Revision of November 2018

Automotive Surface Mount Fuses

Features:

AEM Components' AEC-Q200 qualified and ISO IATF16949 certificated fuses are setting a new standard for reliable performance in demanding automotive applications. Choose from AirMatrix wire-in-air fuses and SolidMatrix solid body fuses for optimum performance under the hood or in the cabin.

AirMatrix® Platform

QA Series

- Excellent inrush current withstanding capability
- Fiberglass enforced epoxy fuse body
- Copper or copper alloy composite fuse link
- Copper termination with nickel and tin plating
- Operating temperature range:
  -55℃ to +125℃ (with de-rating)

SolidMatrix® Platform

QF Series

- 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:
  QF1206F/QF1206H: -55℃ to +150℃ (with de-rating)
  QF0603F/QF0603H: -55℃ to +125℃ (with de-rating)

Applications:

- Communications & Networks
- Battery Management Systems
- Infotainment Systems
- Under-the-hood Applications

Quick Index:

Series	Size	Current Rating (A)	Voltage Rating	Page
QA2410F	2410	0.5, 0.63, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 3.15, 3.5, 4.0, 5.0, 6.3, 7.0, 8.0, 10.0	125VDC	4
		12.0, 15.0, 20.0	65VDC	
QA1206F	1206	1.5, 1.6, 2.0, 2.5, 3.0, 3.15, 3.5, 4.0	65VDC	7
		5.0, 6.3, 7.0, 8.0, 10.0, 12.0, 15.0	32VDC	
QF1206F	1206	0.5, 0.75, 1.0, 1.5, 1.75, 2.0	63VDC	10
		2.5, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0	32VDC	
QF0603F	0603	1.0, 1.5	63VDC	13
		2.0, 2.5, 3.0, 3.5, 4.0, 5.0	32VDC	
		6.0	24VDC	
QF1206H	1206	0.5, 0.75	65VDC	16
		1.0, 1.5, 2.0	63VDC	
		2.5, 3.0, 3.5, 4.0, 4.5, 5.0	32VDC	
		6.0, 7.0, 8.0	24VDC	
QF0603H	0603	1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 6.0, 7.0, 8.0	32VDC	19

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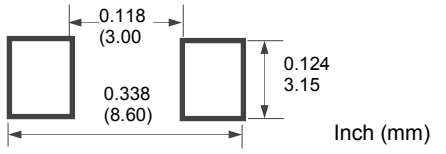
Product Identification:

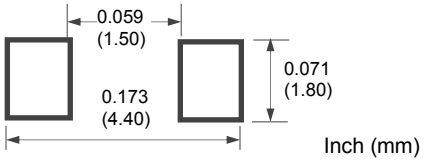
Q A 1206 F 2A00 T
(1) (2) (3) (4) (5) (6)

(1) Product type code: Q- Automotive fuse
(2) Product code: A-AirMatrix Chip Fuse, F-SolidMatrix Chip Fuse
(3) Dimension code: L x W (inch)
The first two digits - L (length)
The last two digits - W (width)
(4) Characteristic code: F-fast acting, H-Slow Blow
(5) Current rating code: 2A00-2.0A
(6) Package code:
T – Tape and Reel
B – Bulk

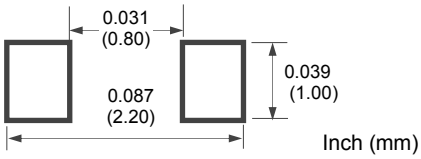
Recommended Land Pattern:



