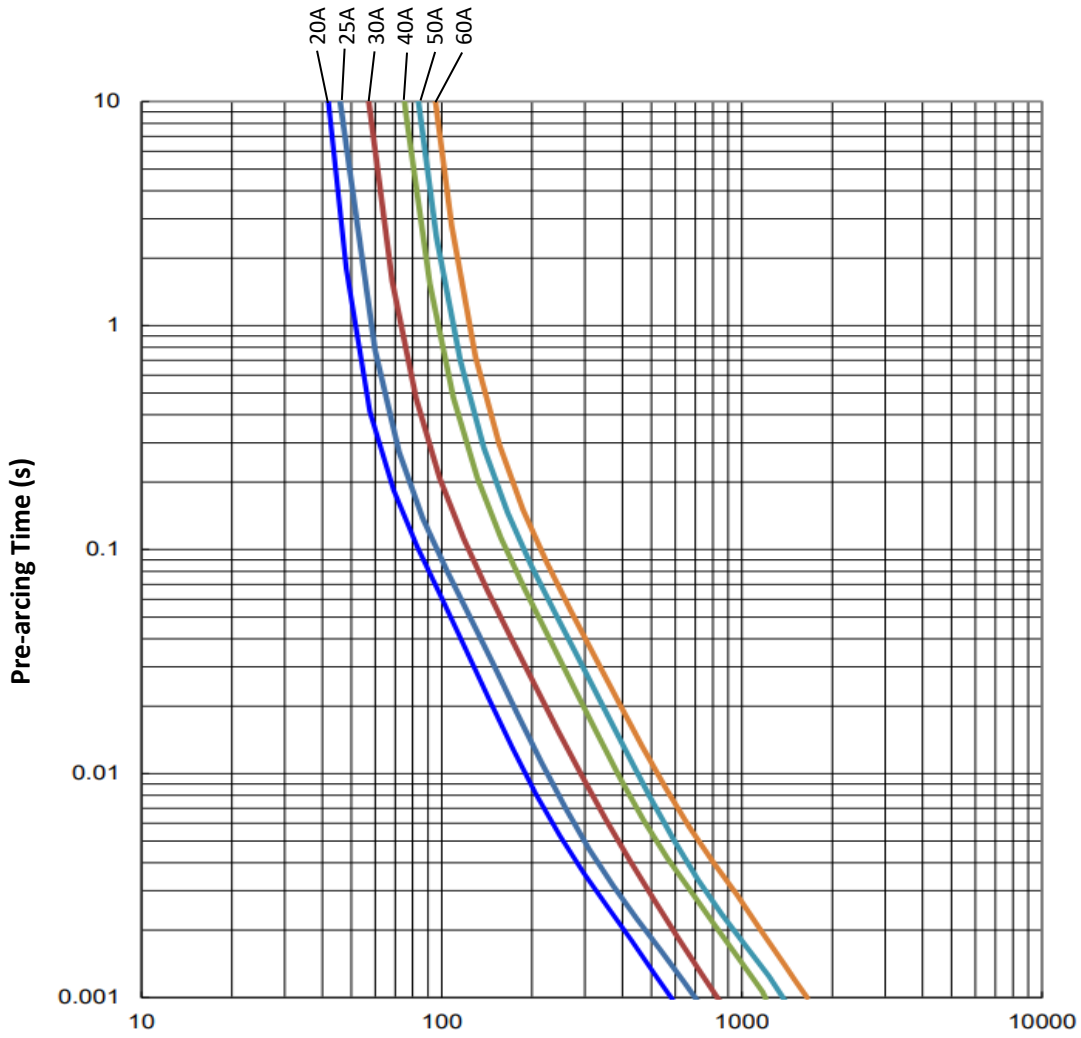
Average Pre-arcing Time Curves:



