AEM®
INNOVATIVE CIRCUIT PROTECTION

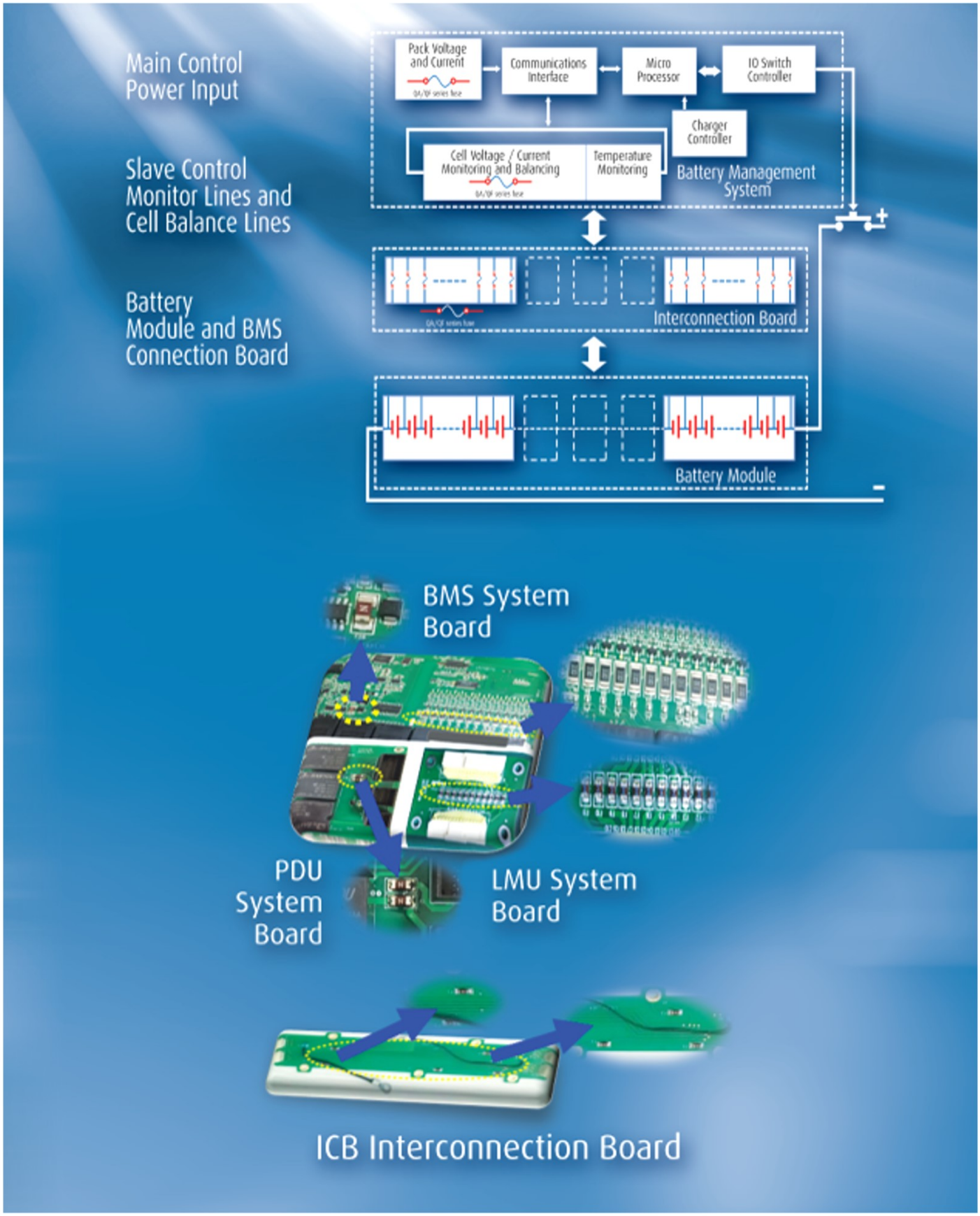
Automotive Grade Surface-Mount Fuses

- AEC-Q200 qualified
- IATF16949 certified

SolidMatrix Platform, QF series
AirMatrix Platform, QA series

Website: **www.aemchina.com & www.aemcomponents.com**

Q-FLEX
www.q-flex.fi info@q-flex.fi
+358 2 4894 500


Main Control
Power Input
Slave Control
Monitor Lines and
Cell Balance Lines
Battery
Module and BMS
Connection Board
Pack Voltage and Current
Communications Interface
Micro Processor
IO Switch Controller
Charger Controller
Cell Voltage / Current Monitoring and Balancing
Temperature Monitoring
Battery Management System
Interconnection Board
Battery Module
BMS System Board
PDU System Board
LMU System Board
ICB Interconnection Board

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:
  -55℃ to +150℃ (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	1.0, 1.5, 2.0	250VDC	4
		2.5, 3.0, 3.15, 3.5, 4.0, 5.0, 6.3, 7.0, 8.0, 10.0	125VDC	
		12.0, 15.0, 20.0	65VDC	
QA1206F	1206	1.5, 1.6, 2.0	110VDC	7
		2.5, 3.0, 3.15, 3.5, 4.0	65VDC	
		5.0, 6.3, 7.0, 8.0, 10.0, 12.0, 15.0	32VDC	
QF1206G	1206	0.5, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0	65VDC	10
QF0603G	0603	0.5, 0.75, 1.0, 1.25, 1.5	65VDC	13
		2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0	35VDC	
		7.0, 8.0	24VDC	
QF1206F	1206	0.5, 0.75, 1.0, 1.5, 1.75, 2.0	63VDC	16
		2.5, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0	32VDC	
QF0603F	0603	1.0, 1.5	63VDC	19
		2.0, 2.5, 3.0, 3.5, 4.0, 5.0	32VDC	
		6.0	24VDC	
QF1206H	1206	0.5, 0.75	65VDC	22
		1.0, 1.5, 2.0	63VDC	
		2.5, 3.0, 3.5, 4.0, 4.5, 5.0	32VDC	
		6.0	24VDC	
QF0603H	0603	1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0	32VDC	25

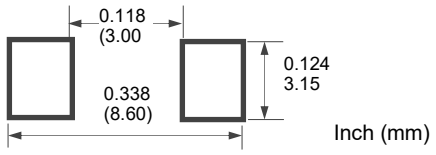
Automotive Surface Mount Fuses

Product Identification:

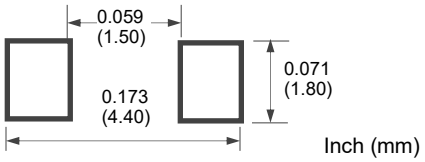
Q A 1206 F 2A00 T
(1) (2) (3) (4) (5) (6)

(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

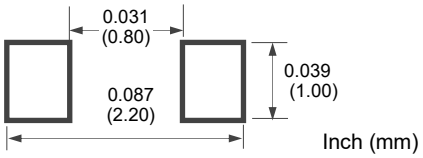
Recommended Land Pattern:



2410 Size



1206 Size

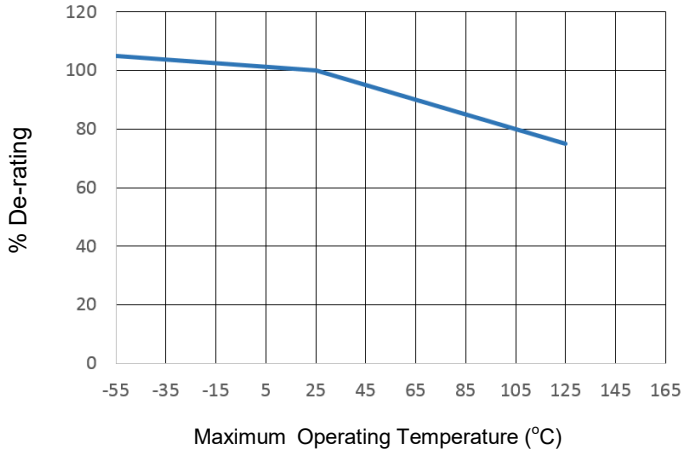


0603 Size

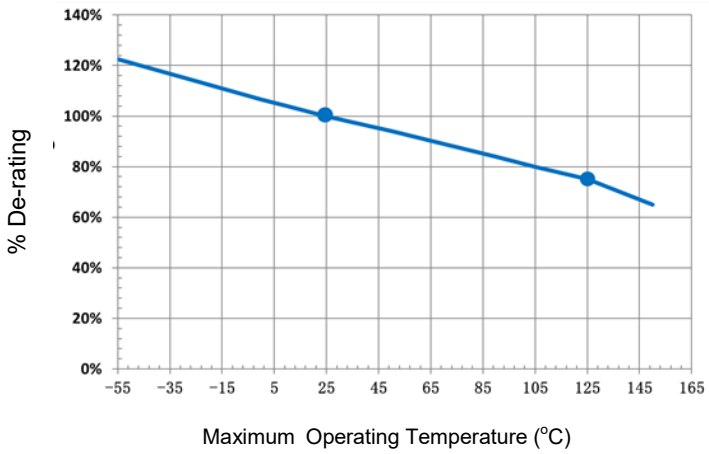
Fuse Selection and Temperature De-rating Guideline:

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.



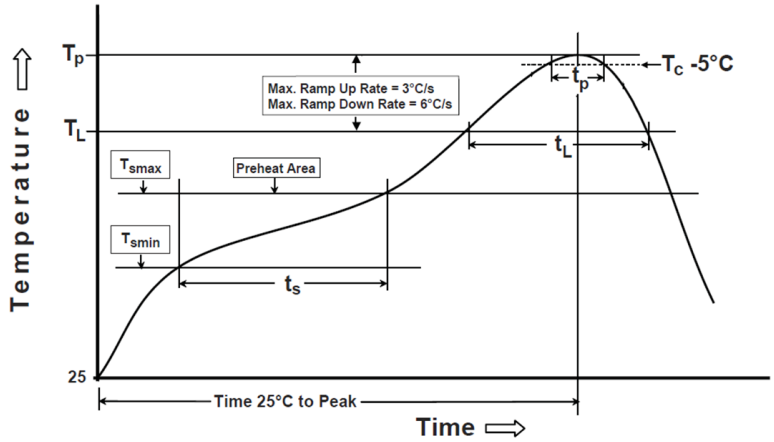
Effect of Ambient Temperature on Current Rating of QF1206 and QF0603 Series.