2410 Size



1206 Size

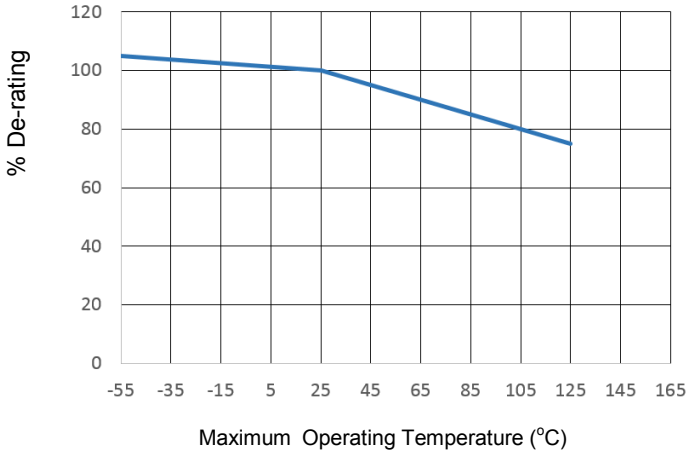


0603 Size

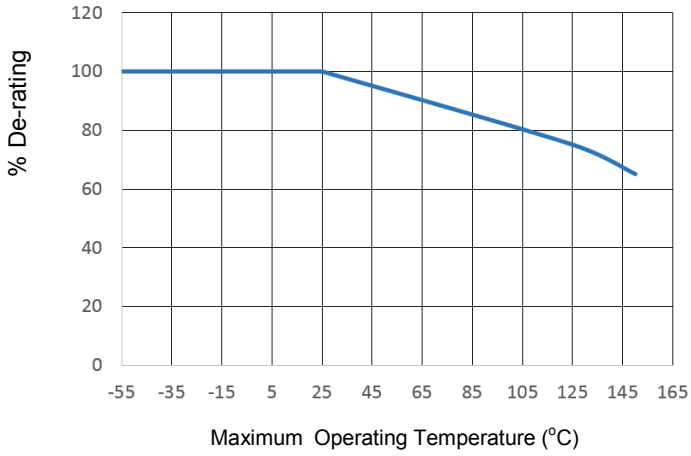
Fuse Selection and Temperature De-rating Guideline:

The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C, 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.
Example: At maximum operating temperature of 65°C, % De-rating is 90%. The nominal operating current is 4 A. The current rating for fuse selected from the catalog shall be: 4 / 0.75 / 90% = 5.9 or 6 A. Specifications and descriptions in this literature are as accurate as known at the time of publish, but are subject to change without notice.

Effect of Ambient Temperature on Current Rating of QA2410 and QA1210 Series.



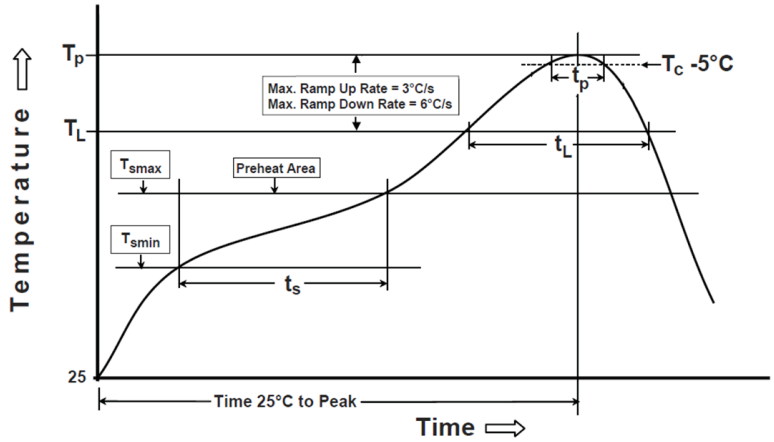
Effect of Ambient Temperature on Current Rating of QF1206 and QF0603 Series.
Notice: QF0603’s operating temperature is up to 125℃.



Automotive Surface Mount Fuses

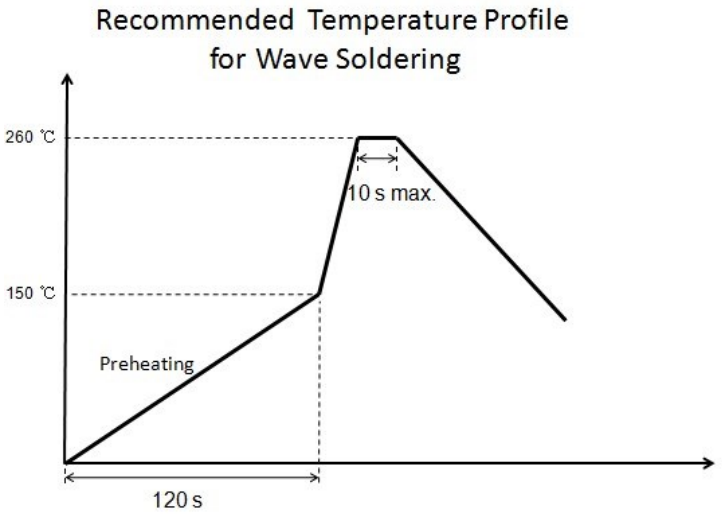
Soldering Temperature Profile:

∗ Recommended Temperature Profile for Reflow Soldering



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 Wave Soldering



Notice: Wave Soldering is suitable for 1206 and 0603 size.

Packaging:

Chip Size	Parts on 7 inch (178 mm) Reel
0603 (1608)	4,000
1206 (3216) (For QA1206F Series)	3,500
1206 (3216)	3,000
2410	2,000

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SolidMatrix® Automotive Surface Mount Fuses

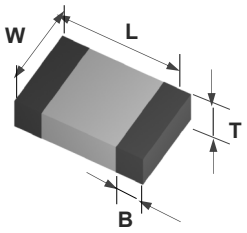
QF1206F Series

Agency Approval:

Agency	File NO.
UL	E232989

Shape and Dimensions:

Unit	Inch	mm
L	0.126 ± 0.008	3.20 ± 0.20
W	0.063 ± 0.008	1.60 ± 0.20
T	0.033 ± 0.008	0.85 ± 0.20
B	0.020 ± 0.010	0.51 ± 0.25



Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100%	4 hours	
250%		5 seconds
400%		0.05 second

Ordering Information:

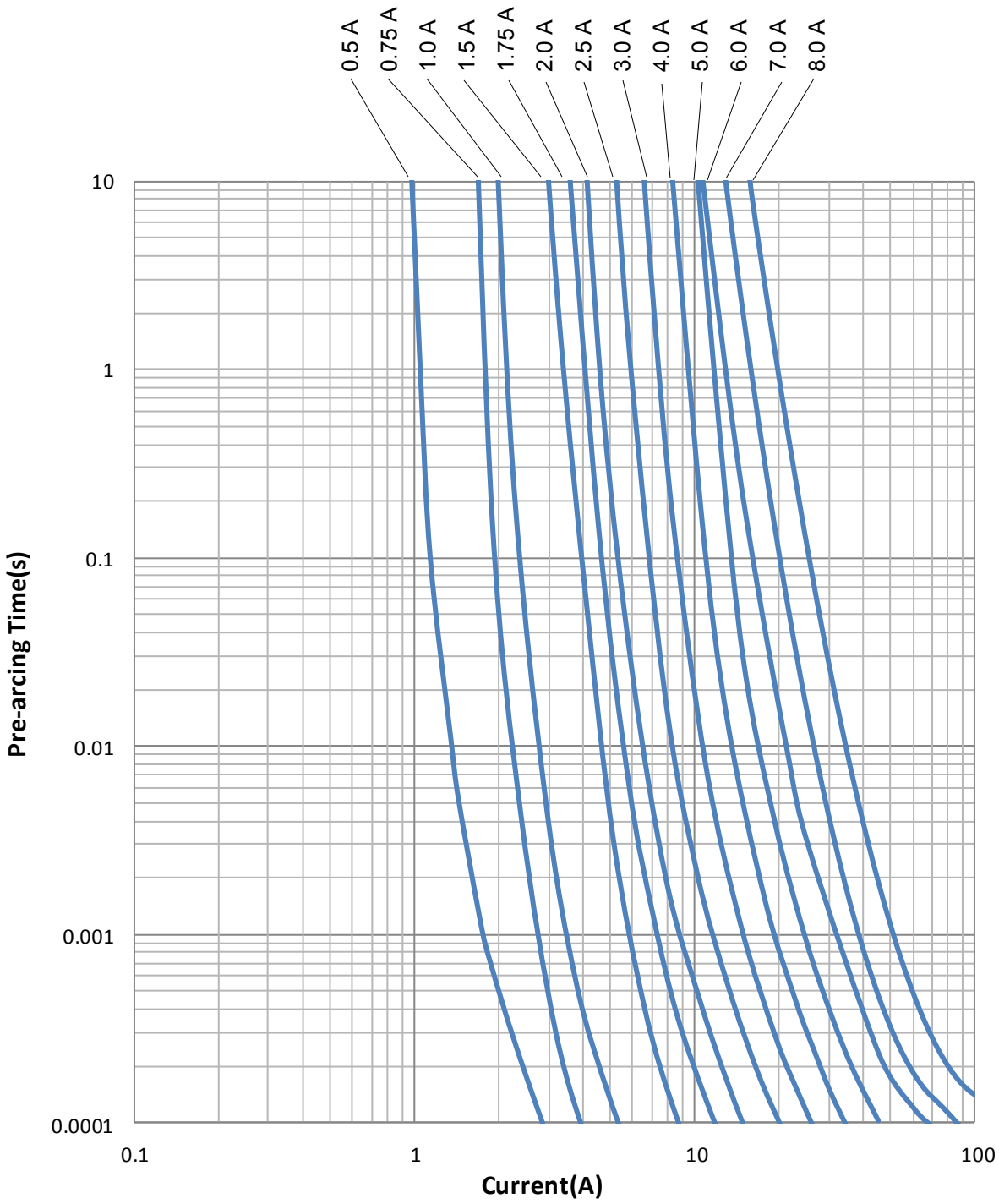
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206FA500T	0.5	63	50A @ 63VDC	0.780	0.003	C
QF1206FA750T	0.75			0.530	0.008	D
QF1206F1A00T	1.0			0.250	0.012	E
QF1206F1A50T	1.5			0.110	0.026	G
QF1206F1A75T	1.75			0.098	0.046	H
QF1206F2A00T	2.0			0.054	0.076	I
QF1206F2A50T	2.5	32	50A @ 32VDC	0.040	0.115	J
QF1206F3A00T	3.0			0.036	0.220	K
QF1206F4A00T	4.0		45A @ 32VDC	0.022	0.360	M
QF1206F5A00T	5.0			0.015	0.620	N
QF1206F6A00T	6.0		50A @ 32VDC	0.013	0.850	+
QF1206F7A00T	7.0			0.011	1.030	-
QF1206F8A00T	8.0			0.008	2.040	=

1. Measured at ≤ 10% rated current and 25°C ambient.
2. Melting I^2t at 0.001 second pre-arcing time.
3. Black Marking Character Code.

SolidMatrix® Automotive Surface Mount Fuses

QF1206F Series

Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206F Series

Average I^2t vs. t Curves: