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

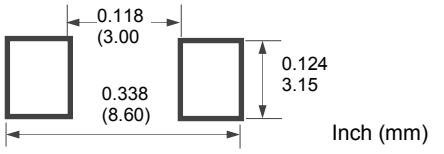
Automotive Surface Mount Fuses

Product Identification:

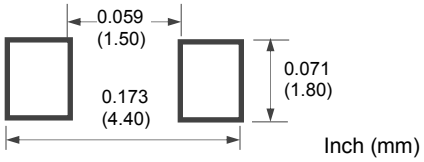
Q A 1206 F 2A00 T
(1) (2) (3) (4) (5) (6)

(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

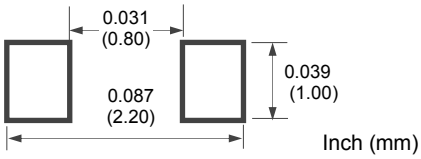
Recommended Land Pattern:



2410 Size



1206 Size

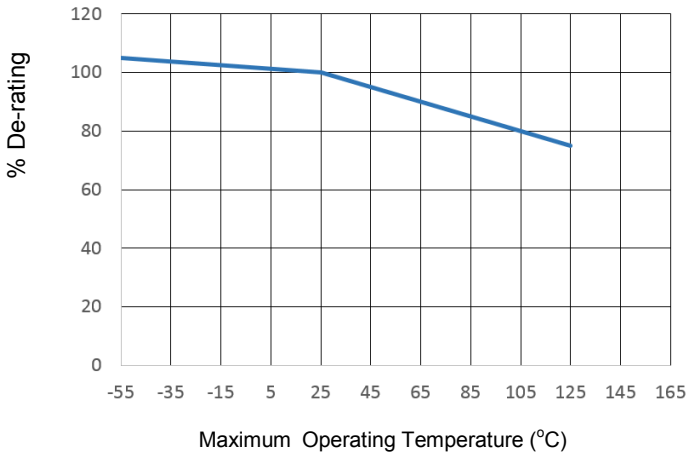


0603 Size

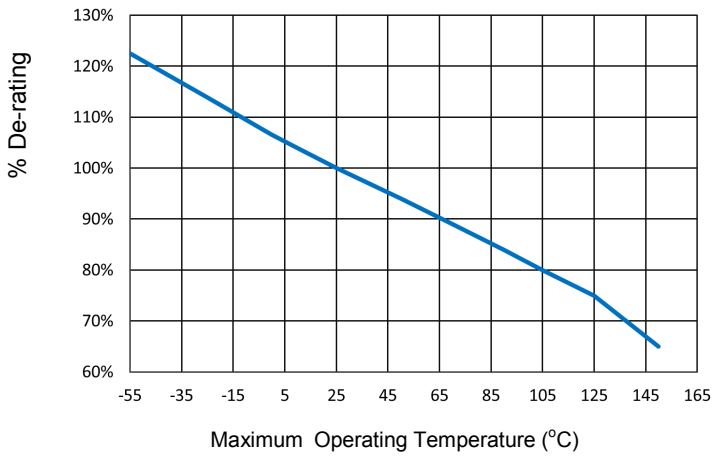
Fuse Selection and Temperature De-rating Guideline:

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.



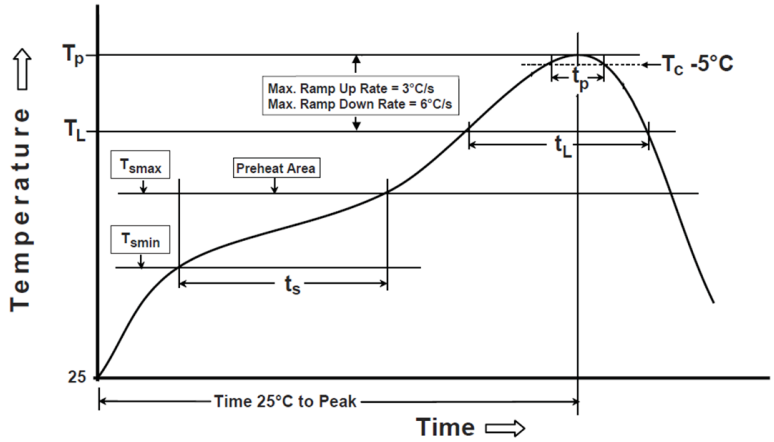
Effect of Ambient Temperature on Current Rating of QF1206 and QF0603 Series.



Automotive Surface Mount Fuses

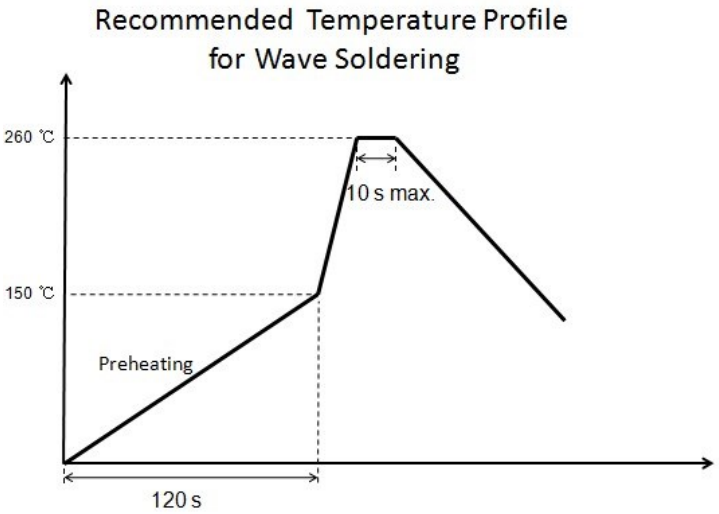
Soldering Temperature Profile:

∗ 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

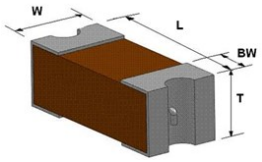
QA2410F Series

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:

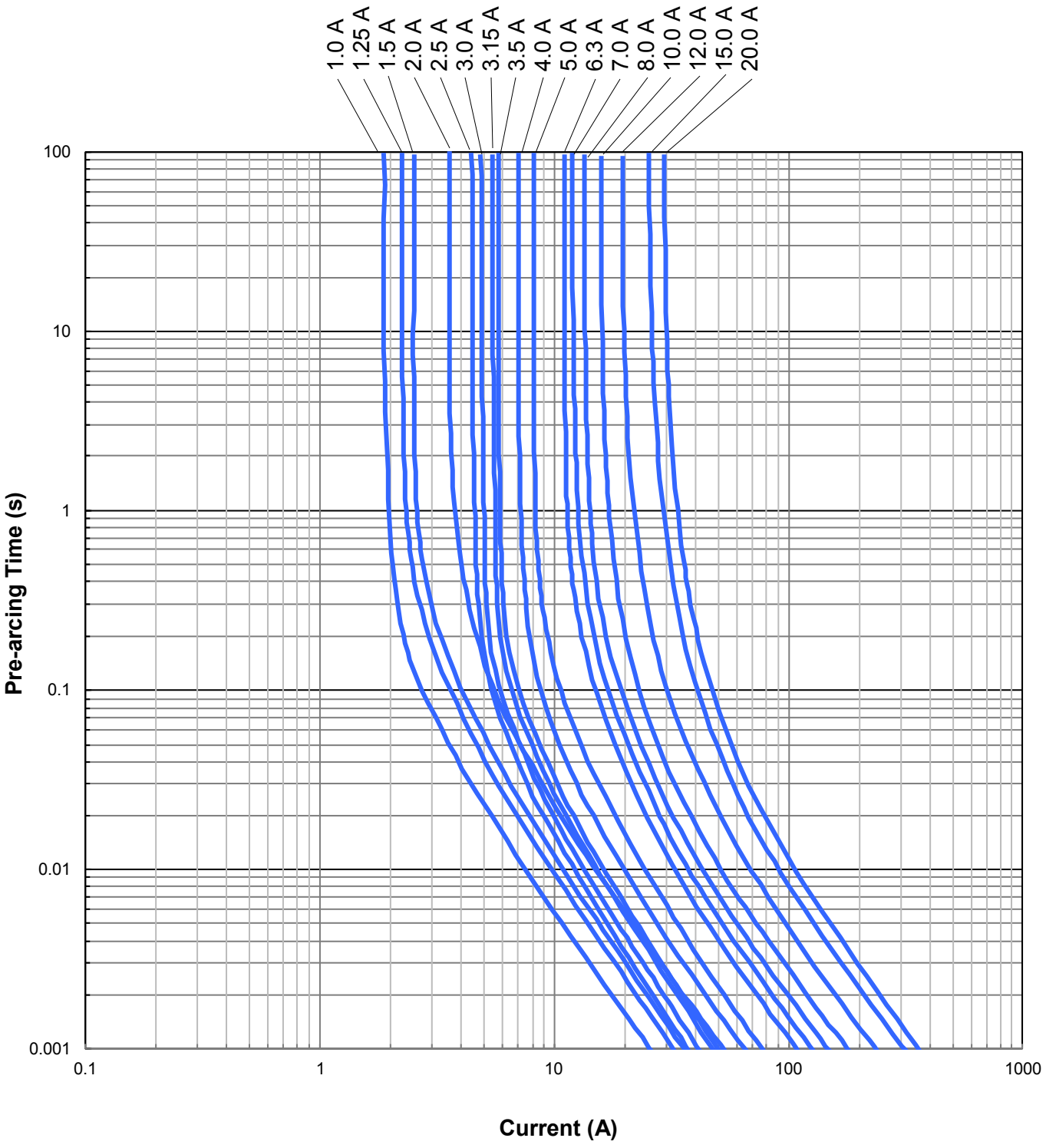
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t $(A^2s)^2$	Marking Code[3]
QA2410F1A00T	1.00	250	1.0-2.0A: 100A @ 250VDC 300A @ 32VDC 2.5-10.0A: 50A @ 125VDC 300A @ 32VDC 12.0-15.0A: 50A @ 65VDC 300A @ 32VDC 20.0A: 100A @ 65VDC 300A @ 32VDC	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

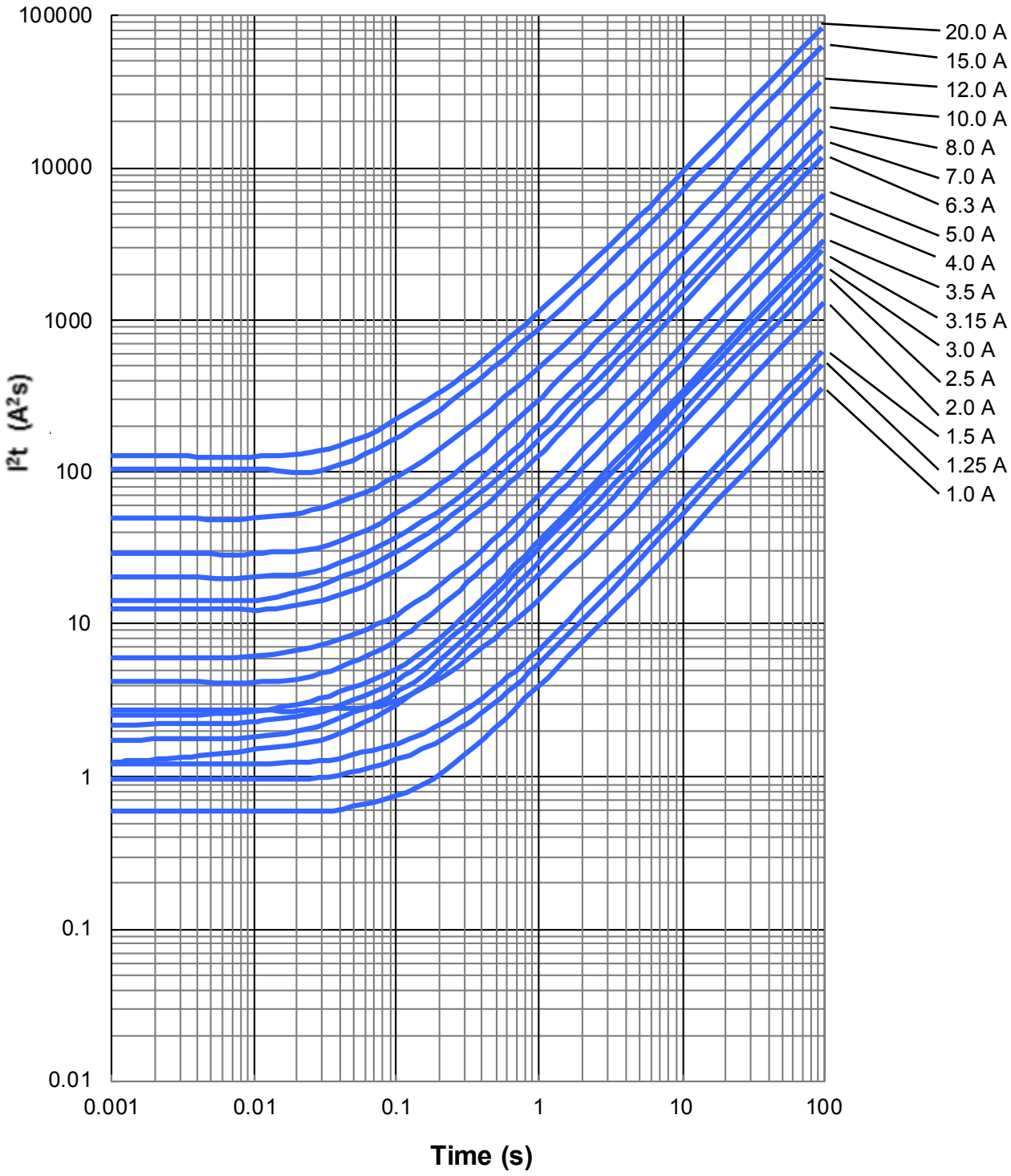
Average Pre-arcing Time Curves:



AirMatrix® Automotive Surface Mount Fuses

QA2410F Series

Average I^2t vs. t Curves:



AirMatrix® Automotive Surface Mount Fuses

QA1206F Series

Agency Approval:

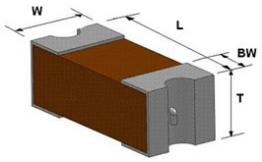
Agency	File NO.
UL	E232989

Clearing Time Characteristics:

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

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



Ordering Information:

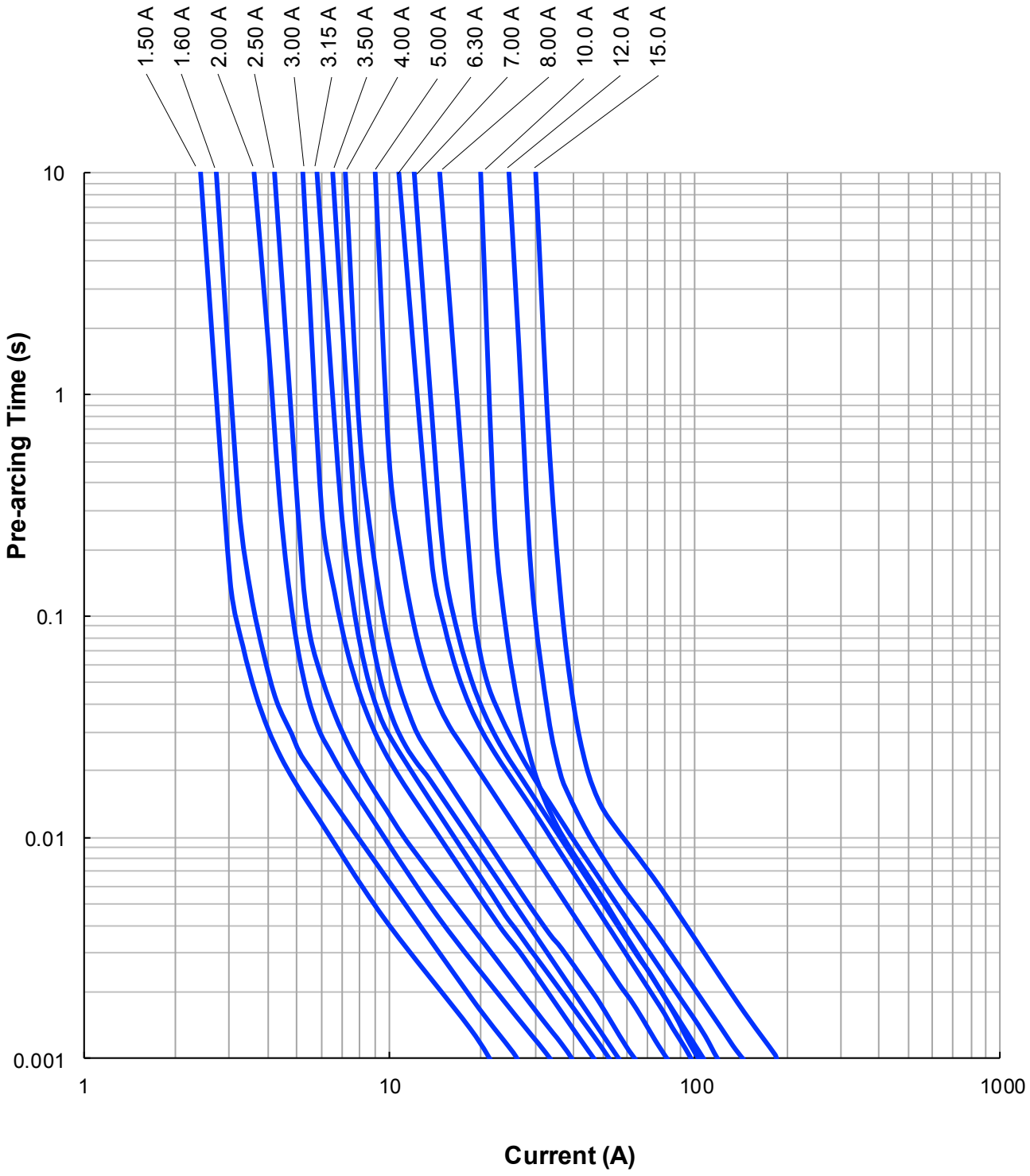
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QA1206F1A50T	1.50	110	50 A @ 110VDC	0.050	0.37	G
QA1206F1A60T	1.60			0.043	0.52	T
QA1206F2A00T	2.00			0.032	0.88	I
QA1206F2A50T	2.50	65	50 A @ 65VDC	0.028	1.1	J
QA1206F3A00T	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

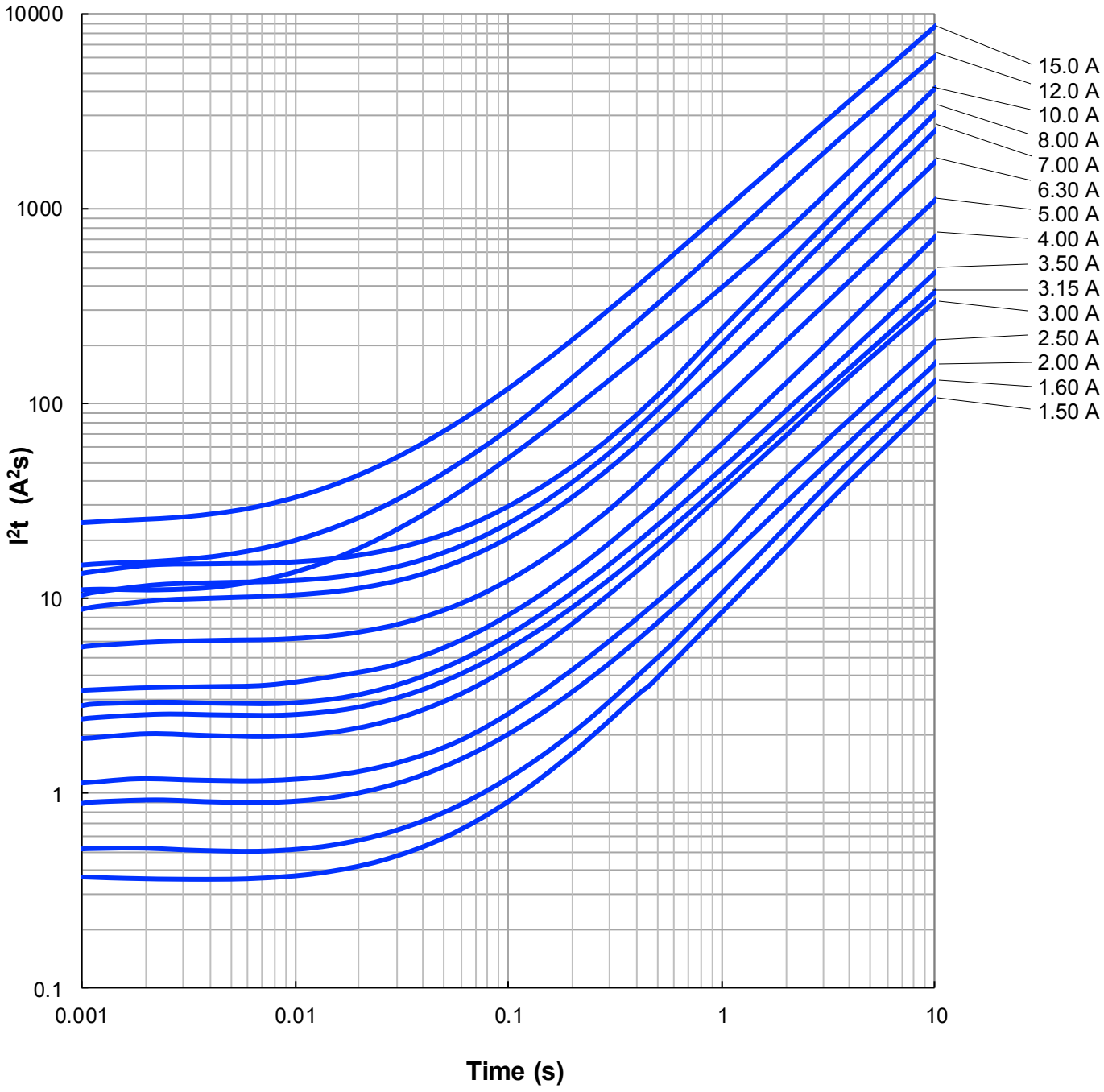
Average Pre-arcing Time Curves:



AirMatrix® Automotive Surface Mount Fuses

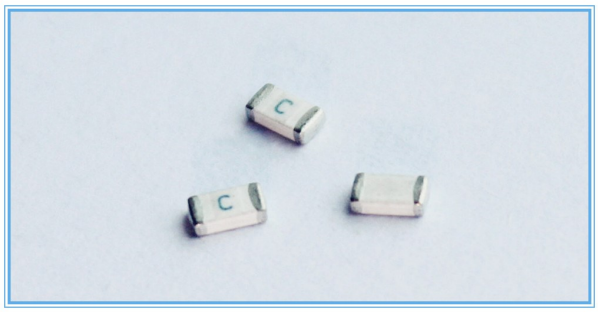
QA1206F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206G Series



Agency Approval:

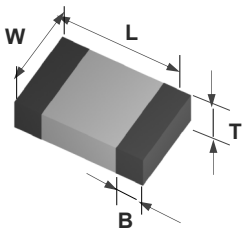
Agency	File NO.
UL	E232989

Clearing Time Characteristics:

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

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



Ordering Information:

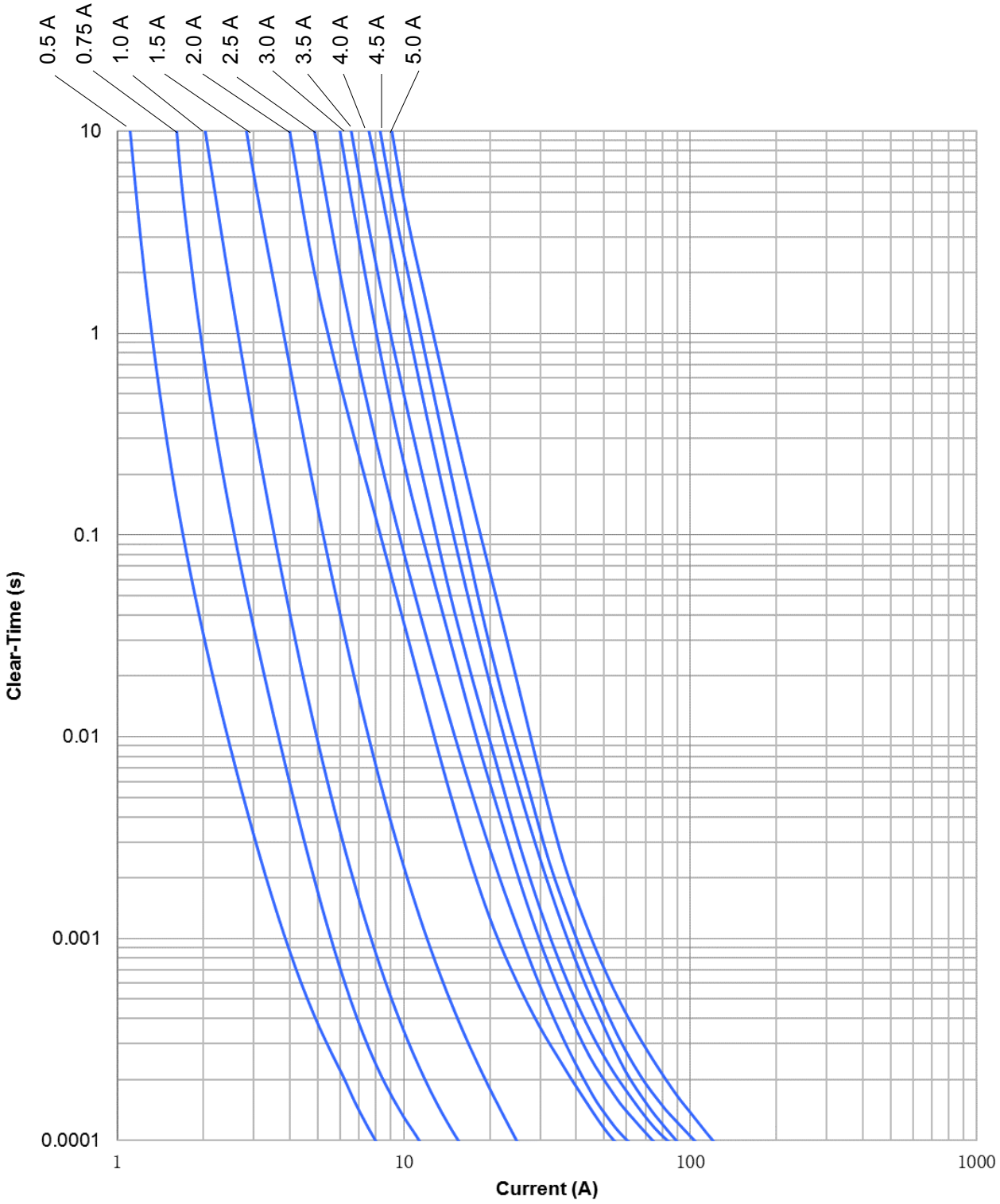
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t $(A^2s)^2$	Marking Code[3]
QF1206GA500T	0.5	65	50A @ 65VDC	1.080	0.006	C
QF1206GA750T	0.75			0.513	0.016	D
QF1206G1A00T	1.0			0.420	0.048	E
QF1206G1A50T	1.5			0.209	0.120	G
QF1206G2A00T	2.0			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

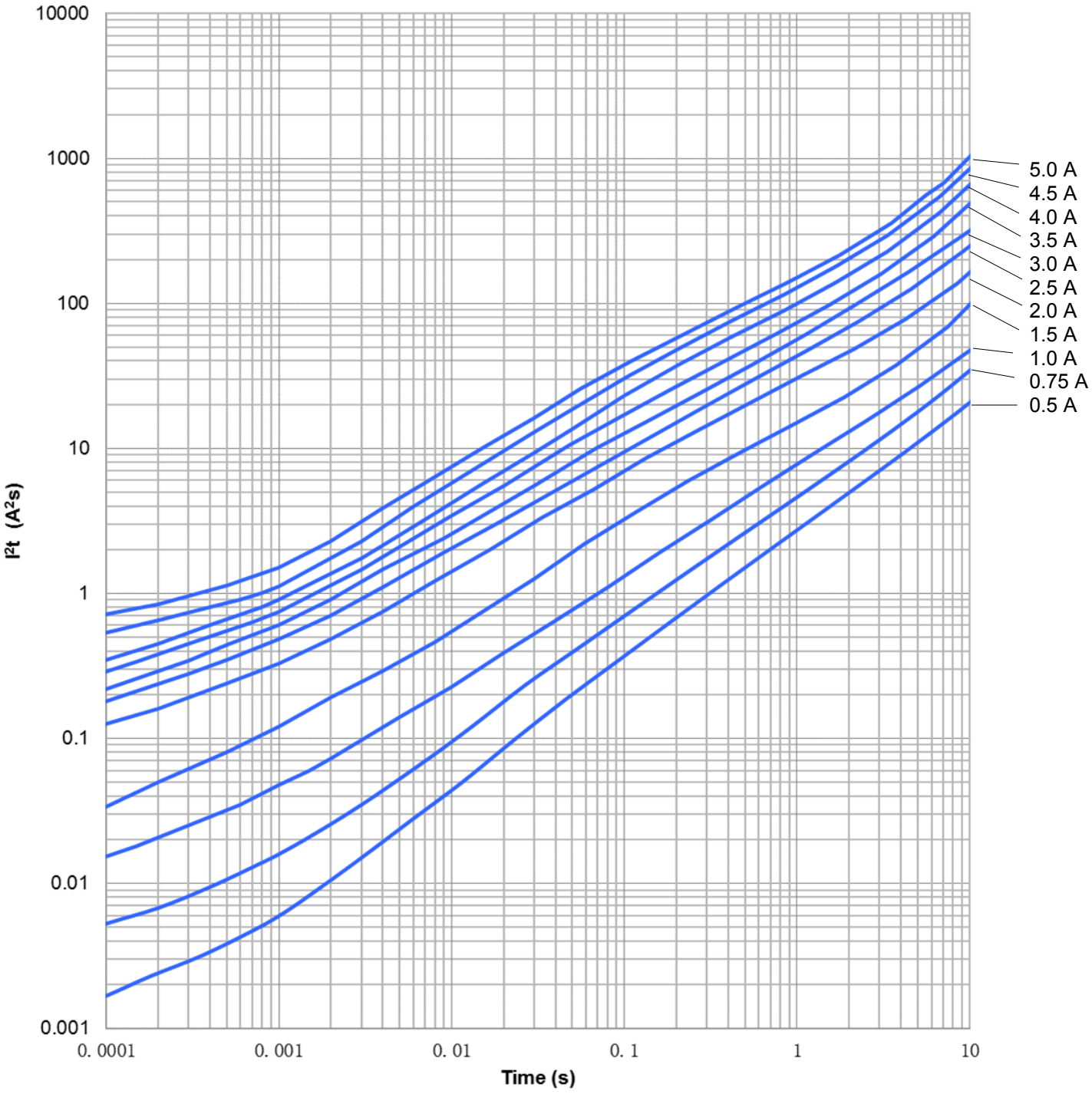
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206G Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603G Series