Automotive Surface Mount Fuses

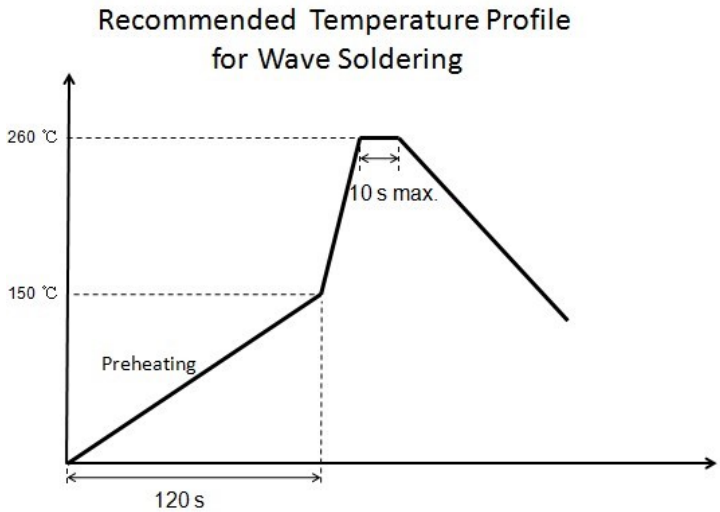
Soldering Temperature Profile:

∗ 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)	3,000
2410	2,000

AirMatrix® Automotive Surface Mount Fuses

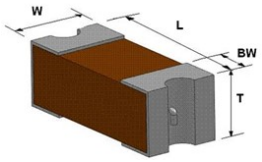
QA2410F Series

Agency Approval:

Agency	File NO.
UL	E232989

Shape and Dimensions:

Unit	Inch	mm
L	0.240 ± 0.006	6.10 ± 0.15
W	0.098 ± 0.006	2.49 ± 0.15
T	0.085 ± 0.008	2.16 ± 0.20
B	0.053 ± 0.015	1.35 ± 0.38



Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100%	4 hours	
200% (1.0-10.0A)	0.01 second	5 seconds
200%	0.01 second	20 seconds

Ordering Information:

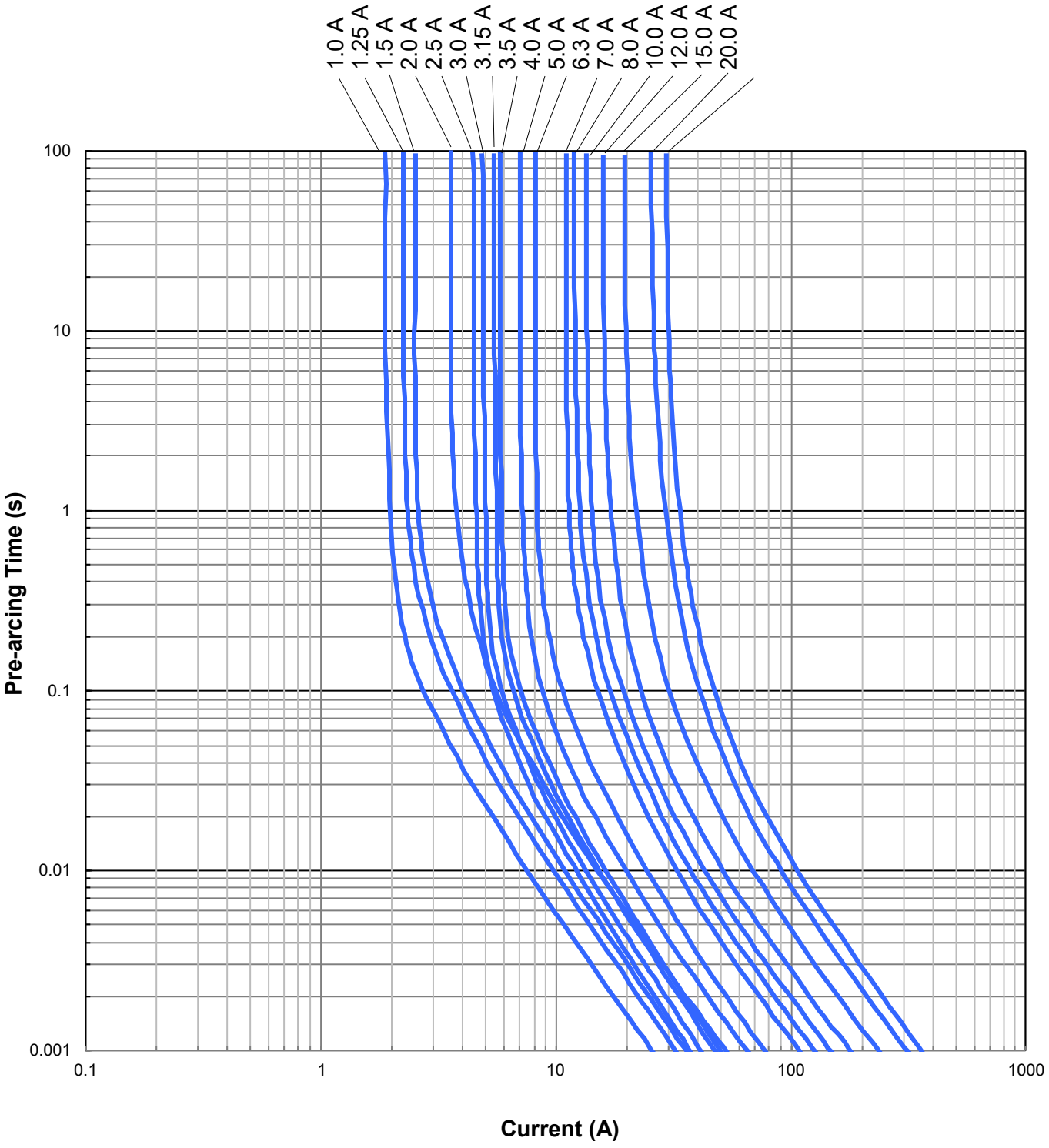
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QA2410F1A00T	1.00	250	1.0-2.0A: 100A @ 250VDC 300A @ 32VDC 2.5-10.0A: 50A @ 125VDC 300A @ 32VDC 12.0-15.0A: 50A @ 65VDC 300A @ 32VDC 20.0A: 100A @ 65VDC 300A @ 32VDC	0.093	0.59	E
QA2410F1A25T	1.25			0.070	0.96	F
QA2410F1A50T	1.50			0.060	1.19	G
QA2410F2A00T	2.00			0.042	2.75	I
QA2410F2A50T	2.50	125		0.031	1.21	J
QA2410F3A00T	3.00			0.0249	1.73	K
QA2410F3A15T	3.15			0.0230	2.2	V
QA2410F3A50T	3.50			0.0210	2.5	L
QA2410F4A00T	4.00			0.0175	3.3	M
QA2410F5A00T	5.00			0.0146	5.9	N
QA2410F6A30T	6.30			0.0100	12.5	O
QA2410F7A00T	7.00			0.0097	14.2	P
QA2410F8A00T	8.00			0.0085	16.5	R
QA2410F10A0T	10.0			0.0068	29.2	Q
QA2410F12A0T	12.0	65		0.0053	39.3	X
QA2410F15A0T	15.0			0.0037	102.5	Y
QA2410F20A0T	20.0			0.0029	126.2	Z

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

AirMatrix® Automotive Surface Mount Fuses

QA2410F Series

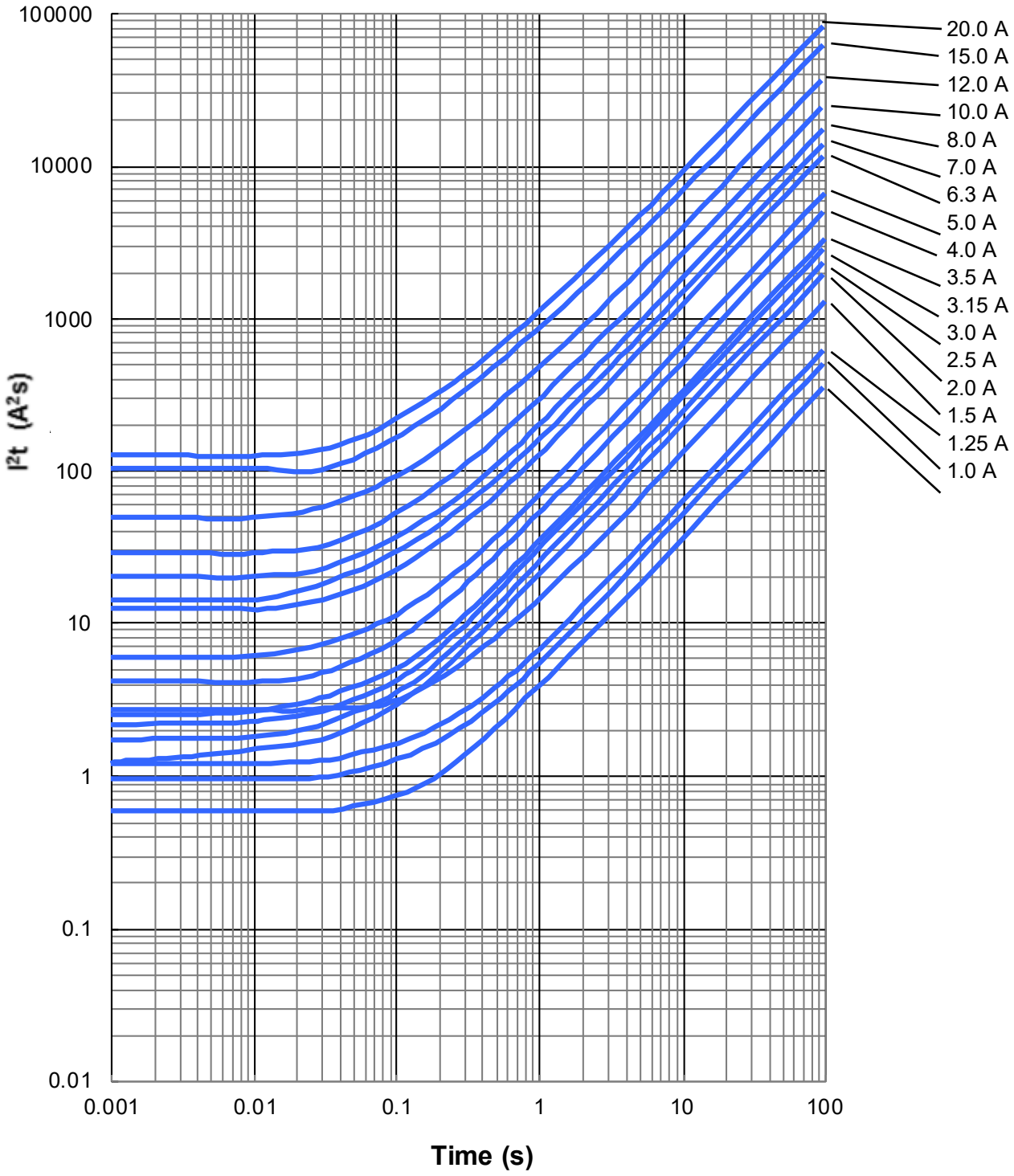
Average Pre-arcing Time Curves:



AirMatrix® Automotive Surface Mount Fuses

QA2410F Series

Average I^2t vs. t Curves:



AirMatrix® Automotive Surface Mount Fuses

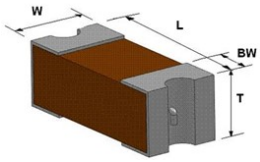
QA1206F Series

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 + 0.012 / -0.004	1.60 + 0.30 / -0.10
T	0.042 ± 0.006	1.08 ± 0.15
B	0.033 ± 0.012	0.85 ± 0.30



Clearing Time Characteristics:

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

Ordering Information:

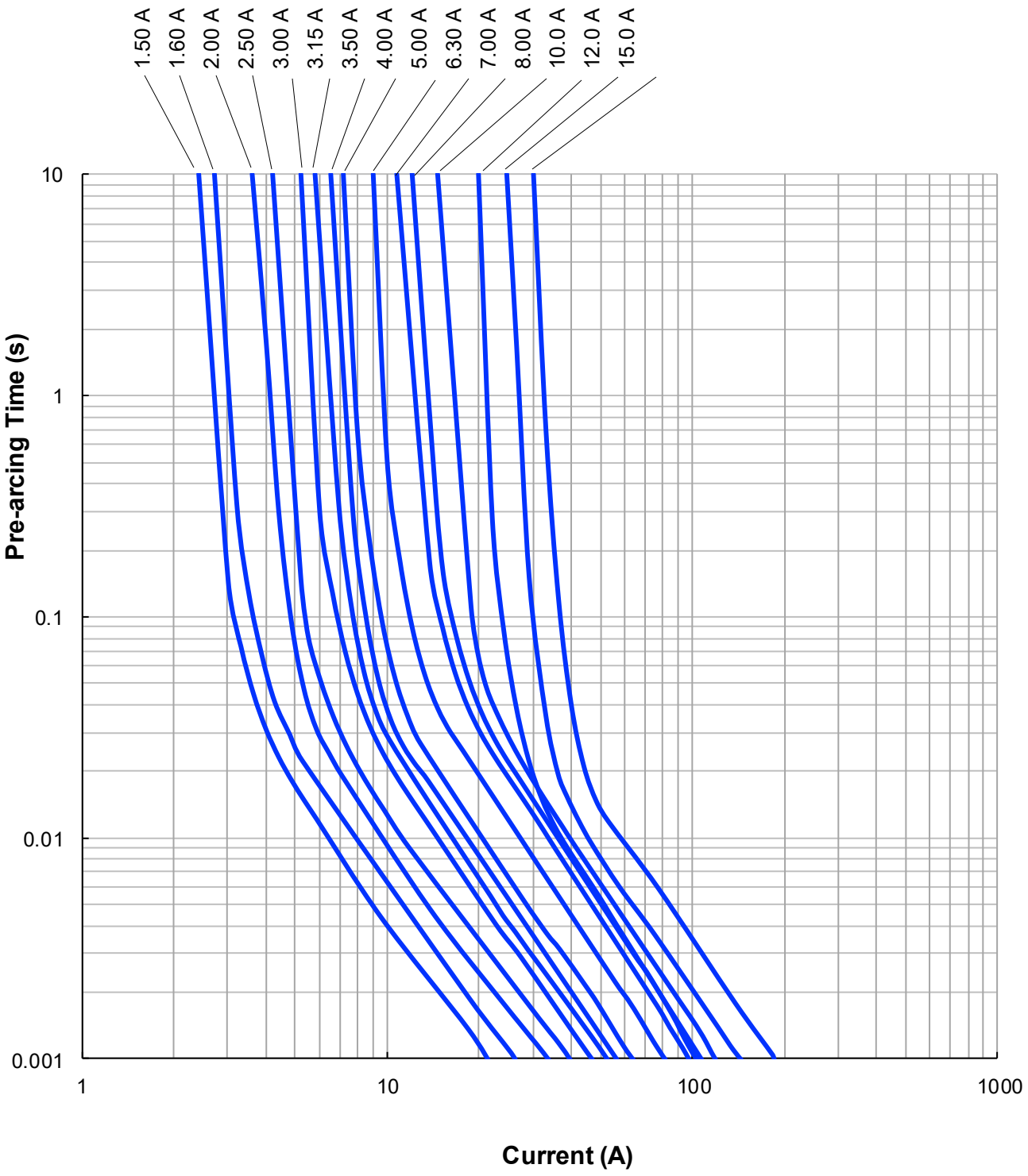
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QA1206F1A50T	1.50	110	50 A @ 110VDC	0.050	0.37	G
QA1206F1A60T	1.60			0.043	0.52	T
QA1206F2A00T	2.00			0.032	0.88	I
QA1206F2A50T	2.50	65	50 A @ 65VDC	0.028	1.1	J
QA1206F3A00T	3.00			0.0224	1.9	K
QA1206F3A15T	3.15			0.0203	2.2	V
QA1206F3A50T	3.50			0.0180	2.6	L
QA1206F4A00T	4.00			0.0161	3.3	M
QA1206F5A00T	5.00	32	50 A @ 32VDC	0.0129	5.4	N
QA1206F6A30T	6.30			0.0100	8.9	O
QA1206F7A00T	7.00			0.0094	10.4	P
QA1206F8A00T	8.00			0.0084	13.5	R
QA1206F10A0T	10.0			0.0050	11.2	Q
QA1206F12A0T	12.0			0.0041	15.0	X
QA1206F15A0T	15.0			0.0035	24.5	Y

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

AirMatrix® Automotive Surface Mount Fuses

QA1206F Series

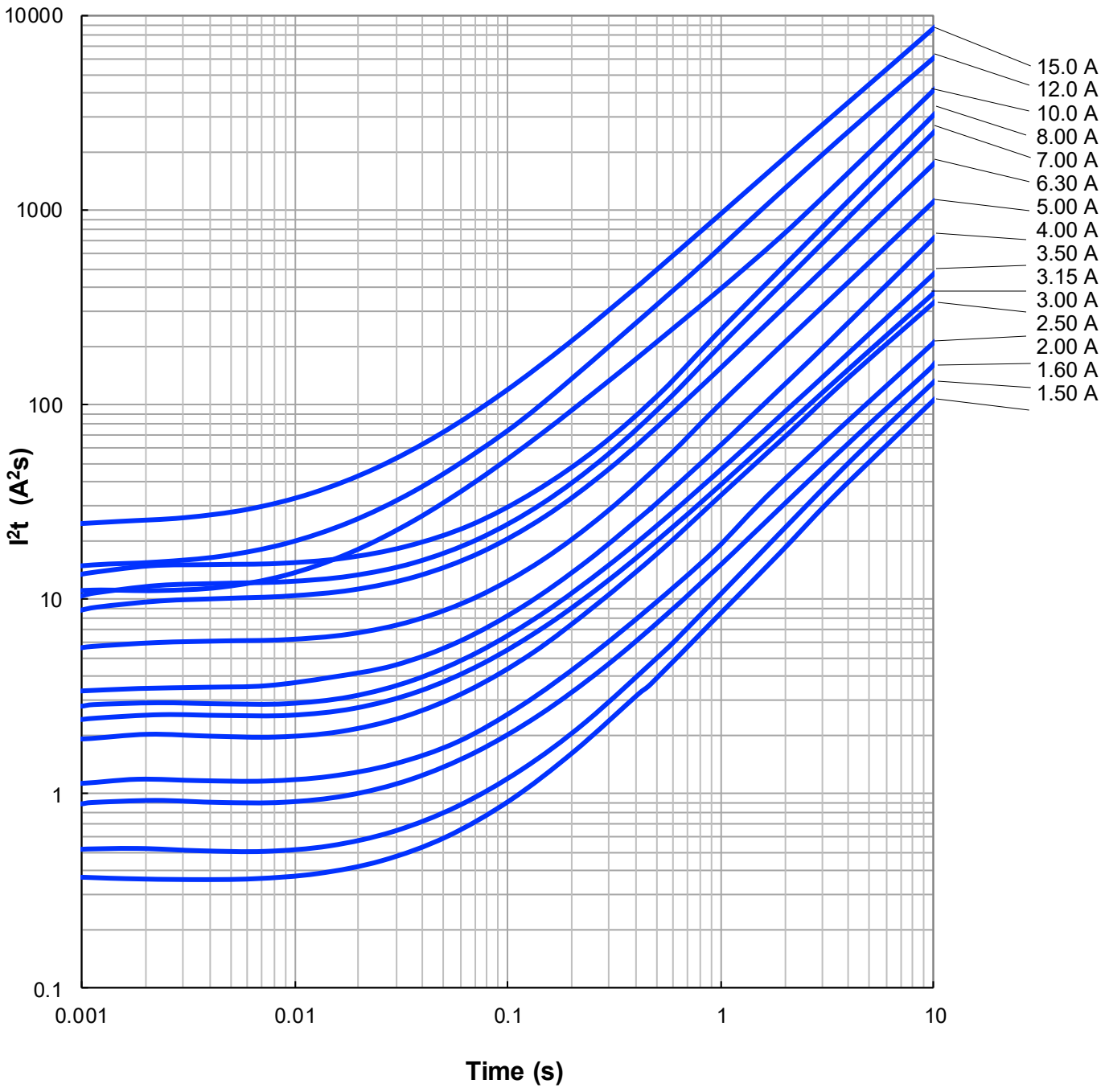
Average Pre-arcing Time Curves:



AirMatrix® Automotive Surface Mount Fuses

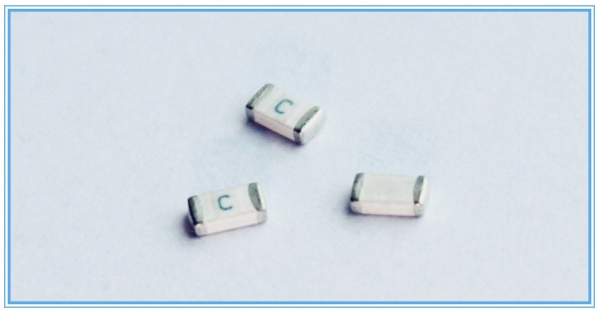
QA1206F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206G Series

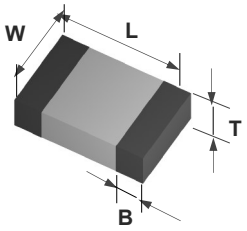


Agency Approval:

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

Ordering Information:

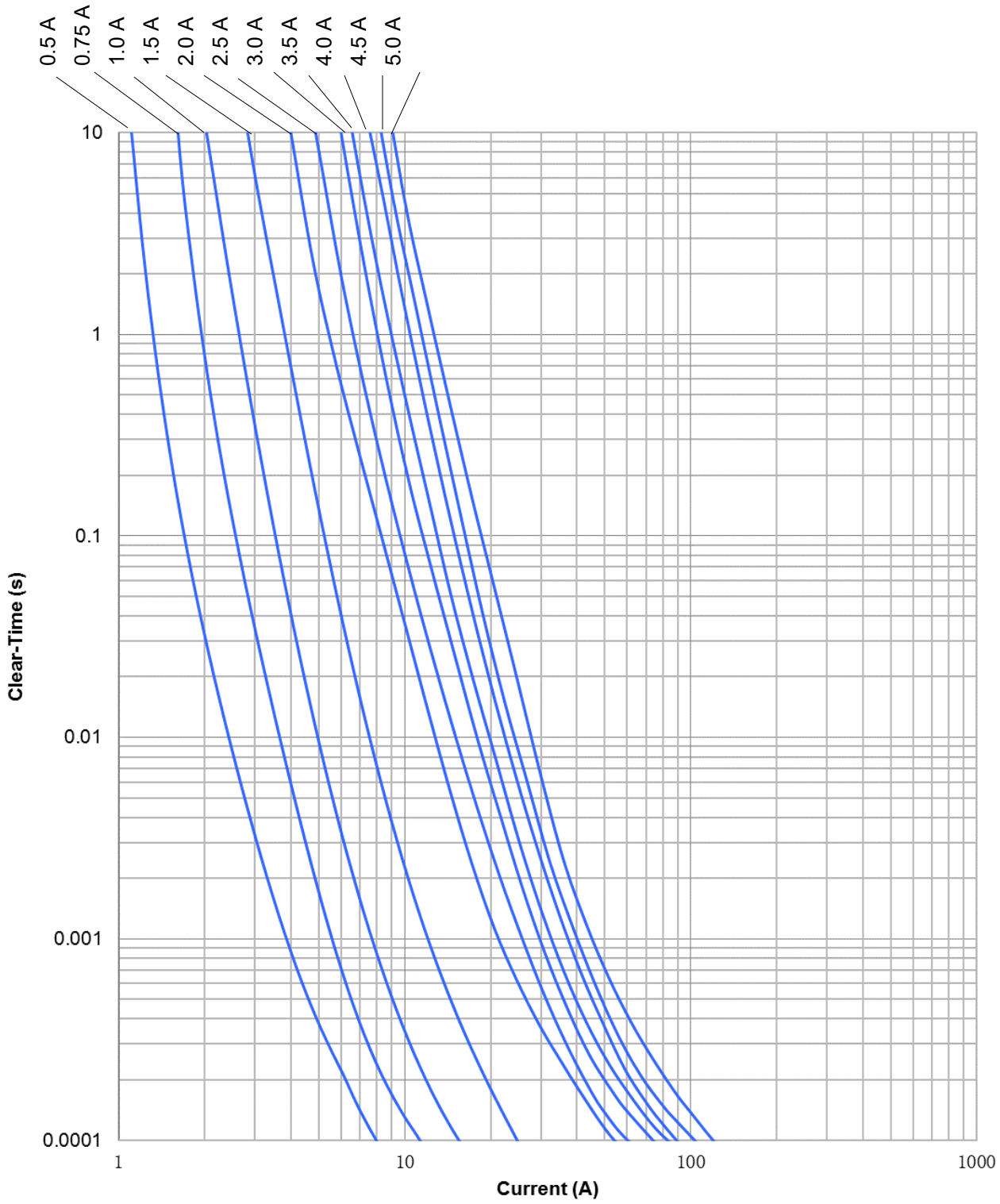
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206GA500T	0.5	65	50A @ 65VDC	1.080	0.006	C
QF1206GA750T	0.75			0.513	0.016	D
QF1206G1A00T	1.0			0.420	0.048	E
QF1206G1A50T	1.5			0.209	0.120	G
QF1206G2A00T	2.0			0.140	0.330	I
QF1206G2A50T	2.5			0.070	0.480	J
QF1206G3A00T	3.0			0.051	0.600	K
QF1206G3A50T	3.5			0.039	0.750	L
QF1206G4A00T	4.0			0.032	0.900	M
QF1206G4A50T	4.5			0.027	1.120	T
QF1206G5A00T	5.0			0.023	1.500	N

1. Measured at ≤10% rated current and 25℃ ambient.
2. Melting I^2t at 0.001 second pre-arcing time.
3. Cyan marking character code at the top side (0.5-0.75A), cyan marking character code at both sides (1-8A).

SolidMatrix® Automotive Surface Mount Fuses

QF1206G Series

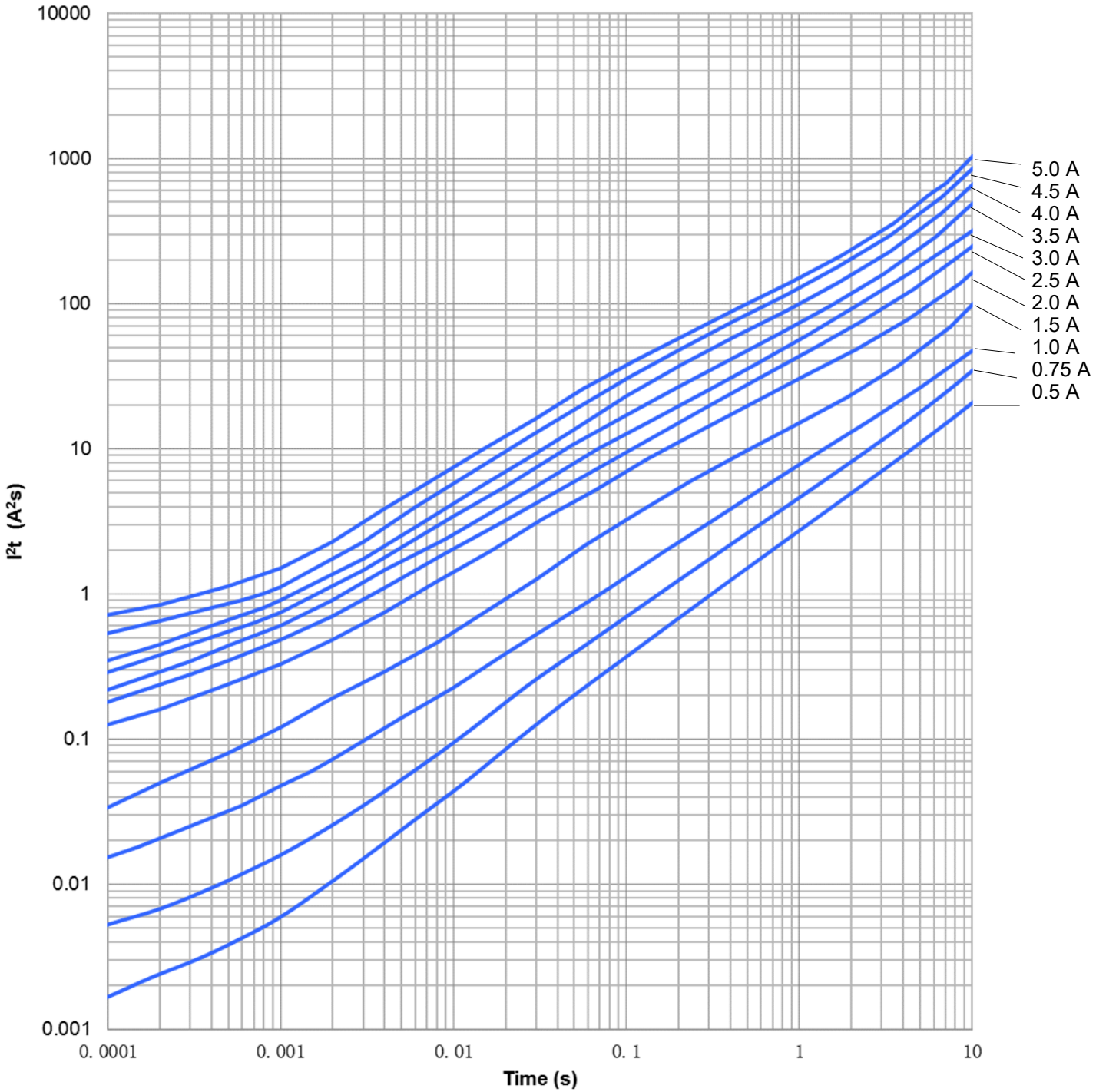
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206G Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

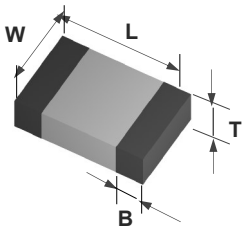
QF0603G Series

Agency Approval:

Agency	File NO.
UL	E232989

Shape and Dimensions:

Unit	Inch	mm
L	0.063 ± 0.006	1.60 ± 0.15
W	0.031 ± 0.006	0.80 ± 0.15
T	0.031 ± 0.006	0.80 ± 0.15
B	0.014 ± 0.006	0.36 ± 0.15



Clearing Time Characteristics:

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

Ordering Information:

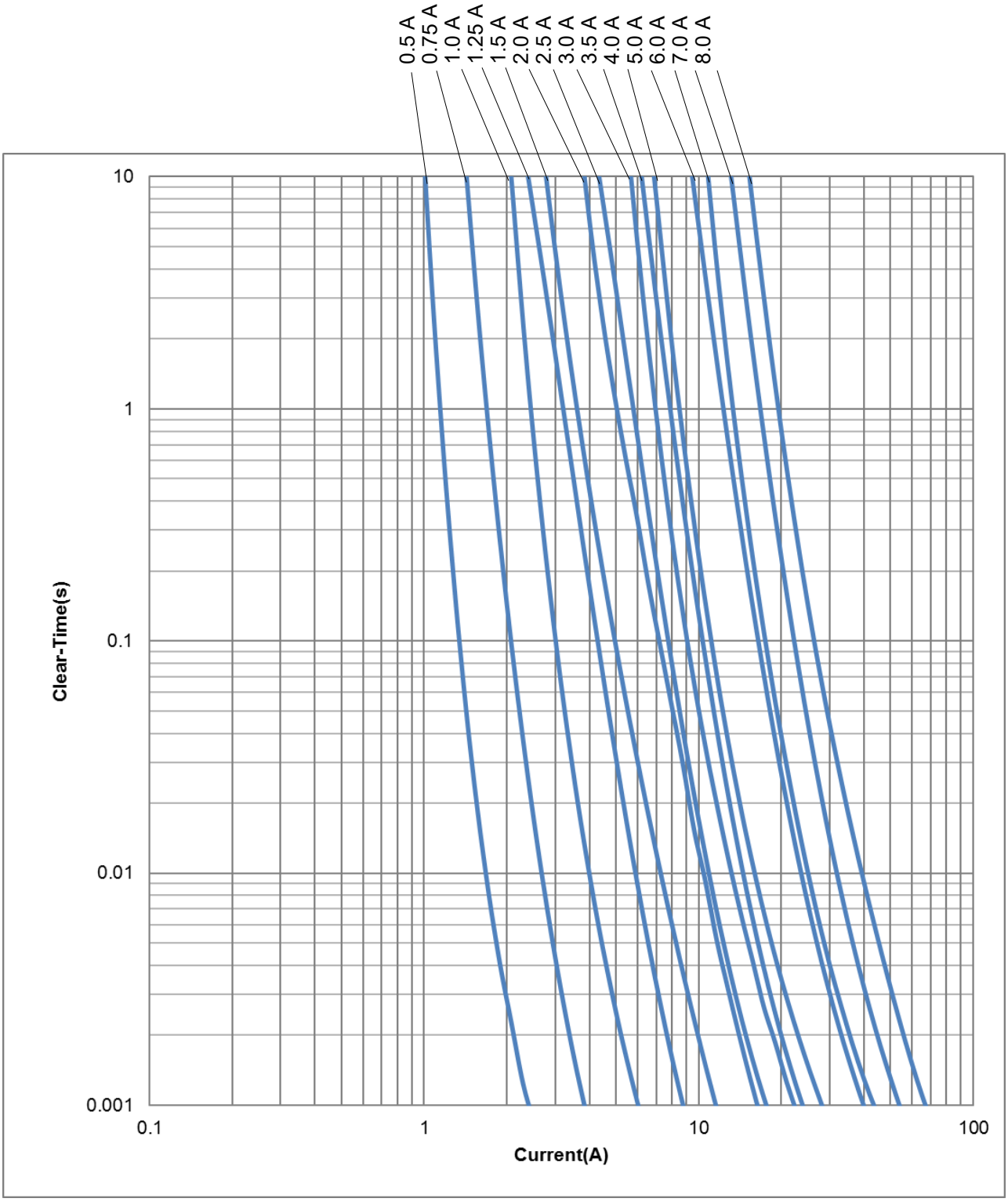
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF0603GA500T	0.5	65	50A @ 65VDC	0.827	0.004	C
QF0603GA750T	0.75			0.373	0.012	D
QF0603G1A00T	1.0			0.237	0.030	E
QF0603G1A25T	1.25			0.153	0.065	F
QF0603G1A50T	1.5			0.116	0.10	G
QF0603G2A00T	2.0	35	50A @ 35VDC	0.067	0.18	I
QF0603G2A50T	2.5			0.039	0.22	J
QF0603G3A00T	3.0			0.029	0.34	K
QF0603G3A50T	3.5			0.024	0.39	L
QF0603G4A00T	4.0			0.020	0.53	M
QF0603G5A00T	5.0			0.012	0.88	N
QF0603G6A00T	6.0			0.011	1.09	O
QF0603G7A00T	7.0	24	80A @ 24VDC	0.008	1.86	P
QF0603G8A00T	8.0			0.007	2.7	R

1. Measured at ≤10% of rated current and 25℃ ambient.
2. Melting I^2t at 0.001 second pre-arcing time.
3. Cyan marking character code.

SolidMatrix® Automotive Surface Mount Fuses

QF0603G Series

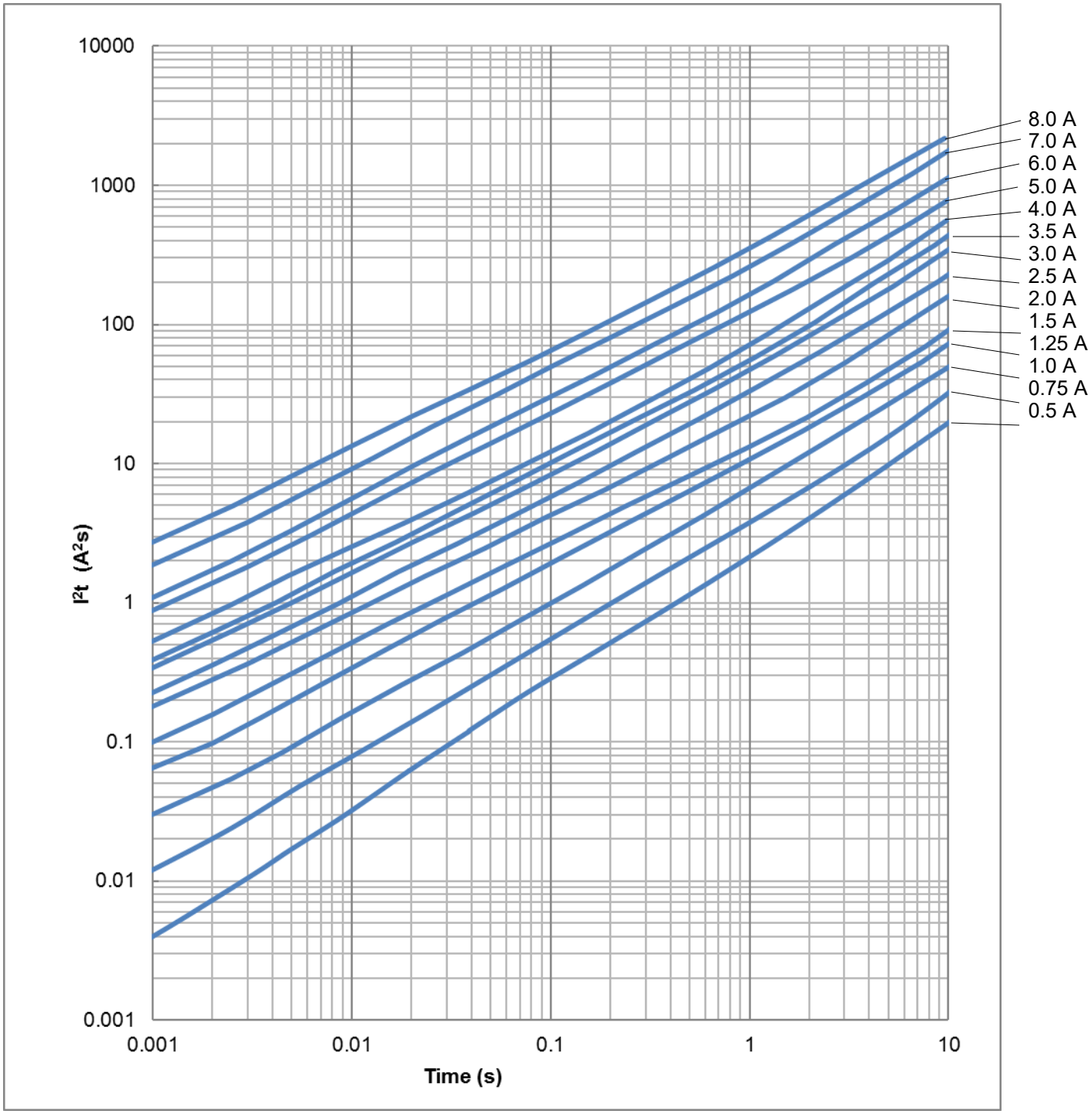
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603G Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

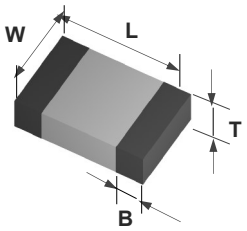
QF1206F Series

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:

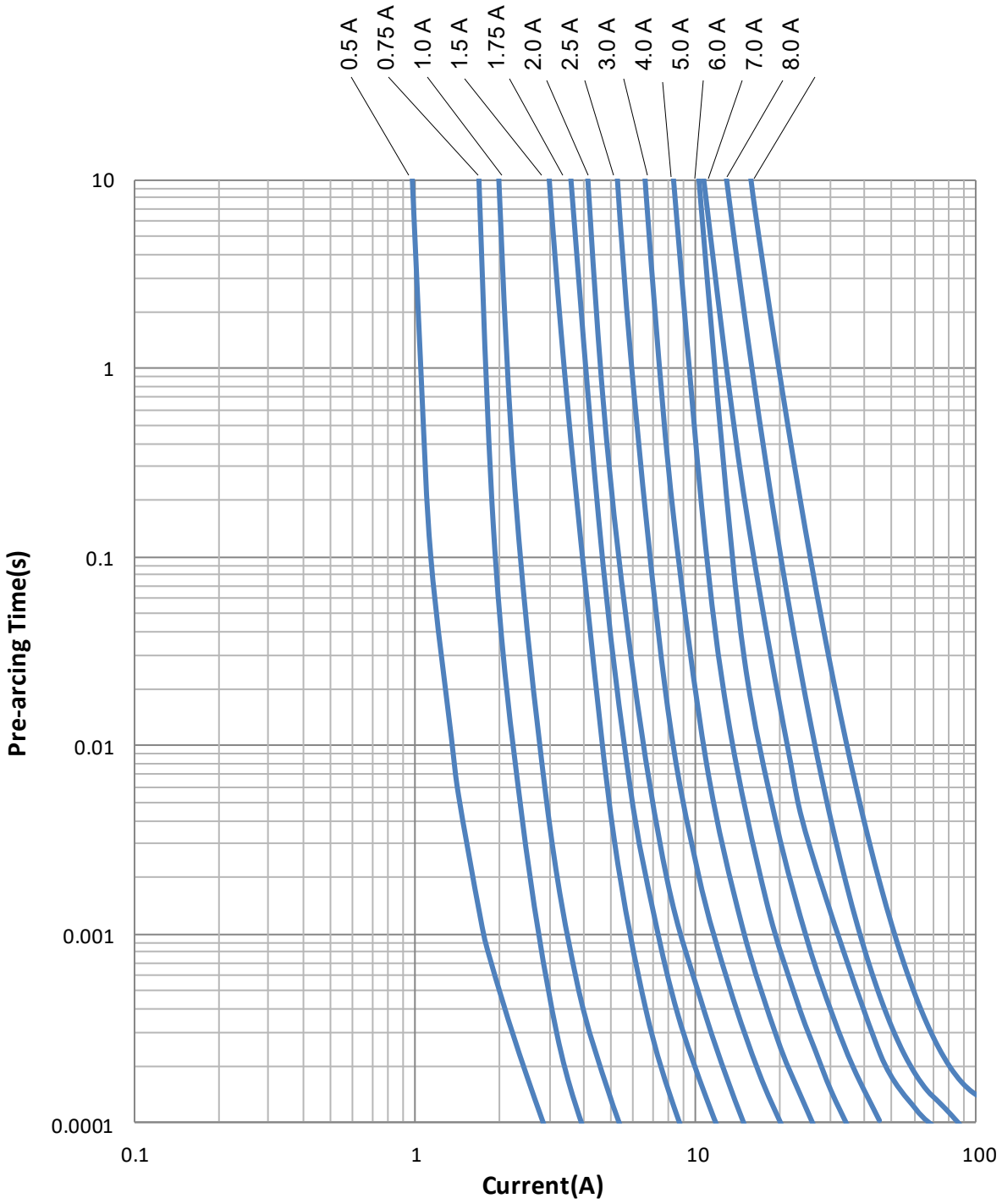
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206FA500T	0.5	63	50A @ 63VDC	0.780	0.003	C
QF1206FA750T	0.75			0.530	0.008	D
QF1206F1A00T	1.0			0.250	0.012	E
QF1206F1A50T	1.5			0.110	0.026	G
QF1206F1A75T	1.75			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

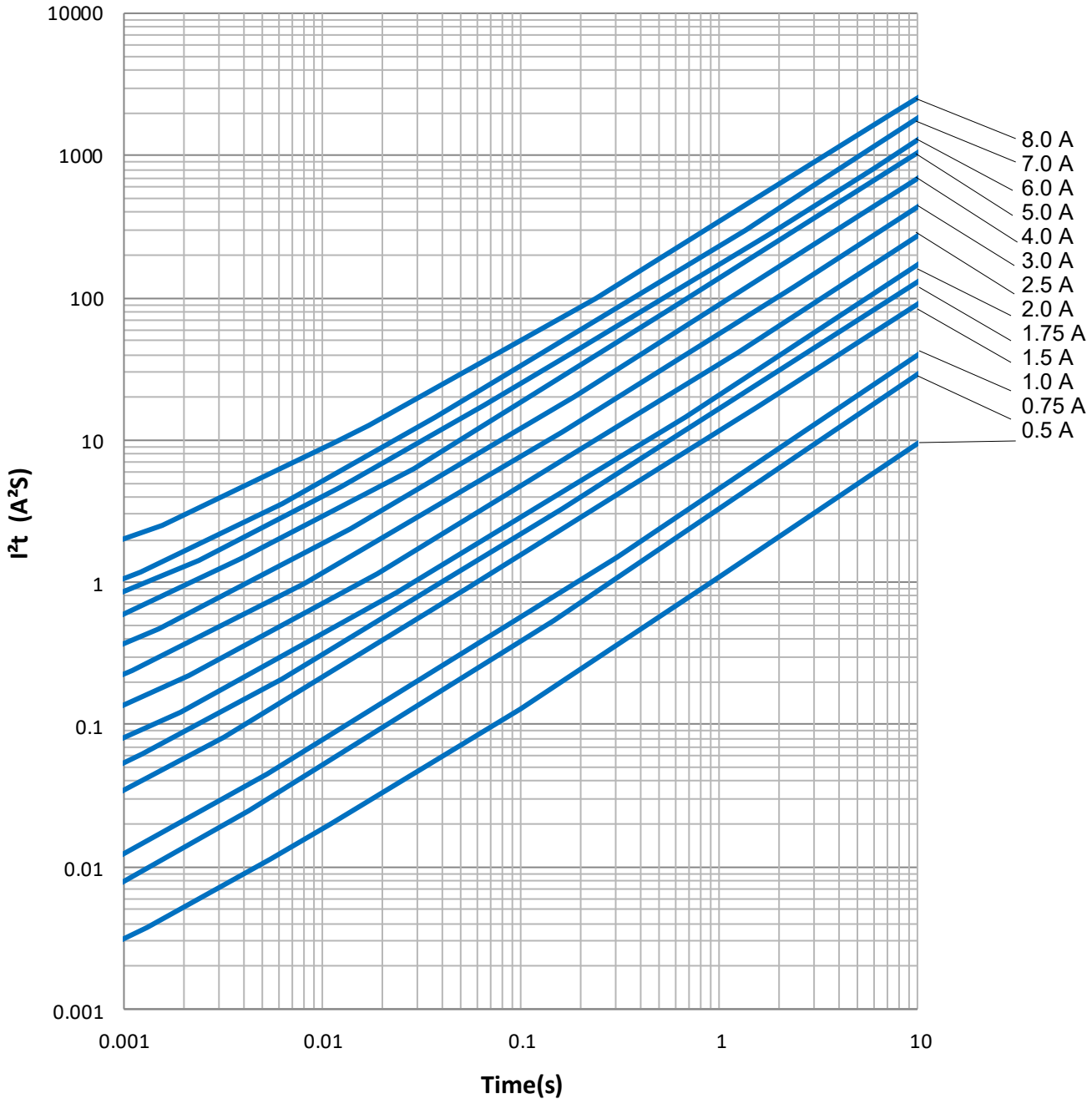
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

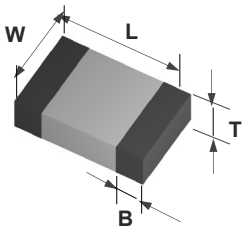
QF0603F Series

Agency Approval:

Agency	File NO.
UL	E232989

Shape and Dimensions:

Unit	Inch	mm
L	0.063 ± 0.006	1.60 ± 0.15
W	0.031 ± 0.006	0.80 ± 0.15
T	0.031 ± 0.006	0.80 ± 0.15
B	0.014 ± 0.006	0.36 ± 0.15



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:

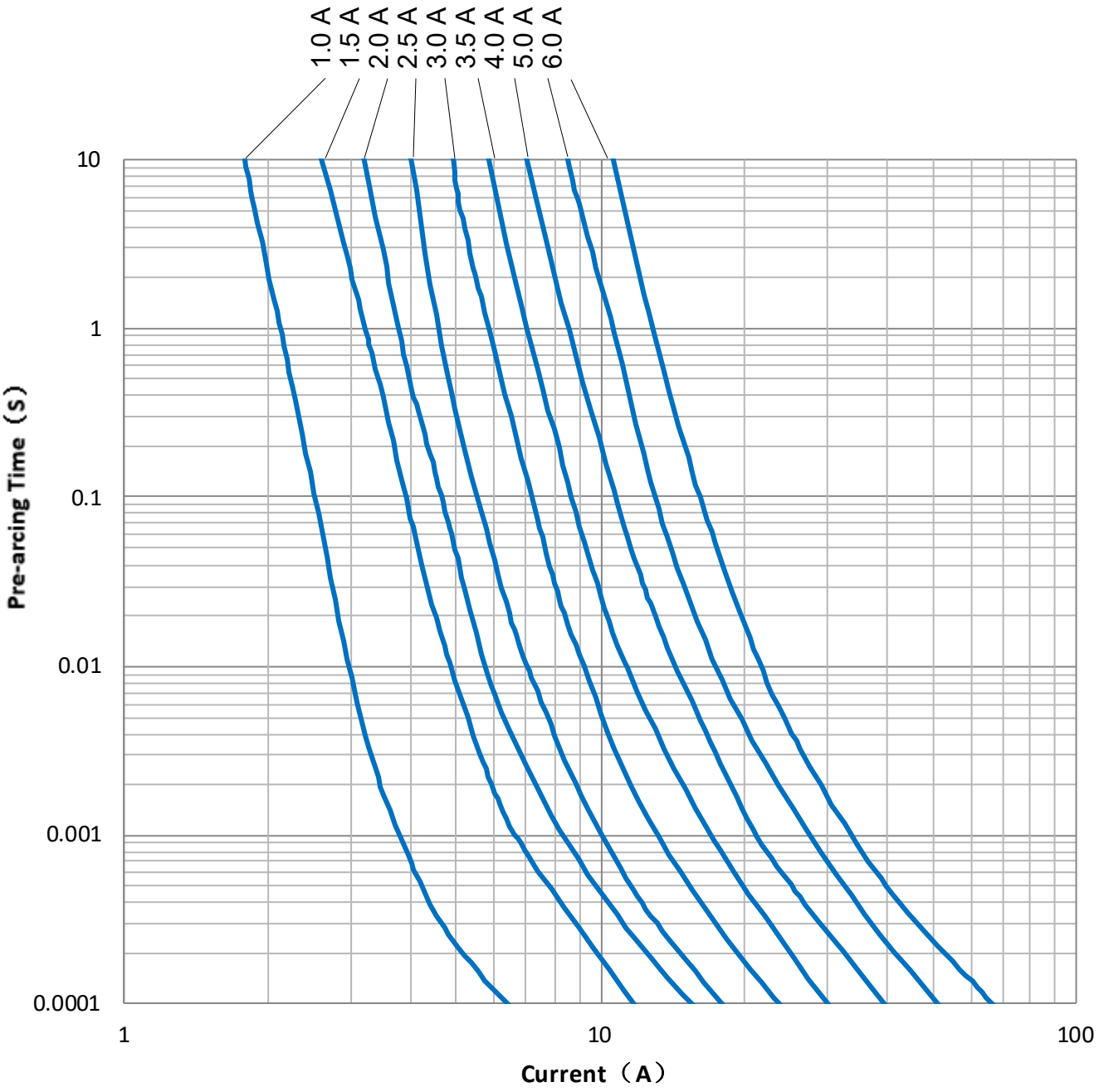
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF0603F1A00T	1.0	63	35A @ 63VDC	0.150	0.0132	E
QF0603F1A50T	1.5			0.063	0.043	G
QF0603F2A00T	2.0	32	35A @ 32VDC	0.044	0.070	I
QF0603F2A50T	2.5			0.034	0.103	J
QF0603F3A00T	3.0			0.025	0.183	K
QF0603F3A50T	3.5			0.024	0.306	L
QF0603F4A00T	4.0			0.019	0.508	M
QF0603F5A00T	5.0			0.013	0.810	N
QF0603F6A00T	6.0	24	35A @ 24VDC	0.010	1.120	O

