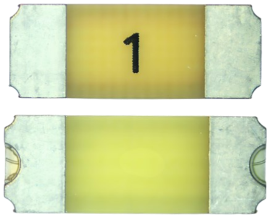
AirMatrix® Surface Mount Fuses

QA4818F Series



Features:

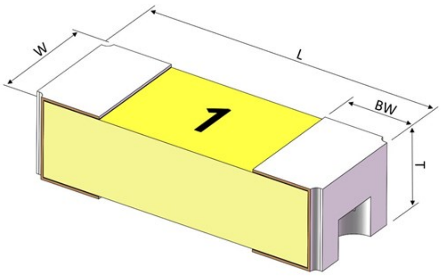
- Fiberglass enforced epoxy fuse body
- Copper termination with nickel and tin plating
- Surface mount type and small size at such high voltage rating
- Halogen free, RoHS compliant and 100% lead-free
- Operating temperature range: -55℃ to +125℃ (with de-rating)

Applications:

- Communications & Networks
- BMS
- Infotainment systems
- Under-the-hood applications

Shape and Dimensions:

Unit	Inch	mm
L	0.480± 0.012	12.1± 0.3
W	0.175± 0.012	4.5± 0.3
T	0.129 ± 0.012	3.3± 0.3
BW	0.110 ± 0.012	2.8 ± 0.3



Clear-Time Characteristics:

% of current rating	Clear-time at 25 ℃
100%	4 hours (min)
200%	120 seconds (max)

Agency Approval:

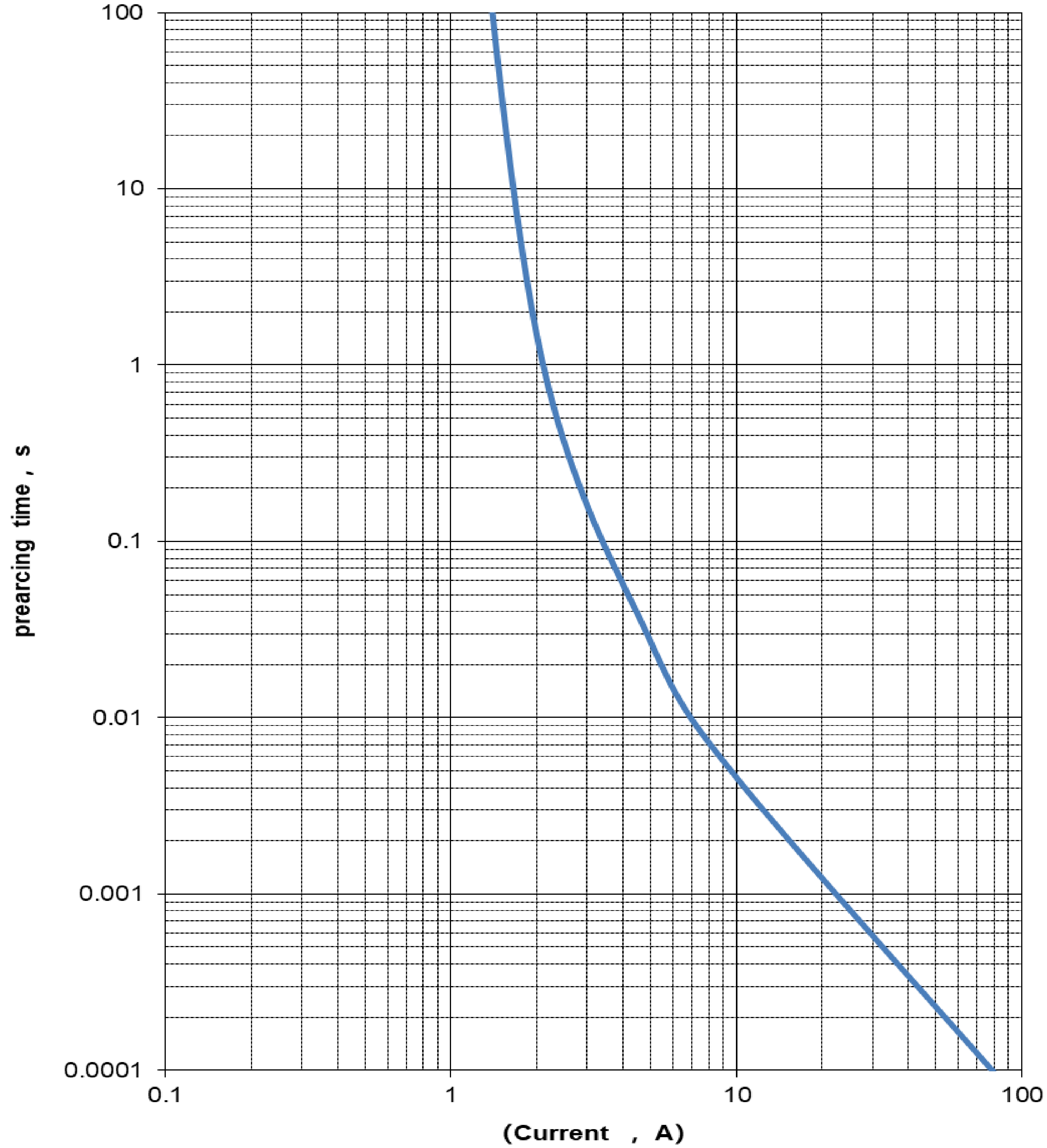
- Recognized Under the Components Program of Underwriters Laboratories. Certification #: UL-E232989.