Agency Approval:

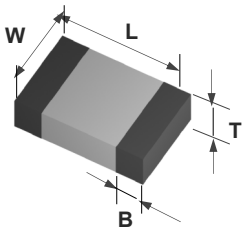
Agency	File NO.
UL	E232989

Clearing Time Characteristics:

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

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



Ordering Information:

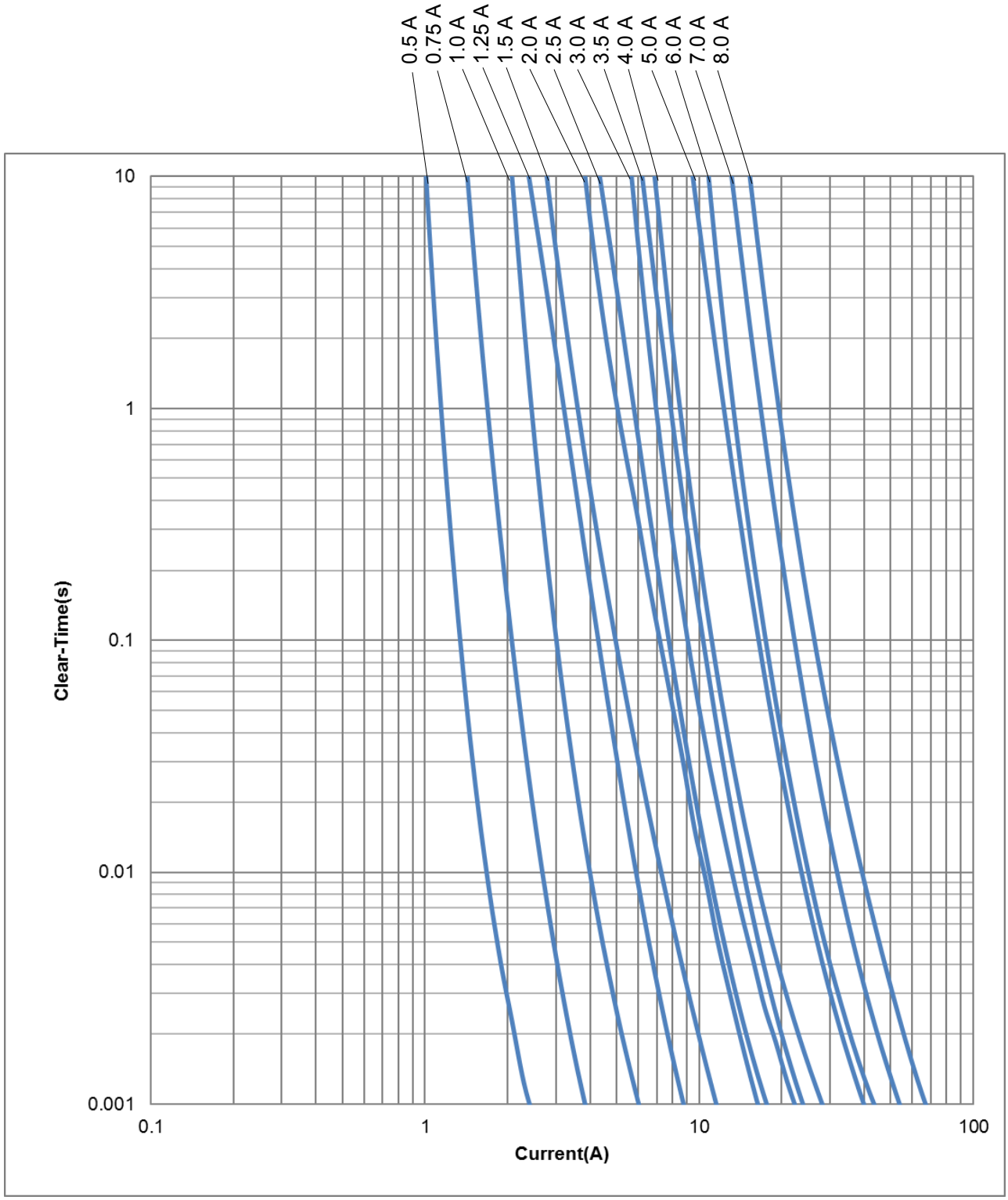
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF0603GA500T	0.5	65	50A @ 65VDC	0.827	0.004	C
QF0603GA750T	0.75			0.373	0.012	D
QF0603G1A00T	1.0			0.237	0.030	E
QF0603G1A25T	1.25			0.153	0.065	F
QF0603G1A50T	1.5			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

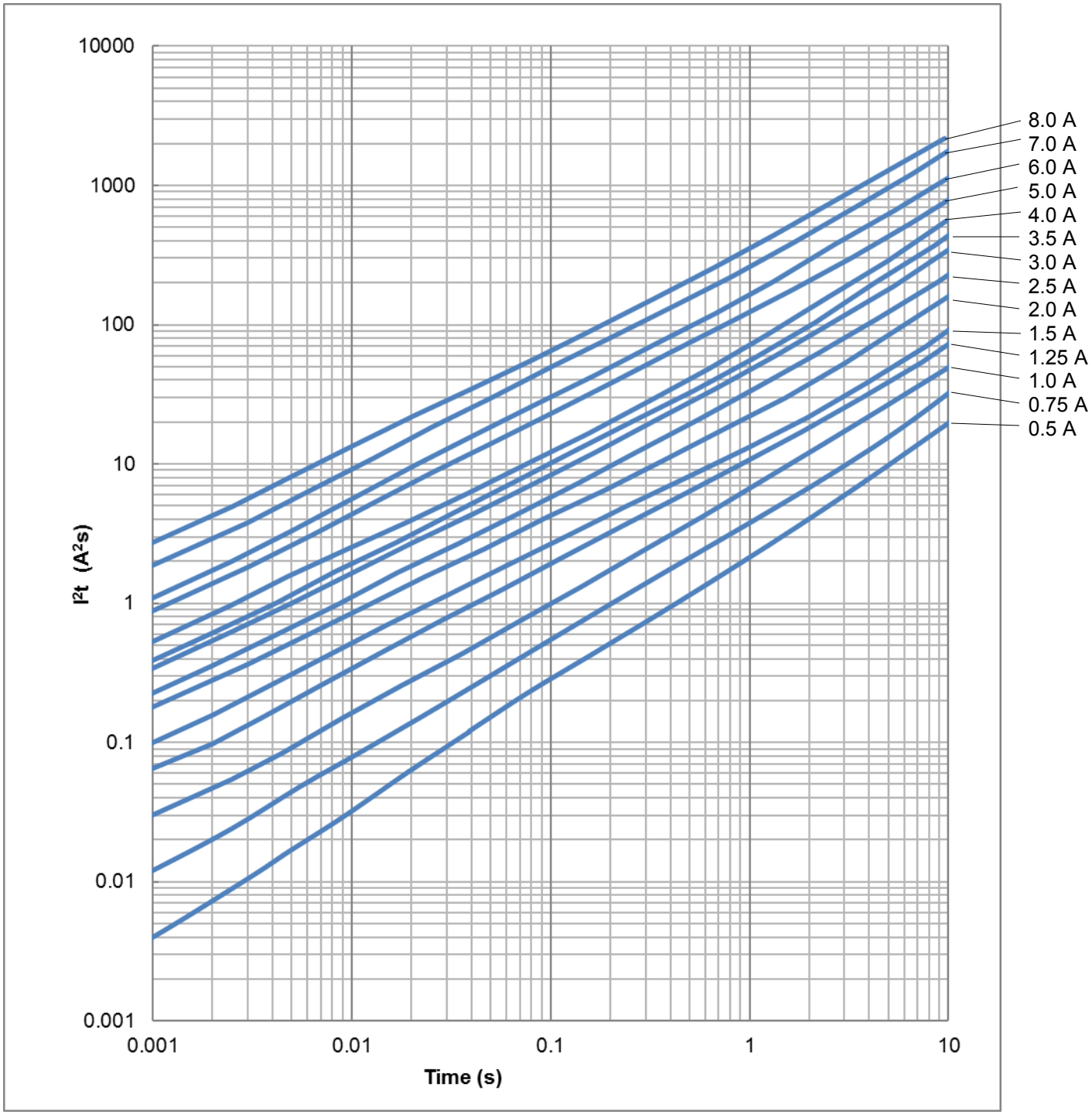
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603G Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

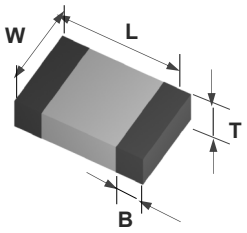
QF1206F Series

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:

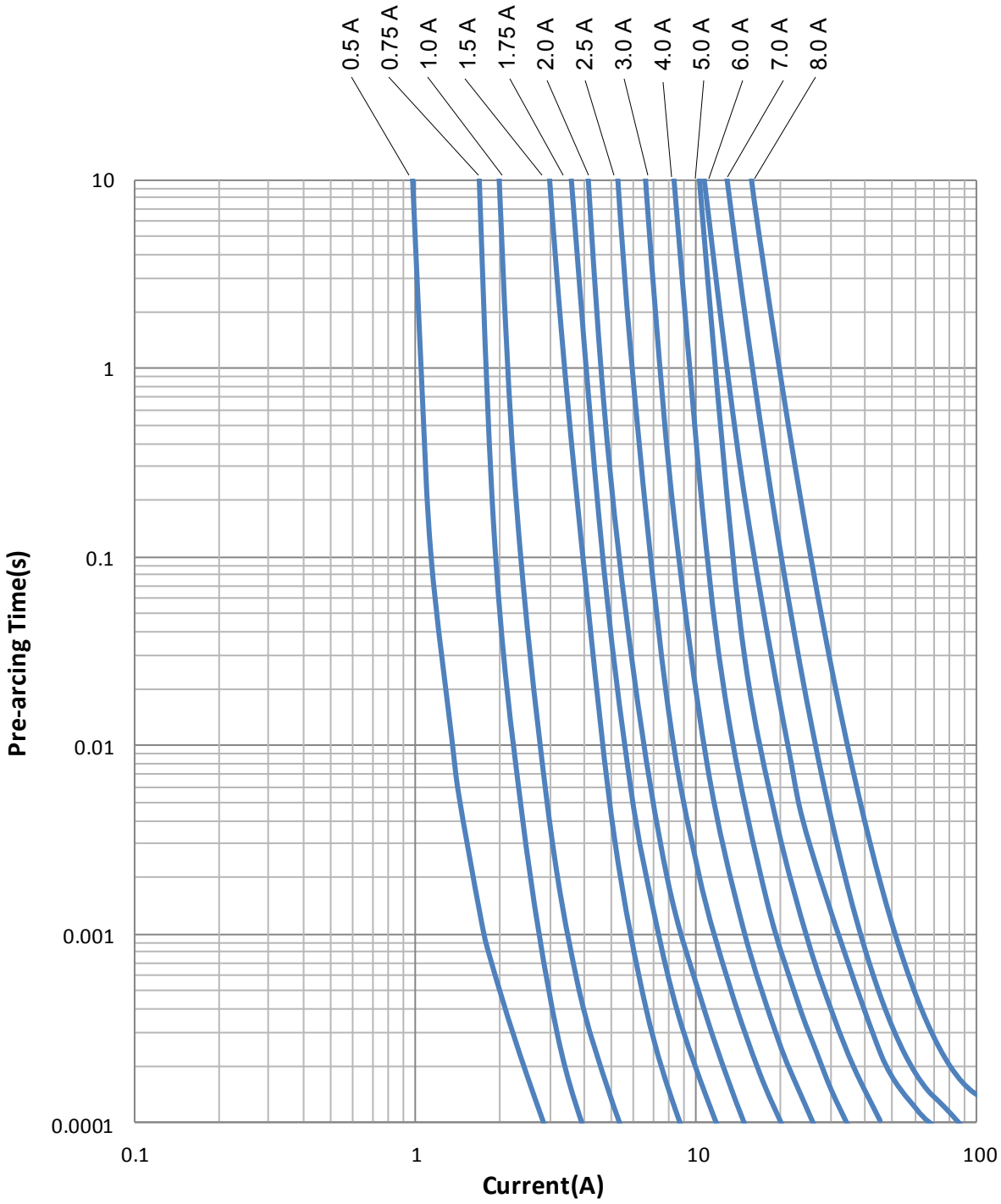
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206FA500T	0.5	63	50A @ 63VDC	0.780	0.003	C
QF1206FA750T	0.75			0.530	0.008	D
QF1206F1A00T	1.0			0.250	0.012	E
QF1206F1A50T	1.5			0.110	0.026	G
QF1206F1A75T	1.75	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