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

QF0603F Series

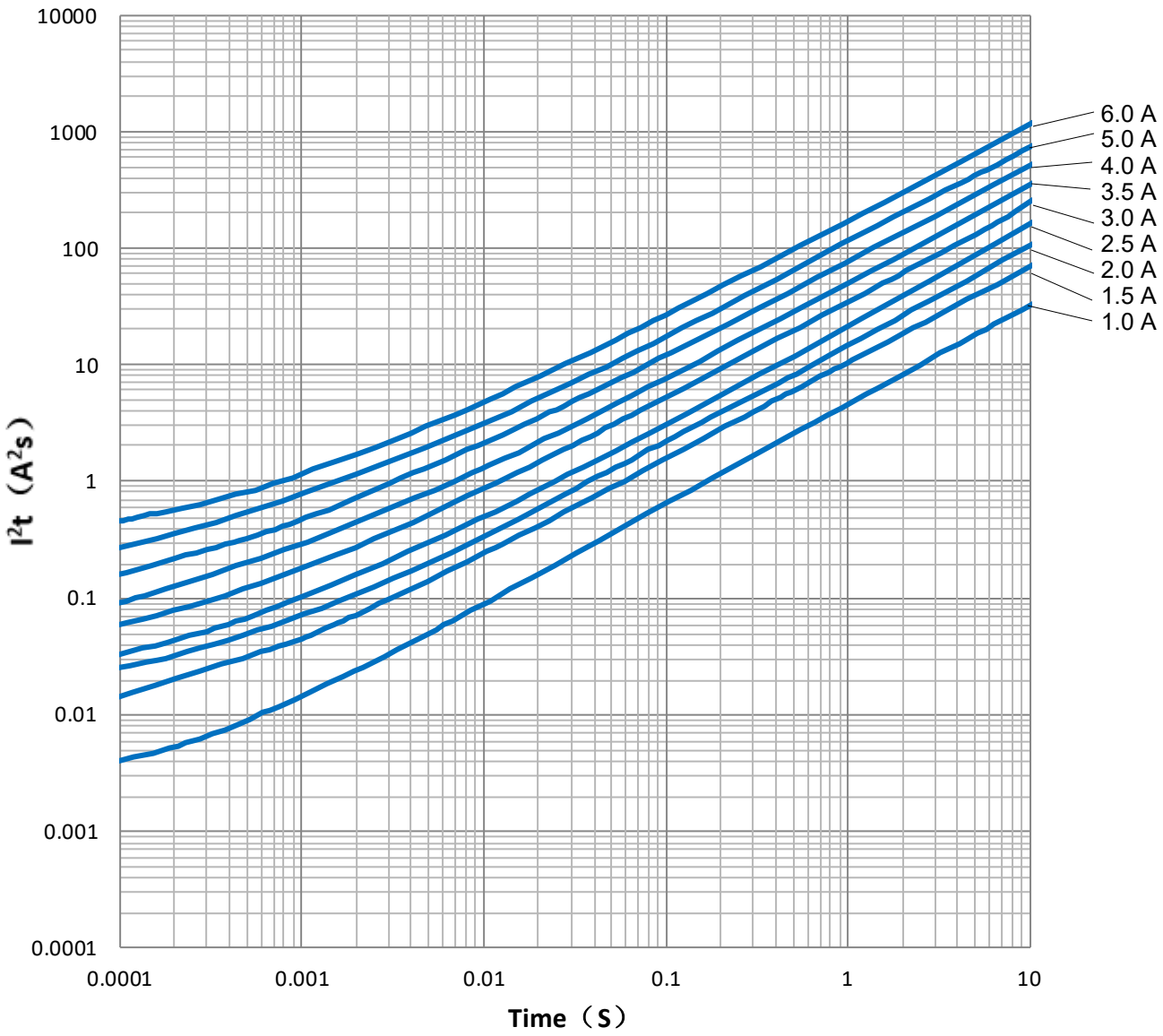
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

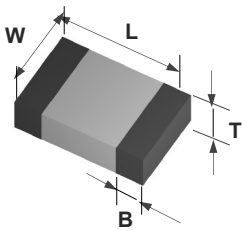
QF1206H Series

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	0.038 ± 0.008	0.97 ± 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	
200% (1-6A)	1 second	60 seconds
350% (0.5-0.75A)		5 seconds

Ordering Information:

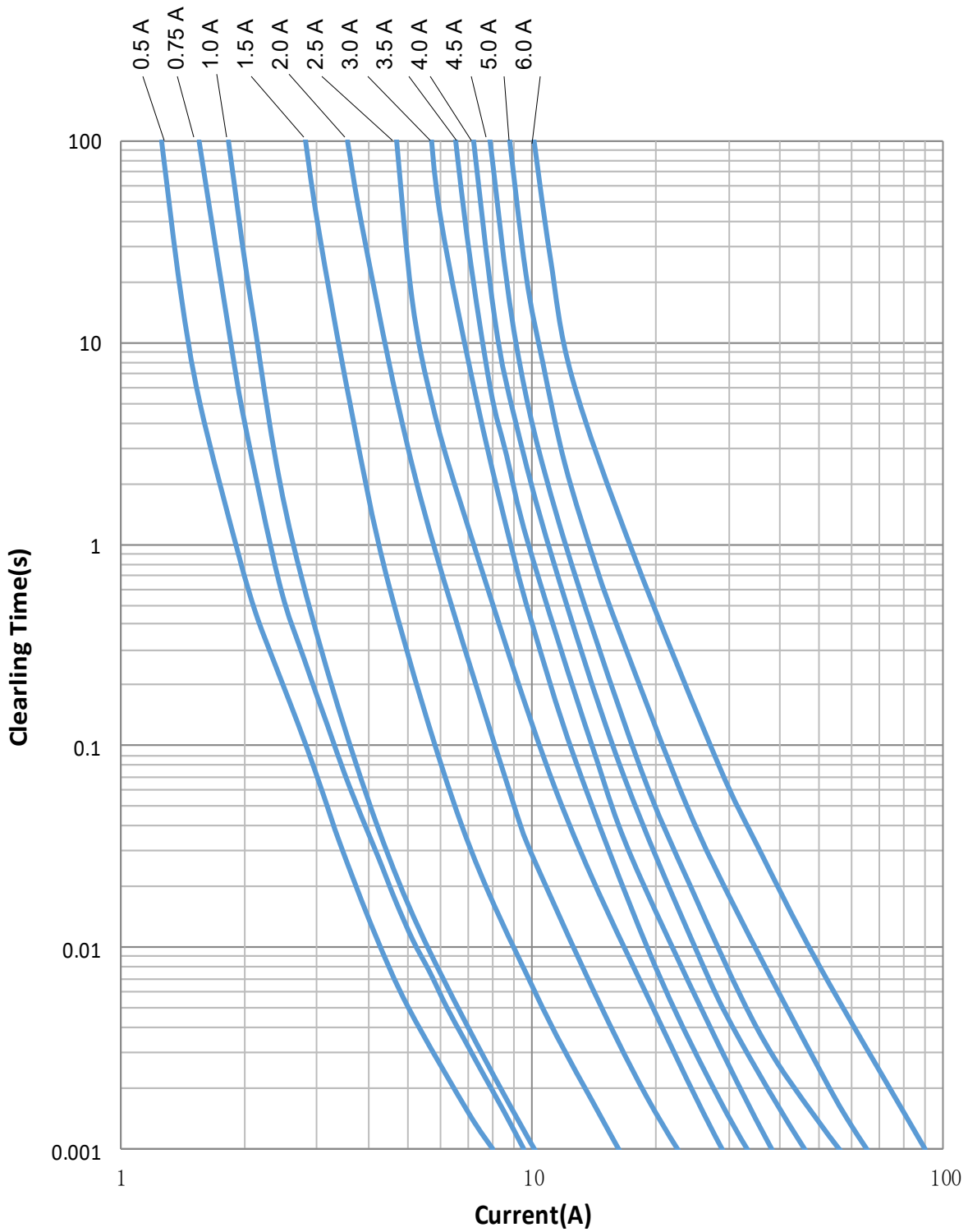
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206HA500T	0.5	65	50A @ 65VDC	0.980	0.035	C
QF1206HA750T	0.75			0.420	0.100	D
QF1206H1A00T	1.0	63	50A @ 63VDC	0.370	0.112	E
QF1206H1A50T	1.5			0.165	0.336	G
QF1206H2A00T	2.0			0.089	0.820	I
QF1206H2A50T	2.5	32	50A @ 32VDC	0.067	1.210	J
QF1206H3A00T	3.0			0.039	1.360	K
QF1206H3A50T	3.5			0.030	1.890	L
QF1206H4A00T	4.0			0.025	2.780	M
QF1206H4A50T	4.5			0.023	3.250	T
QF1206H5A00T	5.0			0.020	7.500	N
QF1206H6A00T	6.0	24	80A @ 24VDC	0.013	12.80	O

1. Measured at ≤ 10% rated current and 25°C ambient.
2. Melting I^2t at 1000% of current rating.
3. Green Marking Character Code.

SolidMatrix® Automotive Surface Mount Fuses

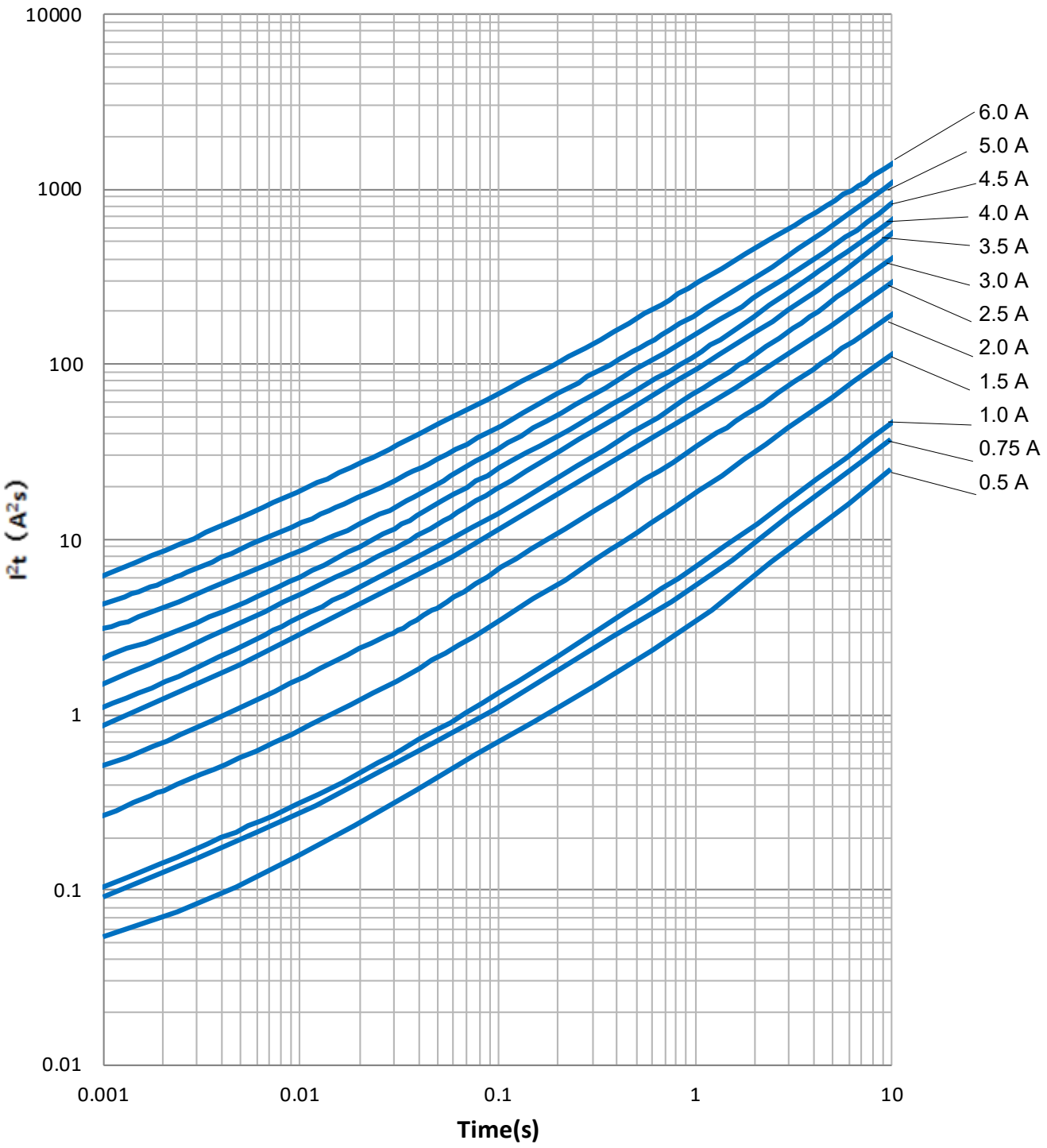
QF1206H Series

Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses
QF1206H Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