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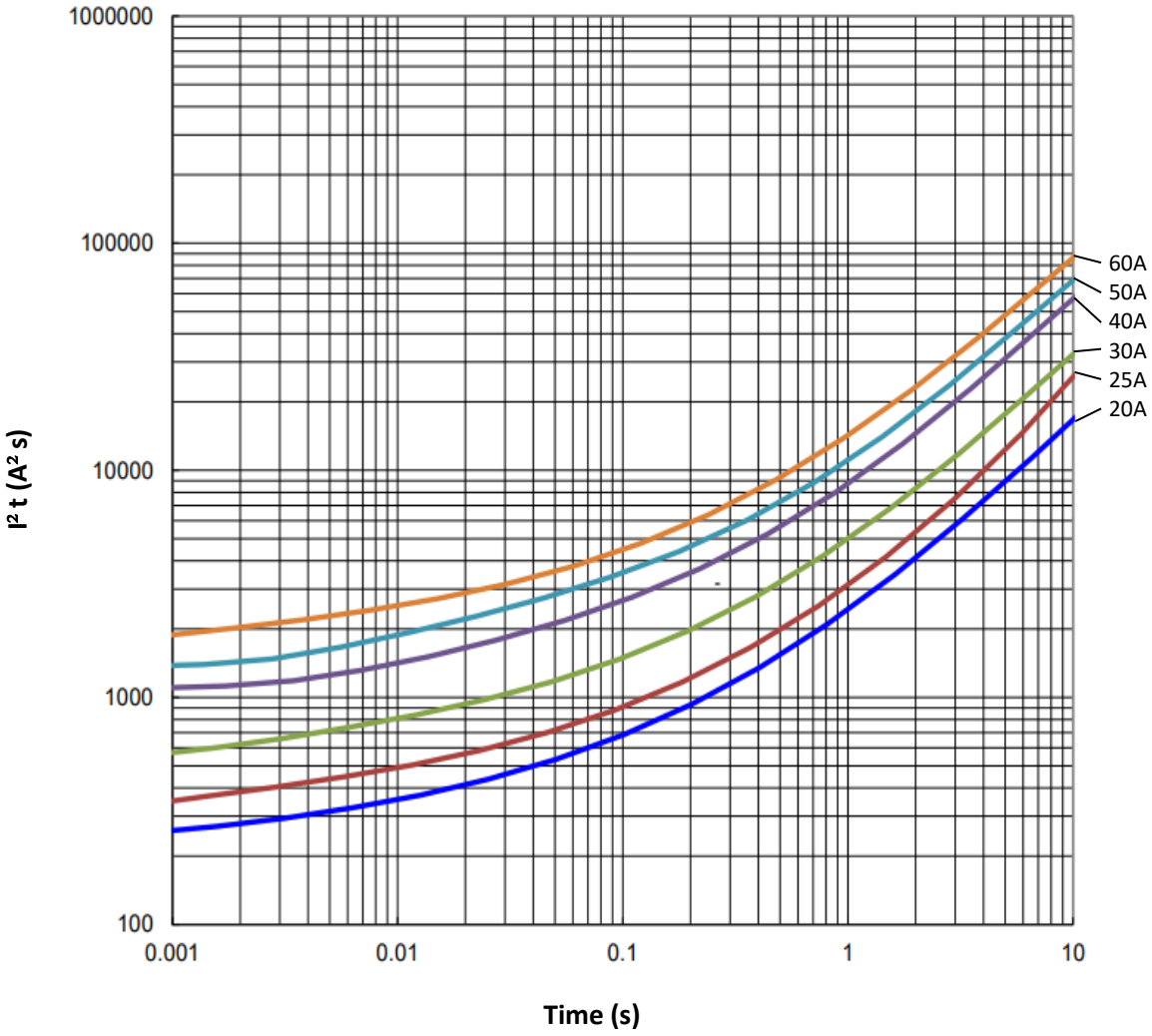
Average I^2t vs. t Curves:



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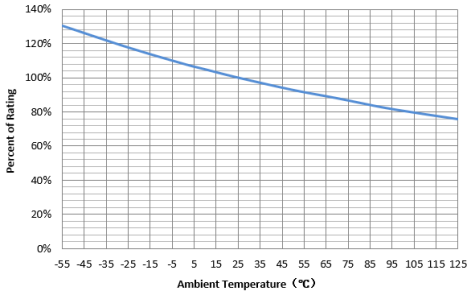
Temperature De-rating:

The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C , the fuse shall be "de-rated" according to the de-rating curve.



