Revision of August 2017

SolidMatrix® Surface Mount Fuses

Product Identification:

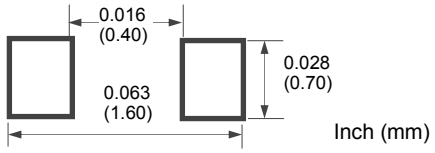
F 0603 FA 1000 V032 T M
(1) (2) (3) (4) (5) (6) (7)

(1) Product Code: F—Chip Fuse
(2) Size Code: Standard EIA Chip Sizes
(3) Series Code: FA - Fast Acting, SB - Slow Blow,
HI - High Inrush, FF - Very Fast Acting, HB - High Current
(4) Current Rating Code: 1000 - 1000 mA (For HB, 10 - 10A)
(5) Voltage Rating Code: V032 - 32 VDC
(6) Package Code: T - Tape & Reel, B - Bulk
(7) Marking Code: M - With Marking

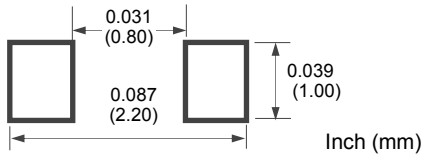
F 1206 HC 20A0 T M
(1) (2) (3) (4) (5) (6)

(1) Product Code: F—Chip Fuse
(2) Size Code: L x W (inch),
the first two digits-L (length),
the last two digits-W (width)
(3) Series Code: HC Series
(4) Current Rating Code: 20A0—20.0A
(5) Package Code: T - Tape & Reel, B - Bulk
(6) Marking Code: M - With Marking

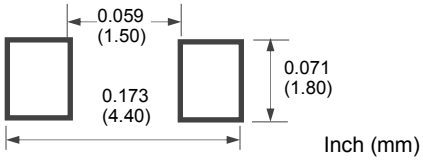
Recommended Land Pattern:



0402 Size



0603 Size



1206 Size

Environmental Tests:

No.	Test	Requirement	Test condition	Test reference
1	Soldering heat resistance	DCR change ≤ ±10% No mechanical damage	One dip at 260°C for 60 seconds	MIL-STD-202 Method 210
2	Solderability	Minimum 95% coverage	One dip at 245°C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change ≤ ±10% No mechanical damage	100 cycles between -65°C and +125°C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change ≤ ±15% No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change ≤ ±10% No excessive corrosion	48 hour exposure	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change ≤ ±10% No mechanical damage	0.4 ” D.A. or 30 G between 5 – 3000 Hz	MIL-STD-202 Method 204
7	Mechanical shock	DCR change ≤ ±10% No mechanical damage	1500 G, 0.5 ms, half-sine shocks	MIL-STD-202 Method 213
8	Life	No electrical “opens” during testing voltage drop change shall be less than ±20% of initial value	80% rated current (75% for < 1 A fuses) for 2000 hours at ambient temperature between +20°C and +30°C	Refer to AEM QIQ106

SolidMatrix® Surface Mount Fuses

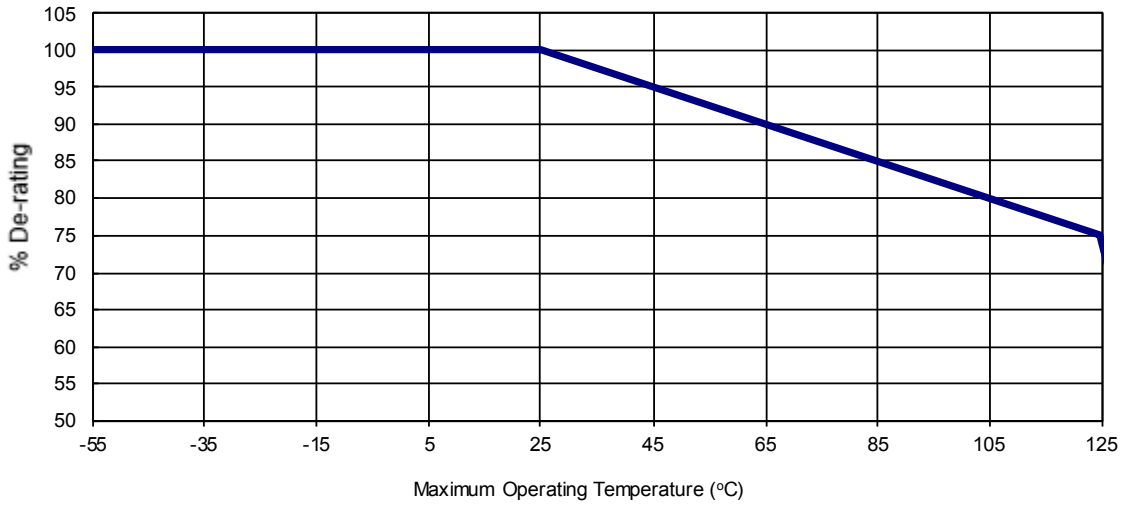
Electrical Specification:

Clearing Time Characteristics:
Same as specified on the Short Form Data Sheet
Insulation Resistance after Opening:
20,000 ohms typical when cleared with rated voltage applied. Fuse clearing under low voltage conditions may result in lower after clearing insulation resistance values. (Note: Under normal fault conditions (low or rated voltage conditions), AEM SolidMatrix fuses provide sufficient after clearing insulation resistance values for circuit protection.)
Current Carrying Capacity:
100% rated current at +25°C ambient for 4 hours minimum when evaluated per MIL-PRF-23419
Interrupt Ratings:
Same as specified in this catalog.