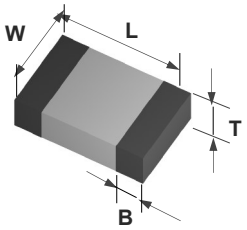
QF0603H Series

Agency Approval:

Agency	File NO.
UL	E232989

Shape and Dimensions:

Unit	Inch	mm
L	0.063 ± 0.006	1.60 ± 0.15
W	0.031 ± 0.006	0.80 ± 0.15
T	0.031 ± 0.006	0.80 ± 0.15
B	0.014 ± 0.006	0.36 ± 0.15



Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100%	4 hours	
200%	1 second	60 seconds

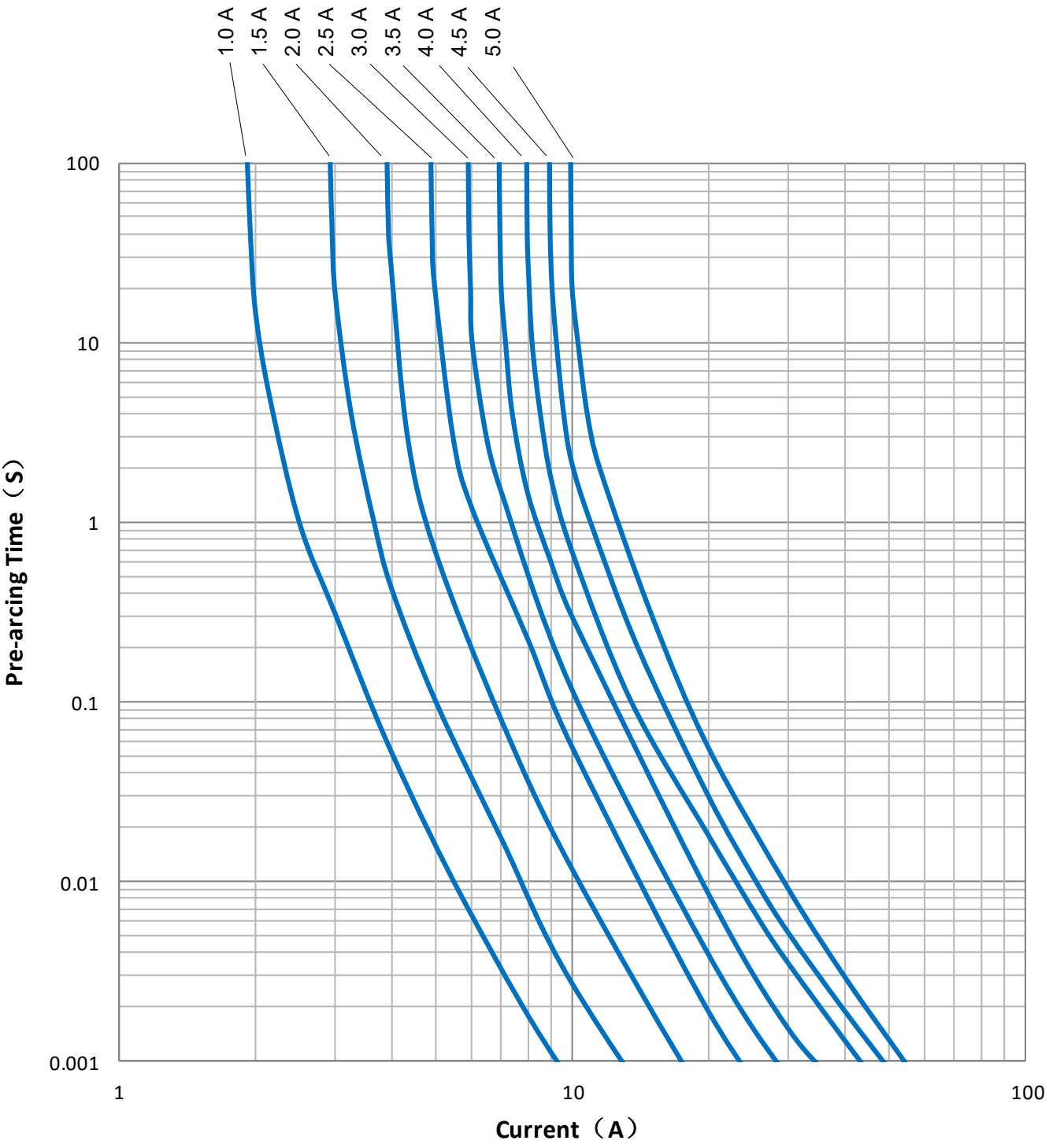
Ordering Information:

Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF0603H1A00T	1.0	32	50A @ 32VDC	0.240	0.082	E
QF0603H1A50T	1.5			0.115	0.112	G
QF0603H2A00T	2.0			0.060	0.245	I
QF0603H2A50T	2.5			0.042	0.570	J
QF0603H3A00T	3.0			0.032	0.740	K
QF0603H3A50T	3.5			0.022	1.120	L
QF0603H4A00T	4.0			0.018	2.10	M
QF0603H4A50T	4.5			0.015	2.68	T
QF0603H5A00T	5.0			0.013	3.30	N

1. Measured at ≤ 10% rated current and 25°C ambient.
2. Melting I^2t at 1000% of current rating.
3. Green Marking Character Code.

SolidMatrix® Automotive Surface Mount Fuses
QF0603H Series

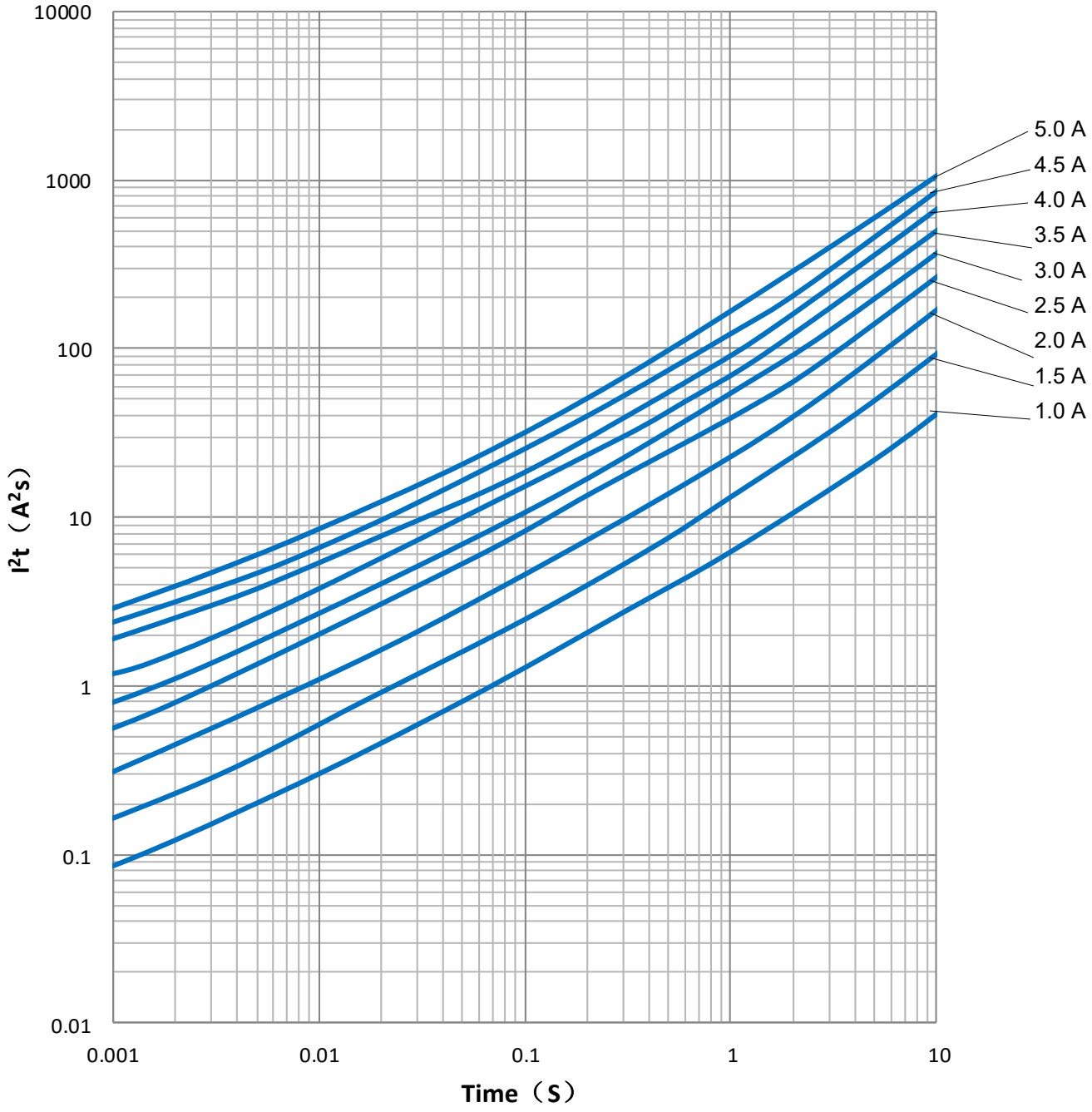
Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603H Series

Average I^2t vs. t Curves:



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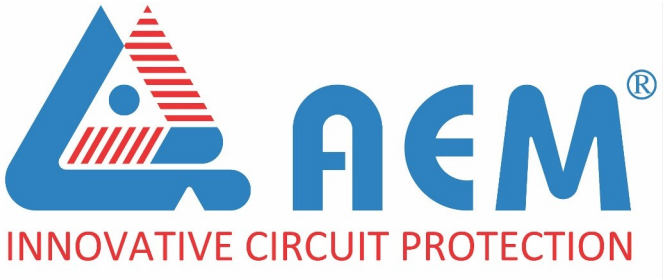
Note



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