Electrical Specification:

AEM Part Number	Current Rating (A)	Max Voltage Rating (VDC)	Interrupting Rating	Nominal I^2t (A^2s)[2]
QA4818F1A00T	1	600	100A@600VDC 100A@350VAC	0.5

1. Measured at ≤ 10% rated current and 25°C ambient;
2. Melting I2t at 1000% of current rating;

Clear Time Curves:



Product Identification:

<u>QA</u> <u>4818</u> <u>F</u> <u>1A00</u> <u>T</u>
(1) (2) (3) (4) (5)

(1) Product code: Q- Automotive Fuse，A-AirMatrix Chip Fuse

(2) Size code: L x W (inch)

The first two digits - L (length)

The last two digits - W (width)

(3) Series code: F

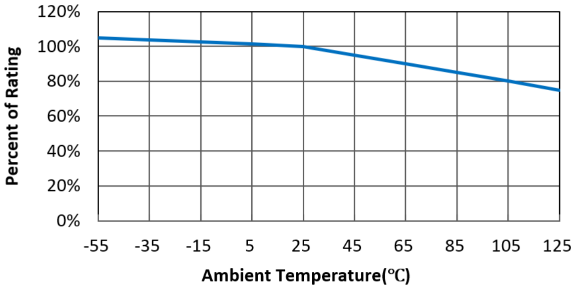
(4) Current rating code: 1A00: 1A

(5) Package code:

T - Tape & Reel; B - Bulk

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.



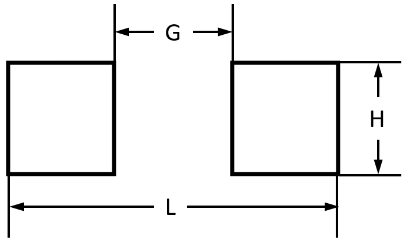
Operating Temperature Range:

-40°C ~+125°C (with de-rating)

Recommended Land Pattern:

Chip Size	4818	Unit
L	0.630 (16.0)	Inch (mm)
G	0.225 (5.72)	Inch (mm)
H	0.213 (5.40)	Inch (mm)

Inch (mm)