Product Identification:

AF 4012 H 20A0 T

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

(1) Series Code: AF101 Series

(2) Size Code: L x W (inch), the first two digits - L (length), the last two digits - W (width)

(3) Characteristic Code: H - High Inrush

(4) Current Rating Code: 20A0 - 20.0A

(5) Package Code: T - Tape & Reel, B - Bulk

Marking: Current Rating Code

Operating Temperature Range:

- -55°C ~+125°C (with de-rating)

Agency Approval:

- Recognized Under the Components Program of Underwriters Laboratories.
- Certification #: UL-E232989

Reliability Tests:

No.	Item	Condition	Criteria
1	Bend	2 mm bend	DCR change within ±20%, no mechanical damage
2	Solderability	245°C, 5 seconds	New solder coverage ≥95%
3	Soldering Heat Resistance	260°C, 10 seconds	DCR change within ±20%, new solder coverage 75% minimum, no mechanical damage
4	Terminal Strength	Gradually apply 1.8 kg force to the bottom of the part for 60 seconds	DCR change within ±20%, no mechanical damage
5	Life	75% rated current, 2000 hours, ambient temperature +20°C to +30°C	Voltage drop change within ±20%
6	Thermal Shock	-65°C to +125°C, 100 cycles	DCR change within ±20%, no mechanical damage
7	Mechanical Vibration	5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak	DCR change within ±20%, no mechanical damage
8	Mechanical Shock	1500 G, 0.5 milliseconds, half-sine shocks	DCR change within ±20%, no mechanical damage
9	Salt Spray	5% salt solution, 48 hours exposure	DCR change within ±20%, no excessive corrosion
10	Moisture Resistance	10 cycles	DCR change within ±20%, no excessive corrosion

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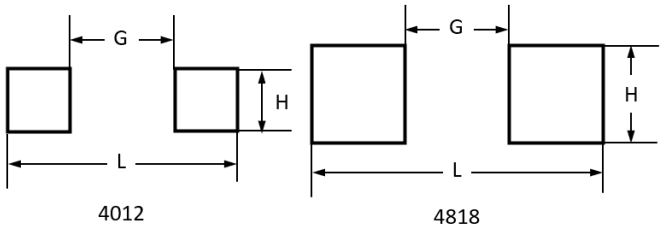
Recommended Land Pattern:

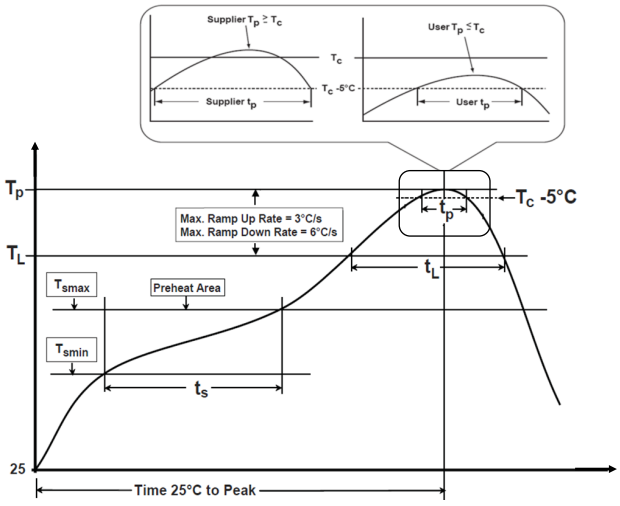
Chip Size	4012	4818	Unit
L	0.496 (12.6)	0.63 (16.0)	Inch (mm)
G	0.225 (5.72)	0.225 (5.72)	Inch (mm)
H	0.135 (3.43)	0.213 (5,40)	Inch (mm)



Recommended Temperature Profile:

Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60~120 seconds
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L	217°C 60~150 seconds
Peak package body temperature (T_p)	260°C
Time (t_p)*within 5°C of the specified classification temperature (T_c)	30 seconds *
Ramp-down rate (T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum	

* Recommended Temperature Profile for Reflow Soldering



Recommended conditions for hand soldering:

1. Appropriate temperature (max.) of soldering iron tip/soldering time (max.): 280°C /10 s or 350°C / 3 s
2. Using hot air rework station with tip that can melt the solder on both terminations at the same time is strongly recommended. Do not directly contact the chip termination with the tip of soldering iron.

Storage:

1. The maximum ambient temperature shall not exceed 35°C . Storage temperatures higher than 35°C could result in the deformation of packaging materials.
2. The maximum relative humidity recommended for storage is 75%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components.
3. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.
4. MSL=1

Packaging:

Chip Size	Parts on 13 inch (330 mm) Reel
4012 & 4818	2,000

Disclaimer

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