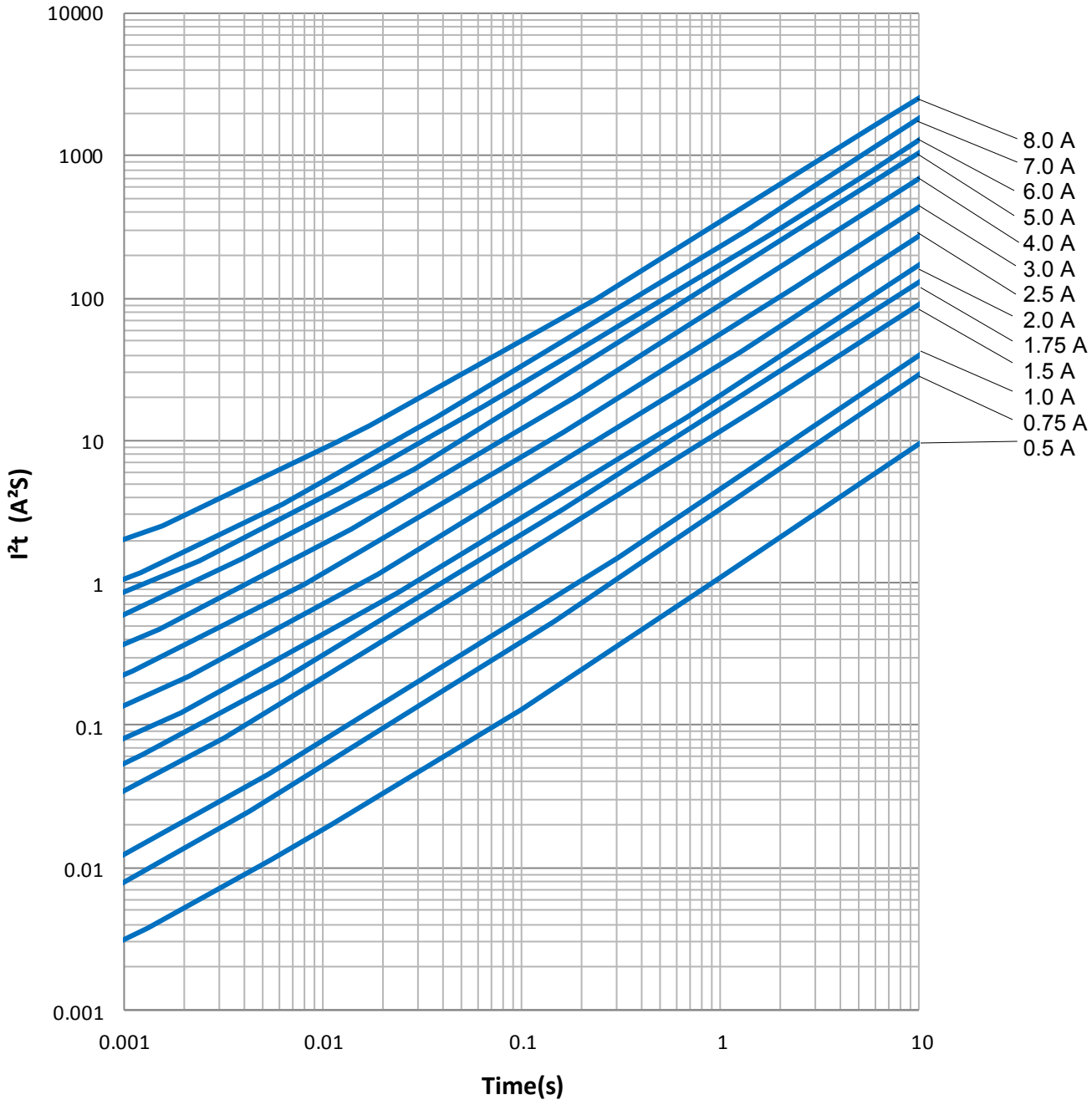
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603F Series

Agency Approval:

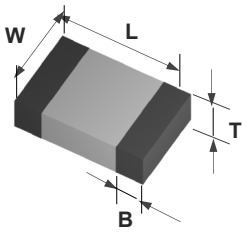
Agency	File NO.
UL	E232989

Clearing Time Characteristics:

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

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



Ordering Information:

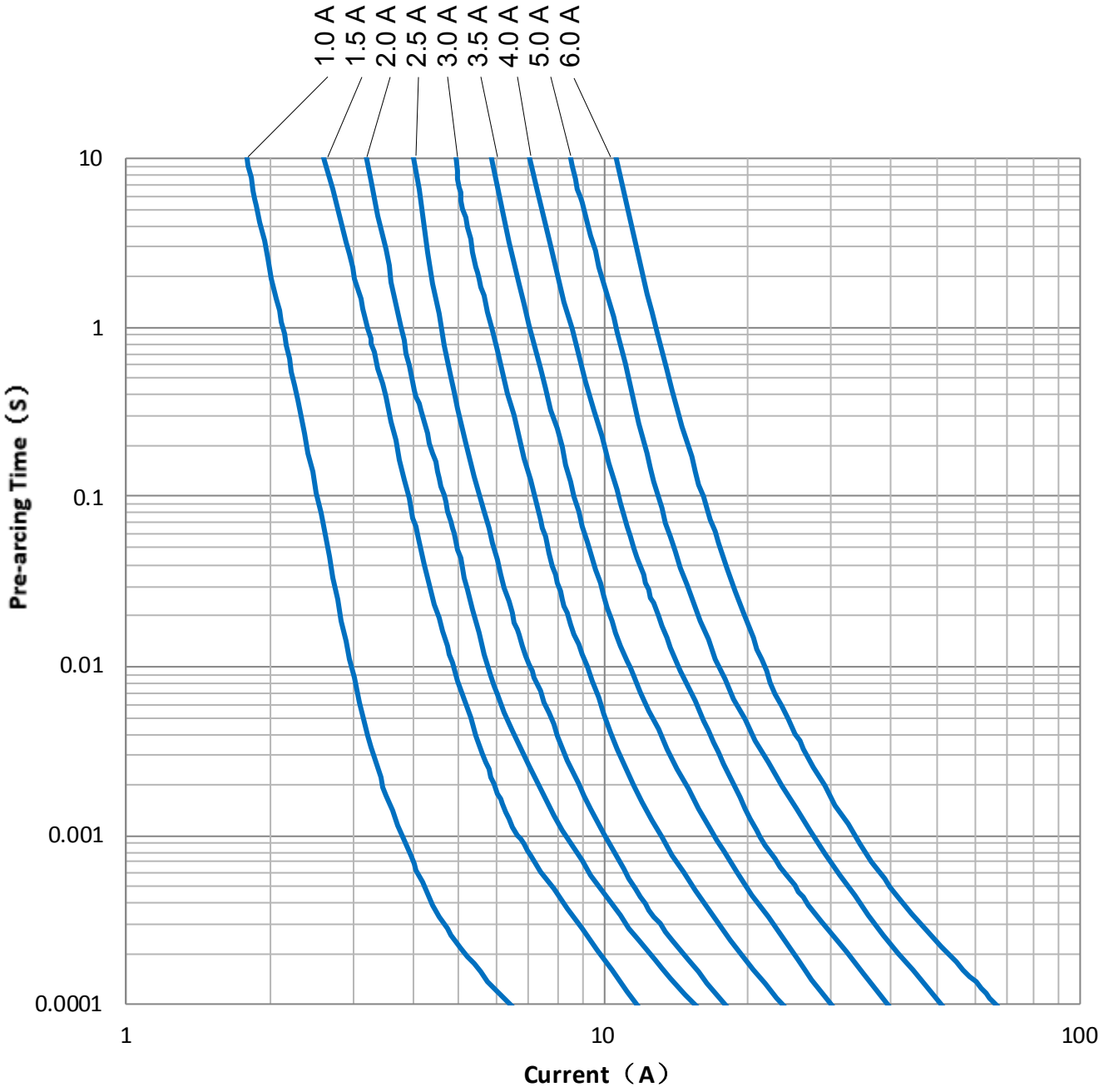
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF0603F1A00T	1.0	63	35A @ 63VDC	0.150	0.0132	E
QF0603F1A50T	1.5			0.063	0.043	G
QF0603F2A00T	2.0	32	35A @ 32VDC	0.044	0.070	I
QF0603F2A50T	2.5			0.034	0.103	J
QF0603F3A00T	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

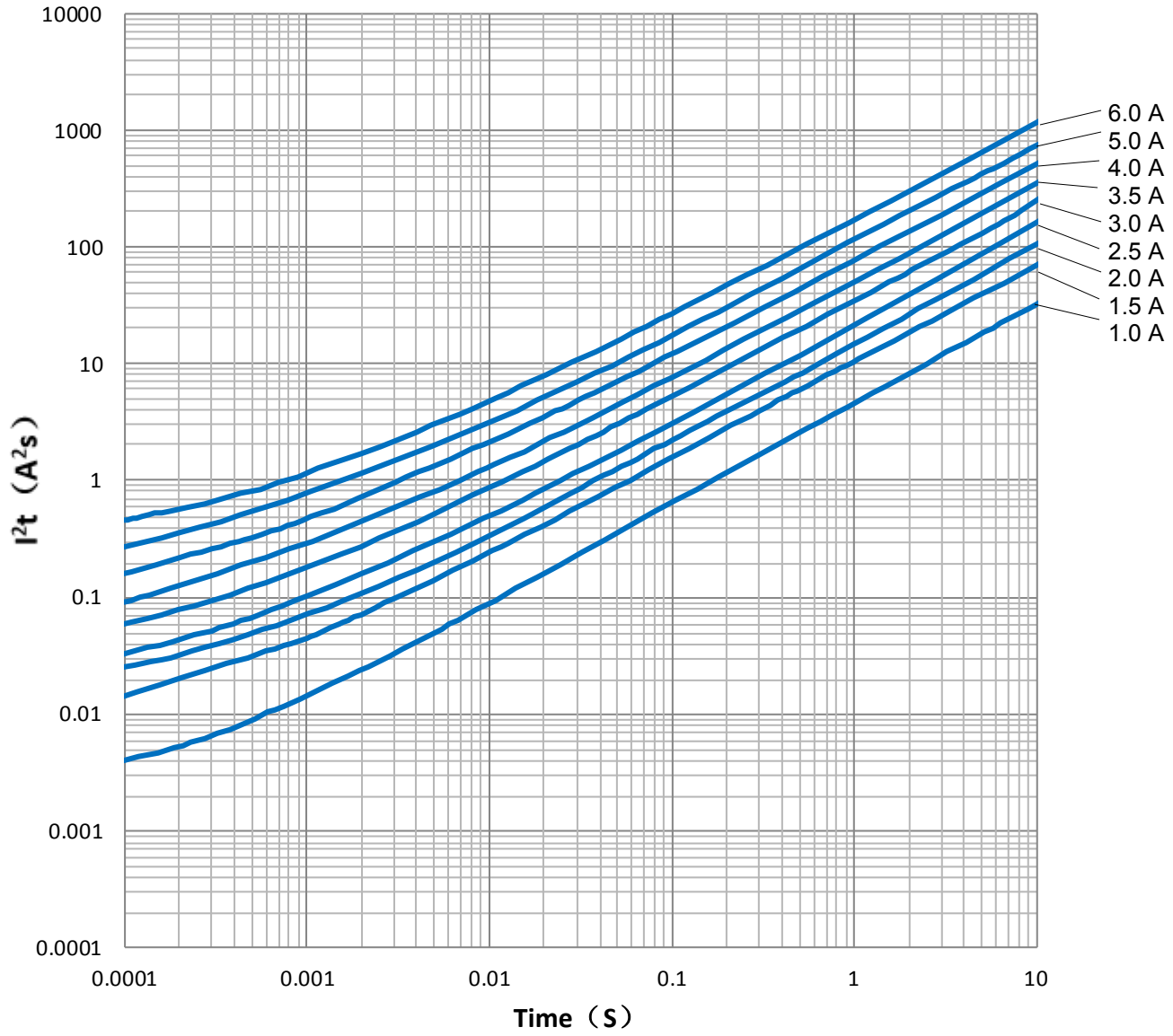
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603F Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

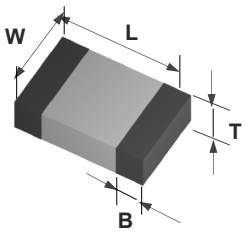
QF1206H Series

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:

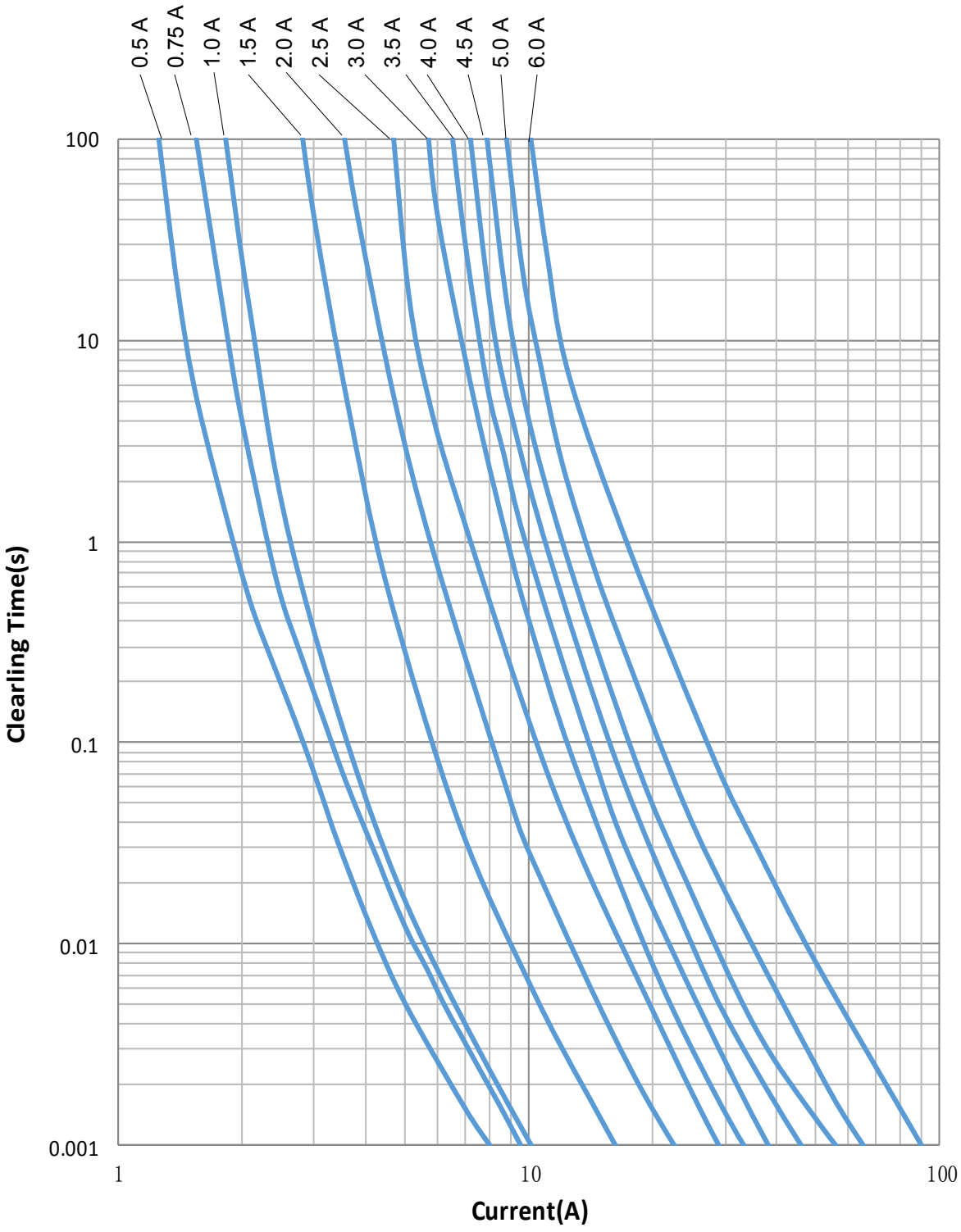
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking Code[3]
QF1206HA500T	0.5	65	50A @ 65VDC	0.980	0.035	C
QF1206HA750T	0.75			0.420	0.100	D
QF1206H1A00T	1.0	63	50A @ 63VDC	0.370	0.112	E
QF1206H1A50T	1.5			0.165	0.336	G
QF1206H2A00T	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