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
4818	2,000 PCS

AirMatrix® Surface Mount Fuses
QA4818F Series

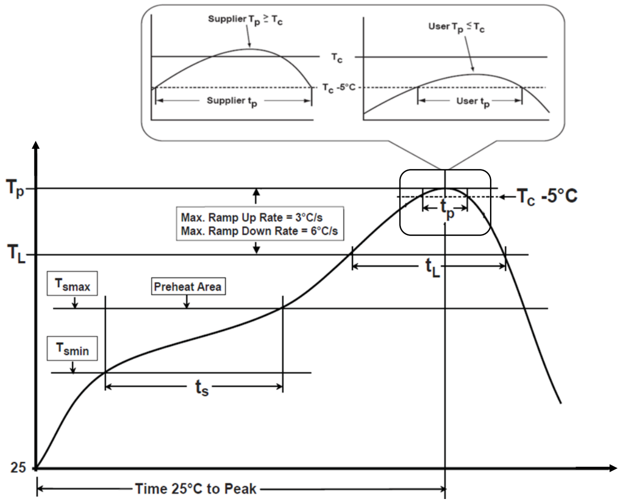
Reliability Tests:

No.	Item	Test Condition	Criteria
1	High temperature storage	Subject fuses to +125°C for 1000 hours	DCR change within ±10%, no damage
2	Low temperature storage	Subject fuses to -65°C for 1000 hours	DCR change within ±10%, no damage, Post Electrical Test not required
3	Temperature Cycling	Subject fuses to 1000 temperature cycles 30min at -65°C lowest temp and 30min at +125°C highest temp	DCR change within ±10%, no damage
4	Biased Humidity	Subject fuses to +85°C/85%RH with 10% rated current for 1000 hours	DCR change within ±10%, no excessive corrosion
5	High Temperature Operating Life	+125°C for 1000 hours. Load setting : 75%(current de-rating) *75%(temp. de-rating per series) * Rated current	DCR change within ±10%, no damage
6	Mechanical Vibration	0.4” D.A. or 30G between 5 and 3000 Hz, along 3 mutually perpendicular axes for a total of 12 hours	DCR change within ±10%, no mechanical damage
7	Mechanical Shock	1500G, 0.5 ms, half sine shocks in 6 major directions along 3 mutually perpendicular axes	DCR change within ±10%, no mechanical damage
8	Resistance to Soldering Heat	One dip at 260°C, 10 seconds.	DCR change within ±20% of > 1A or ±10% of ≤ 1A, no damage,
9	Salt spray	5% salt solution, 48 hours exposure	DCR change within ±10%, no excessive corrosion, Post Electrical Test not required
10	Solderability	245°C , 5 seconds	New solder coverage ≥ 95%, Post Electrical Test not required
11	Terminal Strength	Apply 17.7N (1.8kg) force gradually to the side of the fuse, this force shall be applied for 60 seconds	DCR change within ±10%, no mechanical damage
12	Board Flex	Apply a force that will bend the board distance of x = 6 mm, and the duration of the applied forces shall be 60 seconds	DCR change within ±20% of > 1A or ±10% of ≤ 1A, no mechanical damage
13	Resistance to Solvents	Completely immersed in solvent solutions for 3 minutes, brushed the marking surface for ten strokes; repeated total 3 times	Marking shall remain legible and no discoloration, DCR change within ±10%
14	Electrical Characterization	Conducted Electrical Characterization test at minimum, ambient and maximum operating temperatures; Current Carrying Capacity test with temperature de-rating; overload test 200% current rating	Current Carrying Capacity: 4 hours Min; 200% Overload :0.01~ 5 seconds for 1.0~10A, 0.01~20seconds for >10A; Max; Interrupting Test: meet Interrupting Ratings capability
15	Post -stress Electrical Test	Current Carrying Capacity: Half of samples, test at room Ambient. Overload Test :Half of samples, test at room Ambient and 200% current rating	Current Carrying Capacity: 4 hours Min; 200% Overload :0.01~ 5 seconds for 1.0~10A, 0.01~20seconds for >10A

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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.