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.

Temperature Effect on Current Rating



Packaging:

Chip Size	Parts on 7 inch (178 mm) Reel
0402 (1005)	10,000
0603 (1608)	4,000
0603FF (1608)	6,000
1206 (3216)	3,000

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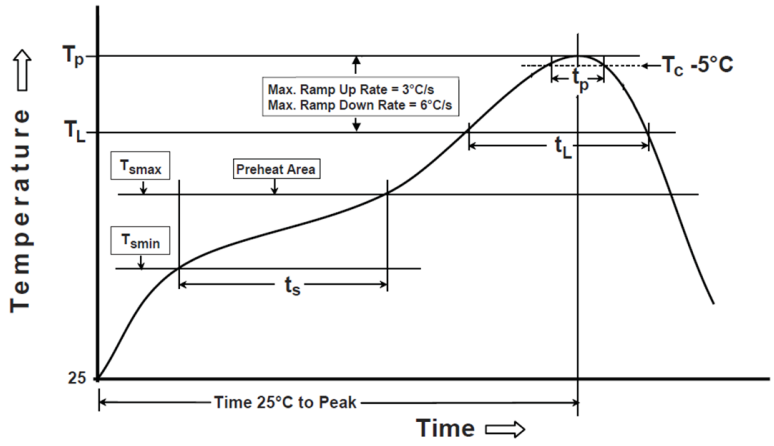
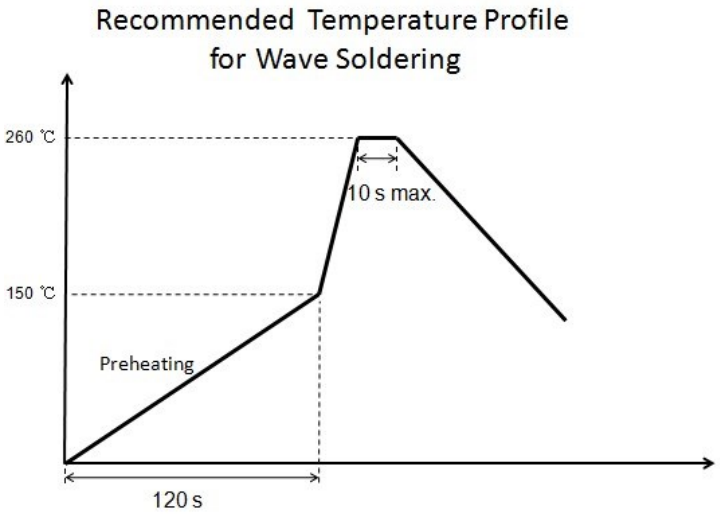
Soldering Temperature Profile:

* 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.

Disclaimer:

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SolidMatrix® Surface Mount Fuses

HC Series (High Current), 1206 Size

Features:

- High inrush current withstanding capability at high voltage
- Glass ceramic monolithic structure
- Sliver fusing element and silver termination with nickel and tin plating
- Superior arc suppression capability
- RoHS compliant and lead free materials
- Operating temperature range: -55°C to 125°C (with de-rating)

Clearing Time Characteristics:

% of current rating	Clearing time at 25°C
100%	4 hours min.
350%	5 seconds max.

Agency Approval:

Recognized Under the Components Program of UL.
File Number: E232989.

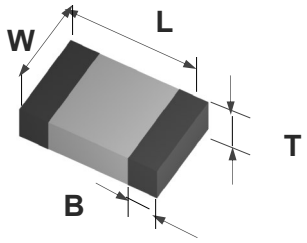
Patents:

Patent numbers “US6,034,589”, “US6,602,766”, “US6,844,278”, “ZL00134544.3”, “ZL02114719.1”, “ZL201020551360.8”, “ZL201010299185.2”, “ZL201220030614.0”, “ZL201210020693.1”.

Shape and Dimensions:

Unit	Inch	mm
L	0.126 ± 0.008	3.20 ± 0.20
W	0.063 ± 0.008	1.60 ± 0.20
T1	0.038 ± 0.008	0.97 ± 0.20
T2	0.051 ± 0.008	1.30 ± 0.20
B	0.020 ± 0.010	0.51 ± 0.25

T1: Thickness for 10-25A;
T2: Thickness for 30-40A.