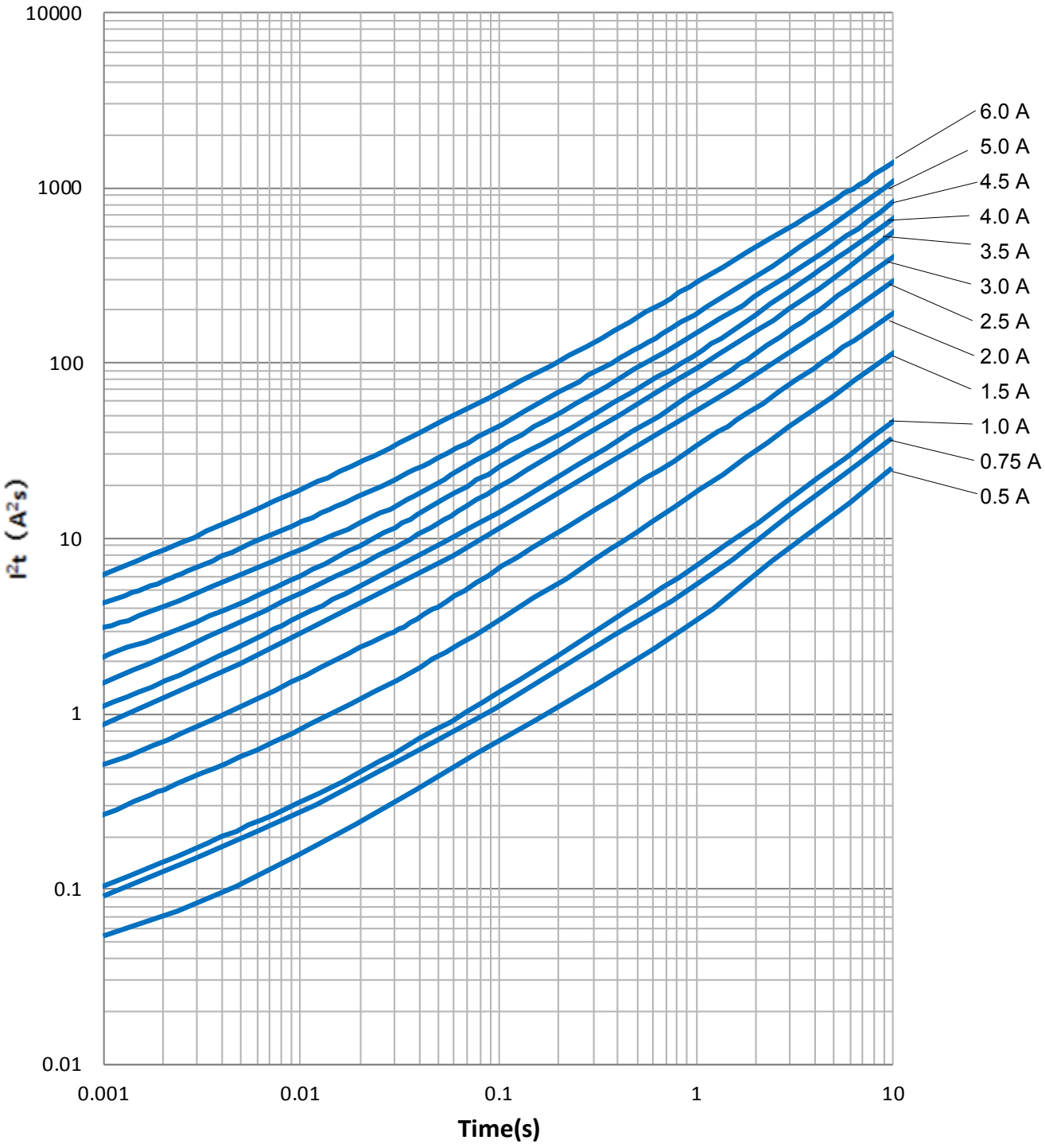
Average Pre-arcing Time Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF1206H Series

Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603H Series

Agency Approval:

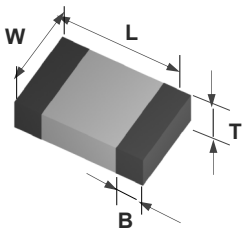
Agency	File NO.
UL	E232989

Clearing Time Characteristics:

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

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



Ordering Information:

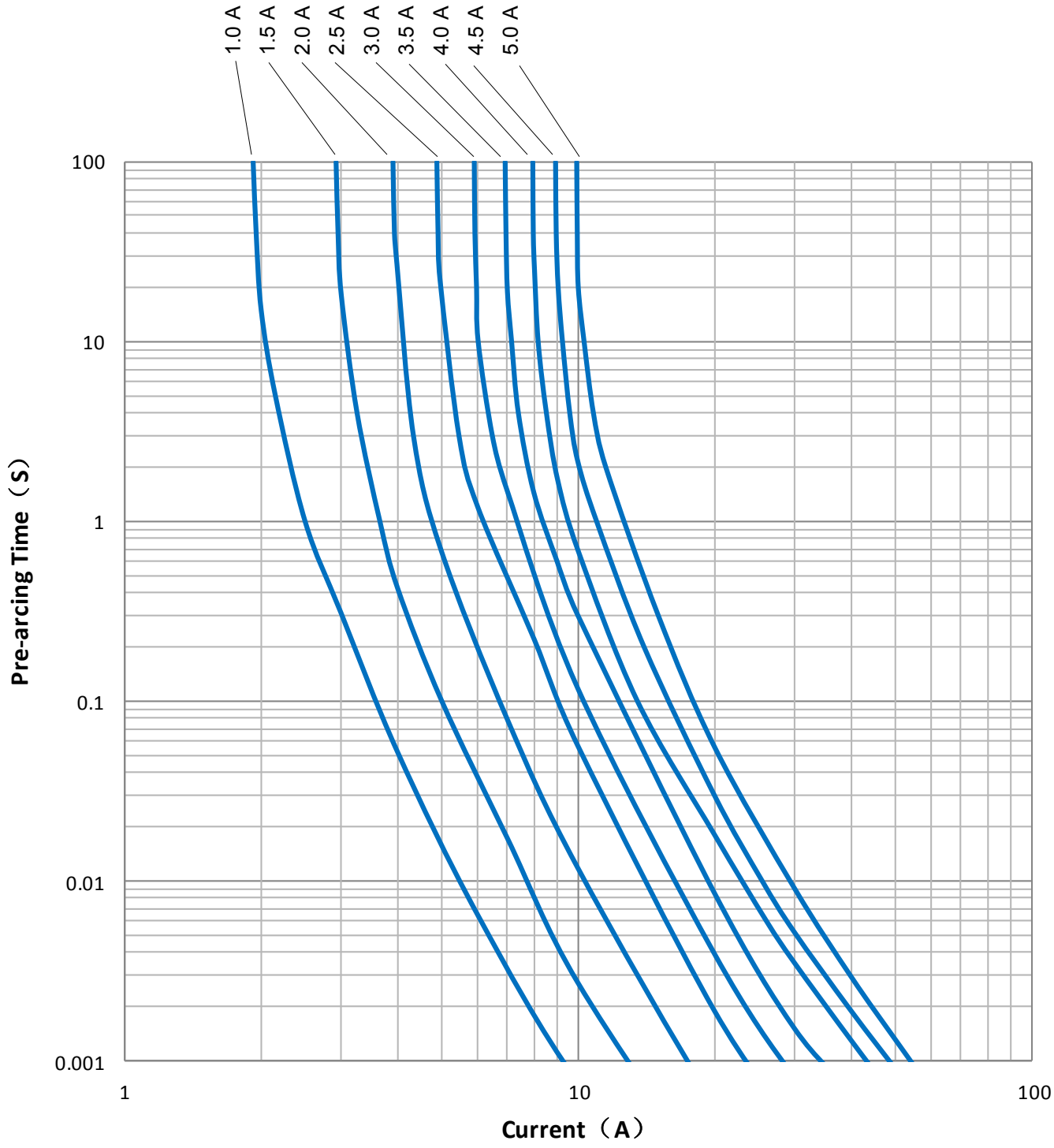
Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t $(A^2s)^2$	Marking Code[3]
QF0603H1A00T	1.0	32	50A @ 32VDC	0.240	0.082	E
QF0603H1A50T	1.5			0.115	0.112	G
QF0603H2A00T	2.0			0.060	0.245	I
QF0603H2A50T	2.5			0.042	0.570	J
QF0603H3A00T	3.0			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

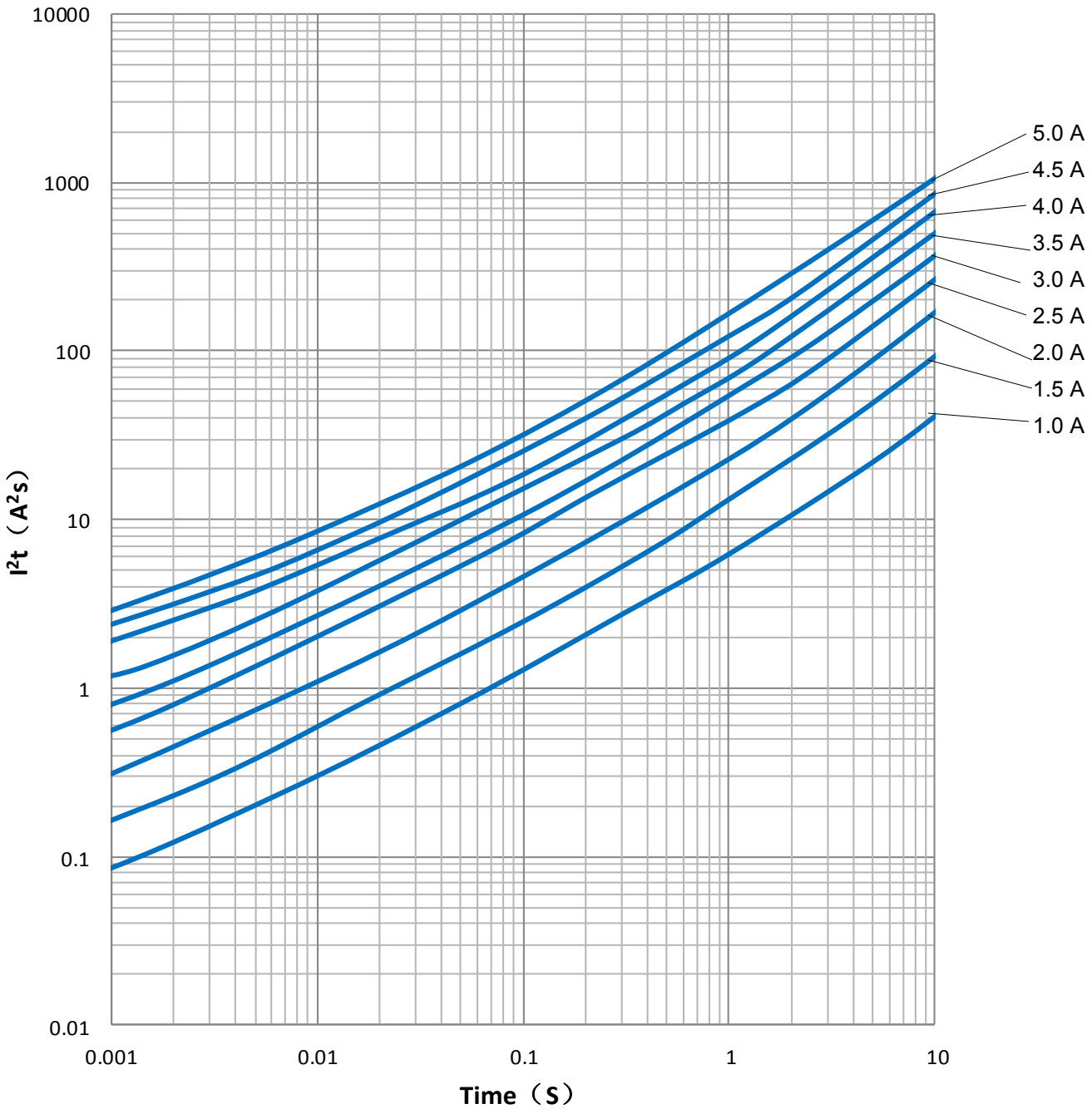
Average I^2t vs. t Curves:



SolidMatrix® Automotive Surface Mount Fuses

QF0603H Series

Average I^2t vs. t Curves:



Automotive Surface Mount Polymer PTC

Features:

PAS Series

- AEC-Q200 Rev-C stress test qualification
- Resettable over-current protection
- Fast time-to-trip
- RoHS compliant
- Halogen free

PAT Series

- AEC-Q200 Rev-C stress test qualification
- Operating temperature range up to 125°C
- Low thermal derating factor
- Higher hold currents at elevated temperature
- RoHS compliant
- Halogen free

Applications:

PAS Series

- Electronic control unit (ECU) I/O and trace protection
- Heating ventilation and cooling (HVAC) control circuit and I/O protection
- Battery management system
- Telematics, infotainment and navigations systems
- Battery packs
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments

PAT Series

- Protection of automotive circuitry including engine control modules
- Overcurrent surge protection of electronic equipment required to operate at high operating temperature ranges
- Resettable fault protection of general electronic equipment

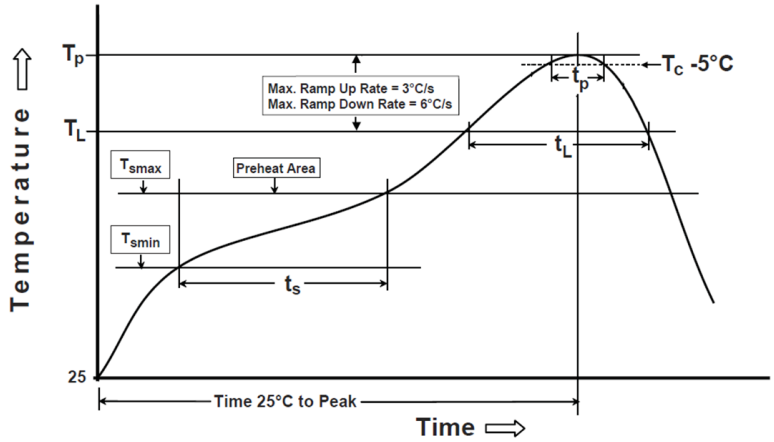
Quick Index:

Series	Size	Current (A)	Page
PAS	1206	Hold (I_H): 0.12, 0.16, 0.20, 0.25, 0.35, 0.50, 0.75, 1.10, 1.50, 2.00	30
		Trip (I_T): 0.29, 0.37, 0.40, 0.46, 0.50, 0.75, 1.00, 1.50, 2.20, 3.00, 4.00	
PAS	1210	Hold (I_H): 0.05, 0.10, 0.20, 0.35, 0.50, 0.75, 1.10, 1.50, 1.75	34
		Trip (I_T): 0.15, 0.30, 0.40, 0.75, 1.00, 1.50, 2.20, 3.00, 3.50	
PAS	1812	Hold (I_H): 0.10, 0.14, 0.20, 0.30, 0.50, 0.75, 1.10, 1.25, 1.50, 1.60, 2.00, 2.50, 2.60, 3.00	38
		Trip (I_T): 0.30, 0.34, 0.40, 0.60, 1.00, 1.50, 2.20, 2.50, 2.80, 3.00, 4.00, 5.00	
PAS	2920	Hold (I_H): 1.85, 2.60, 3.00	44
		Trip (I_T): 3.70, 5.00, 5.20	
PAT	0805	Hold (I_H): 0.05, 0.10, 0.16, 0.20, 0.35, 0.50	47
		Trip (I_T): 0.25, 0.50, 0.80, 1.00, 1.75, 2.00	
PAT	1206	Hold (I_H): 0.10, 0.16, 0.20, 0.35, 0.50, 0.75	49
		Trip (I_T): 0.50, 0.80, 1.00, 1.75, 2.50, 3.00	
PAT	1210	Hold (I_H): 0.10, 0.16, 0.20, 0.35, 0.50, 0.75, 1.10, 1.25, 1.50	51
		Trip (I_T): 0.50, 0.80, 1.00, 1.75, 2.50, 3.75, 4.50, 5.50	

Automotive Surface Mount Polymer PTC

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	

Note:
Polymer PTC cannot be wave soldered. Please contact AEM for hand soldering recommendations.
If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
Compatible with Pb and Pb-free solder reflow profiles.
Excess solder may cause a short circuit, especially during hand soldering.

Caution:
Operation beyond the rated voltage or current may result in rupture electrical arcing or flame.

Warning:

Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
The devices are intended for protection against occasional over-current or over-temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices.
Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal and mechanical procedures for electronic components.
Operation in circuit with a large inductance can generate a circuit voltage (L di/dt) above the rated voltage of the PPTC device.

Automotive Surface Mount Polymer PTC

PAS Series, 1206 Size

Ordering Code:

PAS 1206—035—16 F
(1) (2) (3) (4) (5)

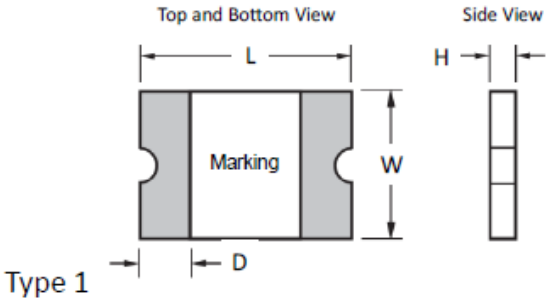
(1) Series code
(2) Size code
(3) Current rating code 035: 0.35A
(4) Voltage rating code 16: 16V
(5) Identification code

Agency Approval:

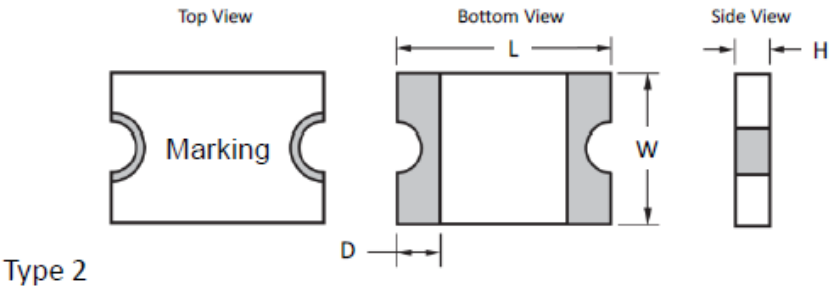
UL file number: E355716

TüV certification number: R50371842, R50371875 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J.

Product Dimensions:



Type 1



Type 2

Part Number	Type	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
		Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1206-012	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.10 (0.043)	0.25 (0.010)
PAS1206-016 PAS1206-020	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-020-30F PAS1206-025F	2	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.85 (0.033)	0.25 (0.010)
PAS1206-035	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-035-16F	2	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.85 (0.033)	0.25 (0.010)
PAS1206-050	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-075 PAS1206-110 PAS1206-150	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
PAS1206-200	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.60 (0.063)	0.25 (0.010)

Automotive Surface Mount Polymer PTC

PAS Series, 1206 Size

Product Dimensions:

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1206-012	0.12	0.29	30	10	1.0	0.20	0.4	1.35	8.50
PAS1206-016	0.16	0.37	30	10	1.0	0.30	0.6	1.20	4.50
PAS1206-020	0.20	0.46	24	10	1.0	0.60	0.6	0.60	2.60
PAS1206-020-30F	0.20	0.40	30	60	1.0	0.60	0.6	0.60	3.30
PAS1206-025F	0.25	0.50	16	20	8.0	0.08	0.6	0.45	2.30
PAS1206-035	0.35	0.75	6	100	8.0	0.10	0.6	0.30	1.20
PAS1206-035-16F	0.35	0.75	16	20	3.5	0.14	0.6	0.30	1.40
PAS1206-050	0.50	1.00	13.2	100	8.0	0.10	0.4	0.15	0.70
PAS1206-075	0.75	1.50	6	100	8.0	0.10	0.4	0.10	0.40
PAS1206-110	1.10	2.20	6	100	8.0	0.10	0.6	0.06	0.20
PAS1206-150	1.50	3.00	6	100	8.0	0.30	0.6	0.03	0.13
PAS1206-200	2.00	4.00	6	100	8.0	1.00	0.7	0.02	0.085

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Packaging and Marking Information:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PAS1206-012	0	3,000
PAS1206-016	1	
PAS1206-020	2	
PAS1206-020-30F	2	
PAS1206-025F	C	
PAS1206-035	3	
PAS1206-035-16F	3	
PAS1206-050	4	
PAS1206-075	5	
PAS1206-110	6	
PAS1206-150	8	
PAS1206-200	A	

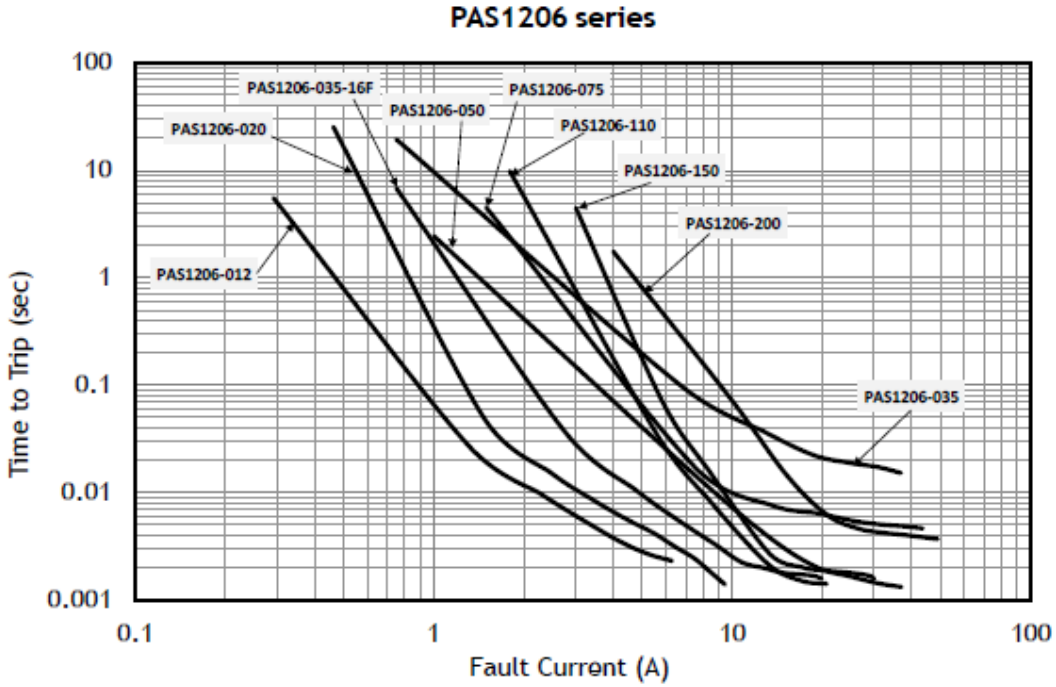
Automotive Surface Mount Polymer PTC

PAS Series, 1206 Size

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1206-012	0.19	0.17	0.15	0.12	0.11	0.10	0.09	0.08	0.07
PAS1206-016	0.24	0.21	0.19	0.16	0.14	0.13	0.11	0.10	0.09
PAS1206-020	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.11
PAS1206-020-30F	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PAS1206-025F	0.39	0.35	0.31	0.25	0.23	0.21	0.18	0.16	0.13
PAS1206-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PAS1206-035-16F	0.58	0.51	0.44	0.35	0.31	0.28	0.24	0.21	0.16
PAS1206-050	0.76	0.68	0.59	0.50	0.44	0.40	0.35	0.32	0.26
PAS1206-075	1.11	1.00	0.85	0.75	0.67	0.61	0.52	0.50	0.42
PAS1206-110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
PAS1206-150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
PAS1206-200	2.88	2.61	2.28	2.00	1.80	1.66	1.51	1.39	1.19

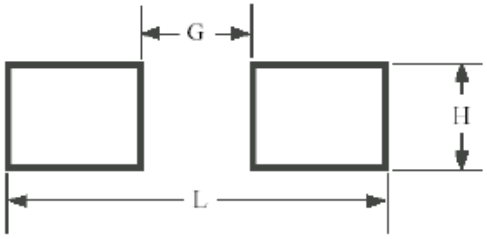
Typical Time to Trip (@ 23˚C):



Automotive Surface Mount Polymer PTC

PAS Series, 1206 Size

Recommended Foot Print Dimensions:



G (mm)	H (mm)	L (mm)
2.0±0.1	1.6±0.1	4.0±0.1

Automotive Surface Mount Polymer PTC

PAS Series, 1210 Size

Ordering Code:

PAS 1210—175 F
(1) (2) (3) (4)

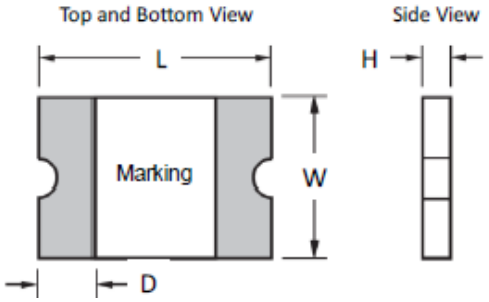
(1) Series code
(2) Size code
(3) Current rating code 175: 1.75A
(4) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50371797, R50371842 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1210-005 PAS1210-010 PAS1210-020	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.80 （0.031）	1.10 （0.043）	0.30 （0.012）
PAS1210-035 PAS1210-050 PAS1210-075 PAS1210-110	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.55 （0.022）	0.85 （0.033）	0.25 （0.010）
PAS1210-150 PAS1210-175F	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	1.80 (0.071)	0.40 （0.016）	0.85 （0.033）	0.25 （0.010）

Automotive Surface Mount Polymer PTC

PAS Series, 1210 Size

Product Dimensions:

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1210-005	0.05	0.15	30	10	0.25	1.50	0.6	2.80	50.0
PAS1210-010	0.10	0.30	30	10	0.50	0.60	0.6	0.80	15.0
PAS1210-020	0.20	0.40	30	10	8.0	0.20	0.6	0.40	5.0
PAS1210-035	0.35	0.75	6	40	8.0	0.20	0.6	0.18	0.90
PAS1210-050	0.50	1.00	13.2	40	8.0	0.10	0.6	0.18	0.90
PAS1210-075	0.75	1.50	6	40	8.0	0.10	0.6	0.07	0.45
PAS1210-110	1.10	2.20	6	40	5.0	1.00	0.6	0.05	0.21
PAS1210-150	1.50	3.00	6	40	5.0	1.00	0.6	0.03	0.11
PAS1210-175F	1.75	3.50	6	40	8.0	1.00	0.7	0.02	0.09

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Packaging and Marking Information:

Part Number	Part Marking*	Tape & Reel Quantity (piece)
PAS1210-005	0 w	3,000
PAS1210-010	1 w	
PAS1210-020	2 w	
PAS1210-035	3 w	
PAS1210-050	4 w	
PAS1210-075	5 w	
PAS1210-110	6 w	
PAS1210-150	8 w	
PAS1210-175F	9 w	

* 9w □ 9 = 1.85A; w = Week code (w=Y □ week 49~50)

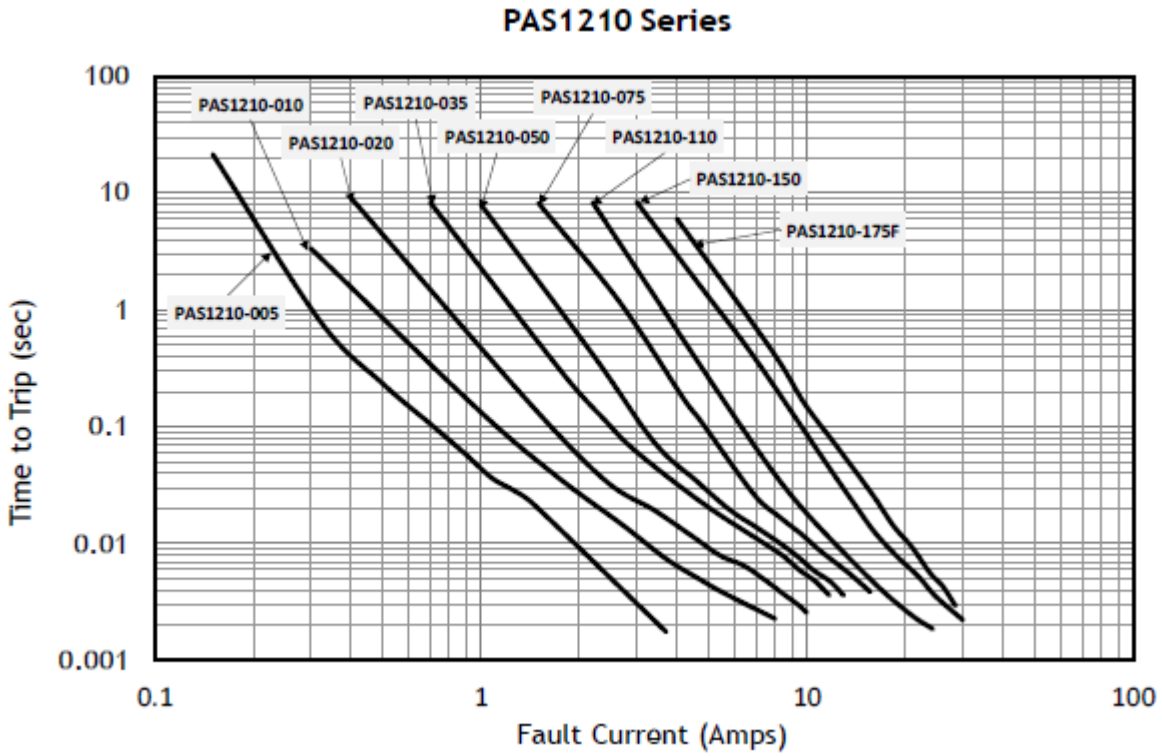
Automotive Surface Mount Polymer PTC

PAS Series, 1210 Size

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1210-005	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
PAS1210-010	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
PAS1210-020	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PAS1210-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PAS1210-050	0.76	0.66	0.58	0.50	0.42	0.38	0.35	0.29	0.23
PAS1210-075	1.10	0.97	0.86	0.75	0.64	0.58	0.55	0.47	0.39
PAS1210-110	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
PAS1210-150	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
PAS1210-175F	2.80	2.45	2.10	1.75	1.55	1.45	1.35	1.25	1.10

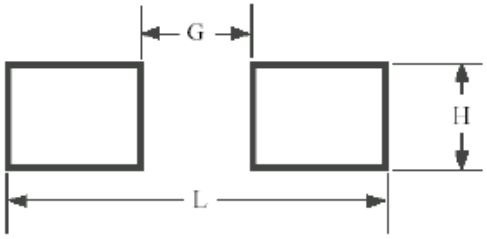
Typical Time to Trip (@ 23˚C):



Automotive Surface Mount Polymer PTC

PAS Series, 1210 Size

Recommended Foot Print Dimensions:



G (mm)	H (mm)	L (mm)
1.8±0.1	2.8±0.1	3.8±0.1

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

Ordering Code:

PAS 1812—110—24 F
(1) (2) (3) (4) (5)

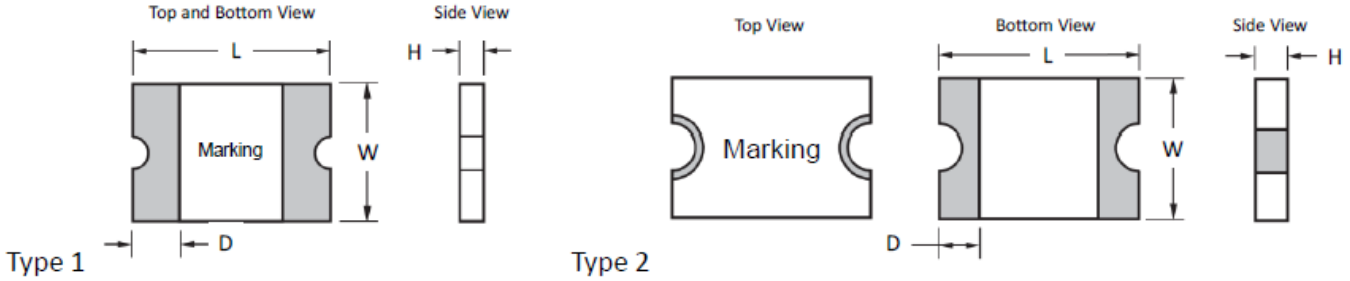
(1) Series code
(2) Size code
(3) Current rating code 110: 1.1A
(4) Voltage rating code 24: 24V
(5) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50371797, R50371842, R50371875 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J

Product Dimensions:



Part Number	Type	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
		Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1812-010 PAS1812-014 PAS1812-020 PAS1812-020-60 PAS1812-030	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.10 (0.043)	0.30 (0.012)
PAS1812-050	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-050-30F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.40 (0.016)	0.85 (0.033)	0.30 (0.012)
PAS1812-075 PAS1812-075-24	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-110 PAS1812-110-16	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.45 (0.018)	0.85 (0.033)	0.30 (0.012)
PAS1812-110-24F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-125 PAS1812-150 PAS1812-150-12	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-150-24F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-160 PAS1812-200	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-250-16F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-260	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.48 (0.019)	0.85 (0.033)	0.30 (0.012)
PAS1812-260-16F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-300F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

Product Dimensions:

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1812-010	0.10	0.30	60	40	0.5	1.50	0.8	0.700	15.00
PAS1812-014	0.14	0.34	60	40	1.5	0.15	0.8	0.400	6.50
PAS1812-020	0.20	0.40	30	80	6.0	0.06	0.8	0.400	6.00
PAS1812-020-60	0.20	0.40	60	40	1.5	0.15	0.8	0.400	6.00
PAS1812-030	0.30	0.60	30	10	8.0	0.10	0.8	0.300	3.00
PAS1812-050	0.50	1. 00	15	100	8.0	0.15	0.8	0.150	1.00
PAS1812-050-30F	0.50	1.00	30	40	8.0	0.15	0.8	0.150	1.00
PAS1812-075	0.75	1.50	13.2	100	8.0	0.20	0.8	0.110	0.450
PAS1812-075-24	0.75	1.50	24	40	8.0	0.20	0.8	0.110	0.450
PAS1812-110	1.10	2.20	6	100	8.0	0.30	0.8	0.040	0.210
PAS1812-110-16	1.10	2.20	16	100	8.0	0.30	0.8	0.040	0.210
PAS1812-110-24F	1.10	2.20	24	20	8.0	0.50	0.8	0.060	0.180
PAS1812-125	1.25	2.50	6	100	8.0	0.40	0.8	0.035	0.140
PAS1812-150	1.50	3.00	6	100	8.0	0.50	0.8	0.030	0.120
PAS1812-150-12	1.50	3.00	12	100	8.0	0.50	0.8	0.030	0.120
PAS1812-150-24F	1.50	3.00	24	20	8.0	1.50	1.0	0.035	0.120
PAS1812-160	1.60	2.80	8	100	8.0	2.0	0.8	0.020	0.099
PAS1812-200	2.00	4.00	8	40	8.0	3.0	0.8	0.015	0.080
PAS1812-250-16F	2.50	5.00	16	100	8.0	5.0	1.2	0.015	0.100
PAS1812-260	2.60	5.20	6	100	8.0	5.0	0.8	0.015	0.080
PAS1812-260-16F	2.60	5.00	16	100	8.0	5.0	1.2	0.015	0.050
PAS1812-300F	3.00	5.00	6	100	8.0	5.0	1.2	0.010	0.040

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

Packaging and Marking Information:

Part Number	Tape & Reel Quantity (piece)
PAS1812-010	1,500
PAS1812-014	
PAS1812-020	
PAS1812-020-60	
PAS1812-030	
PAS1812-050	2,000
PAS1812-050-30F	
PAS1812-075	
PAS1812-075-24	
PAS1812-110	
PAS1812-110-16	
PAS1812-110-24F	1,500
PAS1812-125	2,000
PAS1812-150	
PAS1812-150-12	
PAS1812-150-24F	1,500
PAS1812-160	2,000
PAS1812-200	
PAS1812-250-16F	1,500
PAS1812-260	2,000
PAS1812-260-16F	1,500
PAS1812-300F	1,500

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

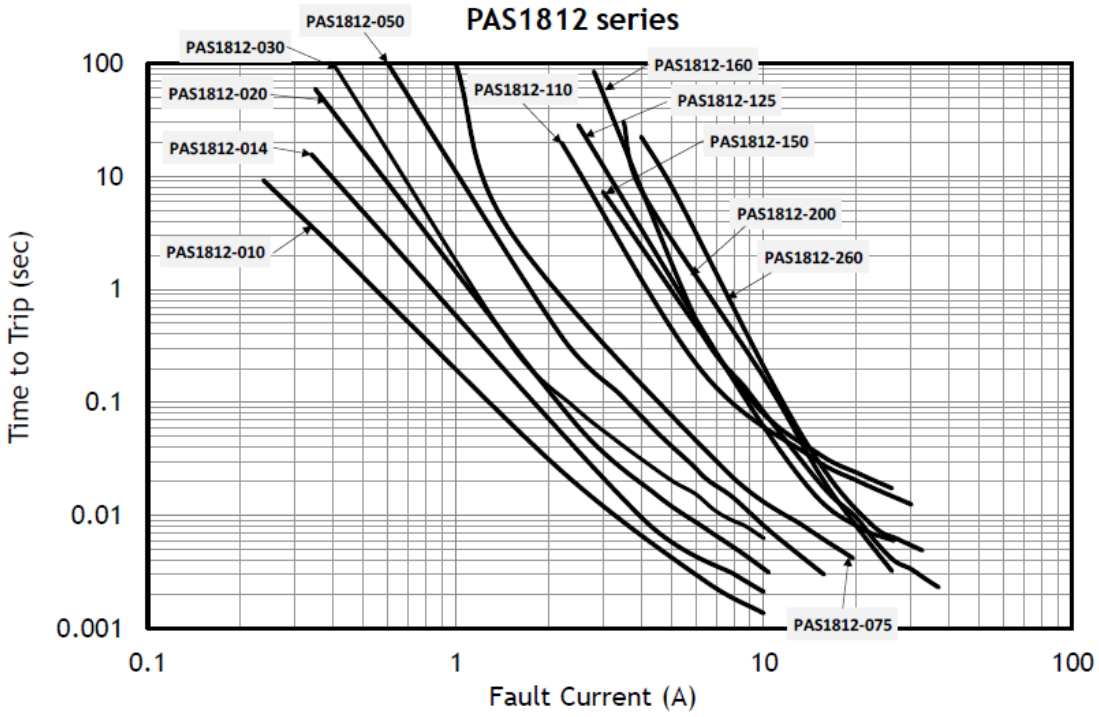
Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1812-010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
PAS1812-014	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PAS1812-020	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PAS1812-020-60	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PAS1812-030	0.44	0.39	0.35	0.30	0.26	0.23	0.21	0.18	0.15
PAS1812-050	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PAS1812-050-30F	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.25
PAS1812-075	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PAS1812-075-24	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PAS1812-110	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PAS1812-110-16	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PAS1812-110-24F	2.00	1.70	1.40	1.10	0.95	0.88	0.80	0.73	0.61
PAS1812-125	1.80	1.63	1.43	1.25	1.08	0.99	0.91	0.81	0.68
PAS1812-150	2. 17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PAS1812-150-12	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PAS1812-150-24F	2.10	1.90	1.70	1.50	1.25	1.13	1.00	0.88	0.69
PAS1812-160	2.30	2.20	1.90	1.60	1.45	1.30	1.15	1.03	0.91
PAS1812-200	3.08	2.71	2.35	2.00	1.80	1.60	1.50	1.40	1.25
PAS1812-250-16F	3.90	3.42	2.96	2.50	2.24	1.98	1.85	1.29	0.94
PAS1812-260	4.00	3.52	3.06	2.60	2.34	2.08	1.95	1.39	1.04
PAS1812-260-16F	3.50	3.20	3.00	2.60	2.30	2.15	2.00	1.85	1.63
PAS1812-300F	4.68	4.10	3.67	3.00	2.69	2.50	2.22	1.55	1.13

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

Typical Time to Trip (@ 23˚C):



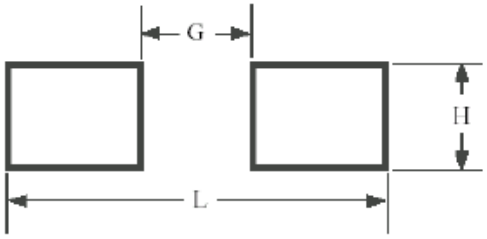
Environmental Test:

Item No.	Test Item	Test Condition
1	Pre-and-Post stress electrical test	-40°C, 25°C and 85°C
4	Temperature cycling	-40 and 85°C, 1000 cycles
6	Moisture resistance	Cycled 25°C to 65°C, 80-100% RH, 24 hrs./cycle. 10 cycles
7	Biased humidity	1000 hrs., 85°C, 85% RH, biased
8	Operational life	1000 hrs., 85℃ with rated power on and off repeatedly
9	External visual	Per individual specification sheets
10	Physical dimension	Per individual specification sheets
12	Resistance to solvents	MIL STD 202 and aqueous wash chemical
13	Mechanical shock	1/2 sine shock pulse, 1500g peak
14	Vibration	5g, 20 mins, 36 cycles, 10-2K Hz
15	Resistance to solder heat	MIL STD 202, 215°C for 3 heating cycles
16	Thermal shock	-40 to 85°C, 300 cycles
17	ESD	Air discharge mode 25KV
18	Solderability	J-STD-002B 215, 235 and 260 'C
19	Electrical characterization	Per spec
20	Flammability	UL-94 V0
21	Board flex	2 mm deflection min
22	Terminal strength (SMD)	1.8Kg, 60 sec
31	Short circuit fault current durability	30V 80A, power on and off for 25 cycles
32	Fault current durability	30V 1.2A, power on and off for 350 cycles
33	End-of-life mode verification	30V 1.2A, power on and off for 1750 cycles
34	Jump start endurance	26V (fixed), power on and off for 3cycles
35	Load dump endurance	Per ISO-7637-2 pulse 5a, Vs=87V, Ri = 4 ohm, Td = 400 ms, 10 pulse

Automotive Surface Mount Polymer PTC

PAS Series, 1812 Size

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	2.7±0.1	3.2±0.1	5.7±0.1
2	2.9±0.1	1.95±0.1	6.1±0.1

Automotive Surface Mount Polymer PTC

PAS Series, 2920 Size

Ordering Code:

PAS 2920—300—24 F
(1) (2) (3) (4) (5)

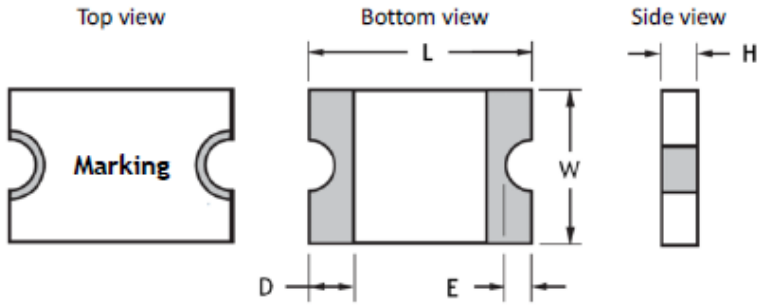
(1) Series code
(2) Size code
(3) Current rating code 300: 3.0A
(4) Voltage rating code 24: 24V
(5) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)	E mm (inches	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
PAS2920-185-33F PAS2920-260F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)	0.30 (0.012)	0.25 (0.010)	2.00 (0.079)
PAS2920-300F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.35 (0.014)	0.85 (0.033)	0.30 (0.012)	0.25 (0.010)	2.00 (0.079)
PAS2920-300-24F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)	0.30 (0.012)	0.25 (0.010)	2.00 (0.079)

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS2920-185-33F	1.85	3.70	33	40	8.0	2.5	1.50	0.045	0.150
PAS2920-260F	2.60	5.20	24	20	8.0	5.0	1.50	0.020	0.075
PAS2920-300F	3.00	5.00	6	40	8.0	20.0	1.50	0.015	0.048
PAS2920-300-24F	3.00	5.20	24	20	8.0	5.0	1.50	0.020	0.075

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Surface Mount Polymer PTC

PAS Series, 2920 Size

Packaging and Marking Information:

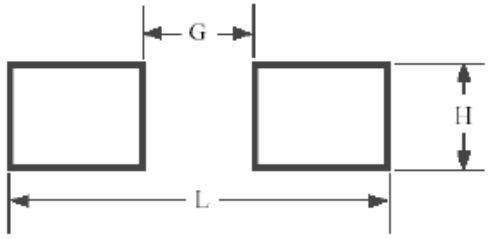
Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAS2920-185-33F	9w	3,000
PAS2920-260F	Ew	
PAS2920-300F	Fw	
PAS2920-300-24F	Jw	

* 9w □ 9 = 1.85A; w = Week code (w=Y □ week 49~50)

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS2920-185-33F	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
PAS2920-260F	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
PAS2920-300F	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
PAS2920-300-24F	4.00	3.55	3.20	3.00	2.50	2.25	2.15	1.85	1.50

Recommended Foot Print Dimensions:

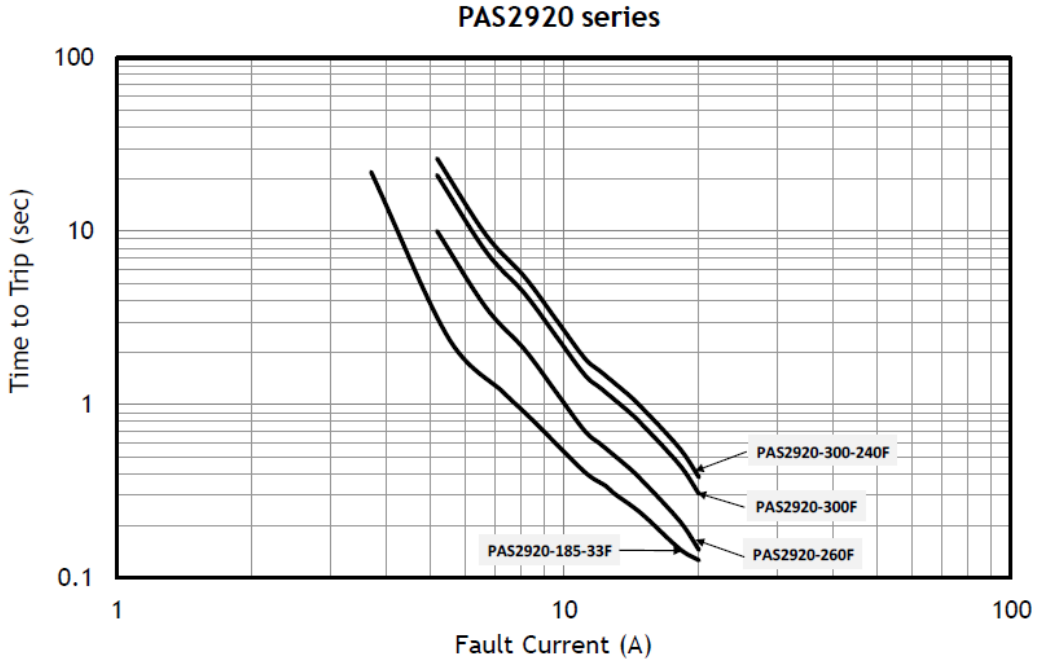


Type	G (mm)	H (mm)	L (mm)
1	4.6±0.1	5.3±0.1	8.6±0.1

Automotive Surface Mount Polymer PTC

PAS Series, 2920 Size

Typical Time to Trip (@ 23˚C):



Environmental Test:

Item No.	Test Item	Test Condition
1	Pre-and-Post stress electrical test	-40°C, 25°C and 85°C
4	Temperature cycling	-40 and 85°C, 1000 cycles
6	Moisture resistance	Cycled 25°C to 65°C, 80-100% RH, 24 hrs./cycle. 10 cycles
7	Biased humidity	1000 hrs., 85°C, 85% RH, biased
8	Operational life	1000 hrs., 85℃ with rated power on and off repeatedly
9	External visual	Per individual specification sheets
10	Physical dimension	Per individual specification sheets
12	Resistance to solvents	MIL STD 202 and aqueous wash chemical
13	Mechanical shock	1/2 sine shock pulse, 1500g peak
14	Vibration	5g, 20 mins, 36 cycles, 10-2K Hz
15	Resistance to solder heat	MIL STD 202, 215°C for 3 heating cycles
16	Thermal shock	-40 to 85°C, 300 cycles
17	ESD	Air discharge mode 25KV
18	Solderability	J-STD-002B 215, 235 and 260 'C
19	Electrical characterization	Per spec
20	Flammability	UL-94 V0
21	Board flex	2 mm deflection min
22	Terminal strength (SMD)	1.8Kg, 60 sec
31	Short circuit fault current durability	30V 80A, power on and off for 25 cycles
32	Fault current durability	30V 1.2A, power on and off for 350 cycles
33	End-of-life mode verification	30V 1.2A, power on and off for 1750 cycles
34	Jump start endurance	26V (fixed), power on and off for 3cycles
35	Load dump endurance	Per ISO-7637-2 pulse 5a, Vs=87V, Ri = 4 ohm, Td = 400 ms, 10 pulse

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 0805 Size

Ordering Code:

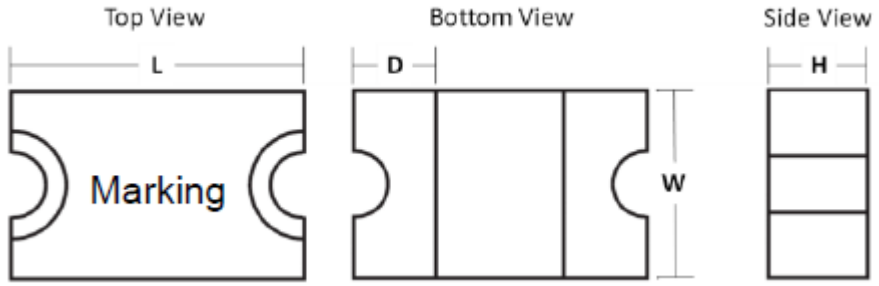
PAT 0805—010 KF
(1) (2) (3) (4)

(1) Series code
(2) Size code
(3) Current rating code 010: 0.1A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT0805-005KF ~ PAT0805-016KF	2.00 (0.097)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.40 （0.016）	0.80 （0.031）	0.25 （0.010）
PAT0805-020KF ~ PAT0805-050KF	2.00 (0.097)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.60 （0.024）	1.20 （0.047）	0.25 （0.010）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT0805-005KF	0.05	0.25	16	40	0.50	1.50	0.9	1.50	50.0
PAT0805-010KF	0.10	0.50	16	40	2.50	1.50	0.9	1.00	7.50
PAT0805-016KF	0.16	0.80	16	40	8.00	0.10	0.9	0.70	6.00
PAT0805-020KF	0.20	1.00	16	40	8.00	0.10	0.9	0.50	5.00
PAT0805-035KF	0.35	1.75	16	40	8.00	0.10	0.9	0.25	3.00
PAT0805-050KF	0.50	2.00	12	40	8.00	0.10	1.0	0.12	1.60

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 0805 Size

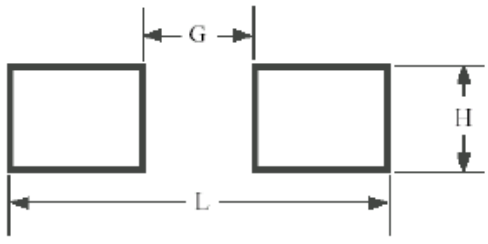
Packaging and Marking Information:

Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT0805-005KF	C	3,000
PAT0805-010KF	D	
PAT0805-016KF	I	
PAT0805-020KF	K	
PAT0805-035KF	H	
PAT0805-050KF	L	

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT0805-005KF	0.07	0.07	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.01
PAT0805-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT0805-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT0805-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT0805-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT0805-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	1.2±0.1	1.5±0.1	3.2±0.1

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1206 Size

Ordering Code:

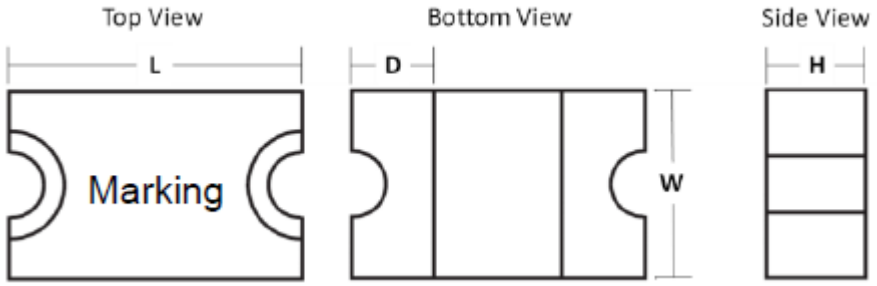
PAT 1206—016 KF
(1) (2) (3) (4)

(1) Series code
(2) Size code
(3) Current rating code 016: 0.16A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT1206-010KF~ PAT1206-035KF	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 （0.016）	0.85 （0.033）	0.25 （0.010）
PAT1206-050KF PAT1206-075KF	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.60 （0.024）	1.20 （0.047）	0.25 （0.010）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT1206-010KF	0.10	0.50	30	20	2.50	1.50	0.9	1.00	7.50
PAT1206-016KF	0.16	0.80	30	20	8.00	0.10	0.9	0.70	6.00
PAT1206-020KF	0.20	1.00	30	20	8.00	0.10	0.9	0.60	5.00
PAT1206-035KF	0.35	1.75	30	20	8.00	0.10	0.9	0.40	2.60
PAT1206-050KF	0.50	2.50	16	20	8.00	0.10	0.9	0.17	1.60
PAT1206-075KF	0.75	3.00	12	40	8.00	5.00	1.2	0.08	0.70

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1206 Size

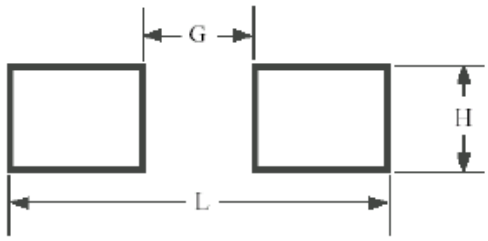
Packaging and Marking Information:

Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT1206-010KF	B	3,000
PAT1206-016KF	D	
PAT1206-020KF	N	
PAT1206-035KF	F	
PAT1206-050KF	H	
PAT1206-075KF	L	

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT1206-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT1206-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT1206-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT1206-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT1206-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14
PAT1206-075KF	1.09	0.98	0.87	0.75	0.66	0.61	0.56	0.50	0.42	0.20

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	2.0±0.1	1.6±0.1	4.0±0.1

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1210 Size

Ordering Code:

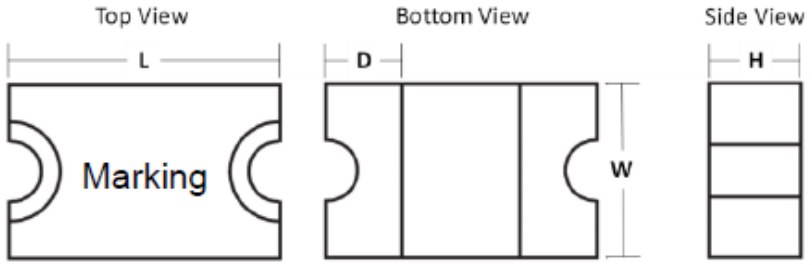
PAT	1210—016	KF
(1)	(2) (3)	(4)

(1) Series code
(2) Size code
(3) Current rating code 016: 0.16A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT1210-010KF~ PAT1210-050KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.40 （0.016）	0.85 （0.033）	0.30 （0.012）
PAT1210-075KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.60 （0.024）	1.20 （0.047）	0.30 （0.012）
PAT1210-110KF~ PAT1210-150KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.80 (0.031)	1.60 (0.063)	0.30 （0.012）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT1210-010KF	0.10	0.50	30	20	2.50	1.50	1.0	1.00	7.50
PAT1210-016KF	0.16	0.80	30	20	8.00	0.10	1.0	0.70	6.00
PAT1210-020KF	0.20	1.00	30	20	8.00	0.10	1.0	0.60	5.00
PAT1210-035KF	0.35	1.75	30	20	8.00	0.10	1.0	0.40	2.20
PAT1210-050KF	0.50	2.50	30	20	8.00	0.10	1.0	0.30	1.60
PAT1210-075KF	0.75	3.75	16	20	8.00	5.00	1.0	0.10	1.00
PAT1210-110KF	1.10	5.50	16	20	8.00	5.00	1.0	0.06	0.50
PAT1210-125KF	1.25	3.75	12	40	8.00	5.00	1.5	0.03	0.30
PAT1210-150KF	1.50	4.50	12	40	8.00	5.00	1.5	0.025	0.25

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1210 Size

Packaging and Marking Information:

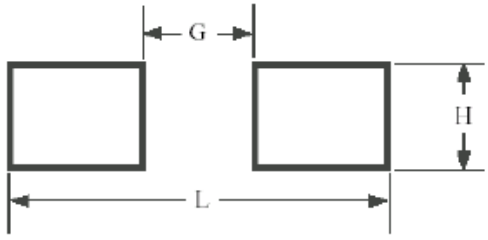
Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT1210-010KF	B w	3,000
PAT1210-016KF	D w	
PAT1210-020KF	E w	
PAT1210-035KF	F w	
PAT1210-050KF	K w	
PAT1210-075KF	L w	
PAT1210-110KF	N w	2,000
PAT1210-125KF	P w	
PAT1210-150KF	S w	

* B w →B = 0.10A; w = Week code (w=Y →week 49~50)

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT1210-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT1210-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT1210-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT1210-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT1210-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14
PAT1210-075KF	1.09	0.98	0.87	0.75	0.66	0.61	0.56	0.50	0.42	0.20
PAT1210-110KF	1.60	1.44	1.26	1.10	0.97	0.89	0.81	0.74	0.62	0.30
PAT1210-125KF	1.81	1.64	1.45	1.25	1.10	1.01	0.93	0.84	0.70	0.34
PAT1210-150KF	2.18	1.97	1.74	1.50	1.32	1.22	1.11	1.01	0.84	0.41

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	1.8±0.1	2.8±0.1	3.8±0.1

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