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]
F1206HC10A0TM	10	35	150A@35VDC	0.0055	15	Q
F1206HC12A0TM	12	35		0.0045	20	X
F1206HC15A0TM	15	35		0.0032	35	Y
F1206HC20A0TM	20	35		0.0023	80	Z
F1206HC25A0TM	25	35	200A@35VDC	0.0016	120	S
F1206HC30A0TM	30	35	200A@35VDC 300A@26VDC	0.0012	180	V
F1206HC40A0TM	40	35		0.0009	240	O

1. Measured at ≤ 10% rated current and 25°C ambient.
2. Melting I^2t at 1000% of current rating.
3. Blue Marking Character Code. Devices designed to be mounted with marking code facing up.

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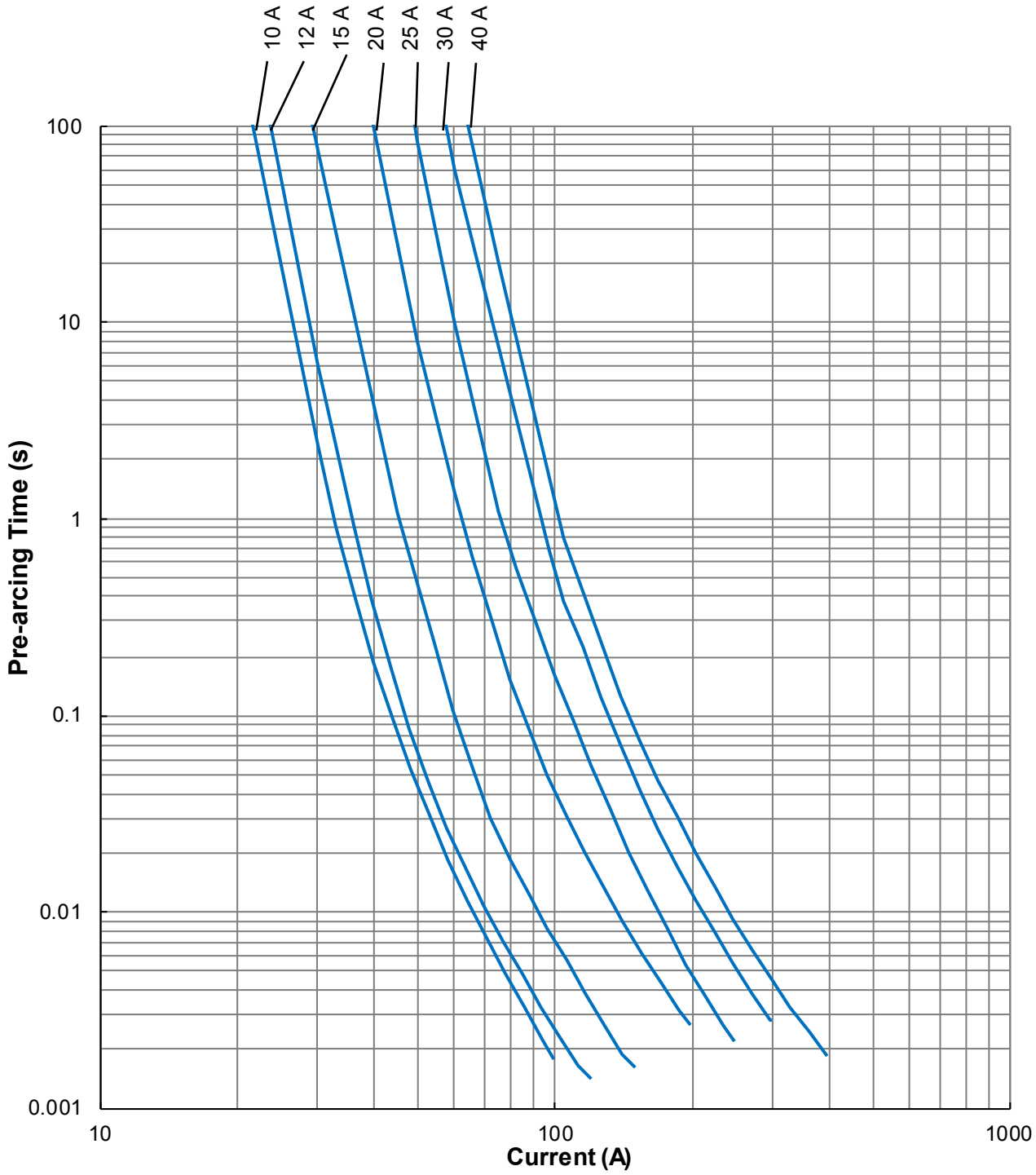
Average Pre-arcing Time Curves:



SolidMatrix® Surface Mount Fuses

HC Series (High Current), 1206 Size

Average I^2t vs. t Curves: