Thin Film Surface Mount Fuses

FF Series, 0603 Size

Features:

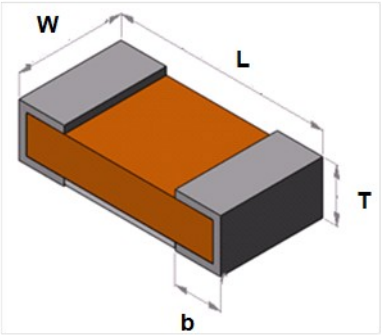
- Very fast acting at 200% overload current levels
- Low DCR
- High inrush current withstanding capability
- Fiberglass enforced epoxy fuse body
- Copper termination with nickel and tin plating
- Halogen free, RoHS compliance and lead-free

Applications:

- Notebook computers and tablets
- Digital cameras
- Memory cards
- Toys
- Bluetooth earphones
- Portable electronic devices

Shape and Dimensions:

Unit	Inch	mm
Length (L)	0.063 ± 0.004	1.60 ± 0.10
Width (W)	0.032 ± 0.004	0.81 ± 0.10
Thickness (T)	0.012 ± 0.004	0.30 ± 0.10
Termination bandwidth (b)	0.014 ± 0.004	0.36 ± 0.10



Clearing Time Characteristics:

% of Current Rating	Opening Time at 25°C
100%	4 hours min.
200%	5 seconds max.
300%	0.2 second max.

Agency Approval:

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

Product Identification:

T 0603 FF 1000 T M
(1) (2) (3) (4) (5) (6)

(1) Product code
(2) Size code: Standard EIA chip sizes
(3) Series code:
FF: FF series
(4) Current rating code:
0500: 0.5A
1000: 1.0A
(5) Package code:
T: Tape & Reel
(6) Marking code:
M: With mark (option)

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Typical Ratings and Characteristics:

Operating temperature: -55 to +90°C

Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Rating	Nominal Cold DCR (Ω)[1]	Nominal I^2t (A^2s)[2]	Marking
T0603FF0150TM	0.150	65	50A@35V DC/AC 13A@65V DC	2.200	0.0006	·
T0603FF0200TM	0.200	65		1.300	0.0014	··
T0603FF0250TM	0.250	65		1.100	0.0016	:
T0603FF0375TM	0.375	65		0.480	0.0040	···
T0603FF0500TM	0.50	65		0.185	0.0120	I
T0603FF0750TM	0.75	65		0.112	0.0210	—
T0603FF1000TM	1.00	65		0.069	0.0420	+
T0603FF1250TM	1.25	65	35A@35V DC/AC 13A@65V DC	0.048	0.0520	×
T0603FF1500TM	1.50	65		0.037	0.0710	II
T0603FF1750TM	1.75	35	35A@35V DC/AC 50A@24V DC/AC	0.031	0.1000	=
T0603FF2000TM	2.00	35		0.0260	0.1400	≠
T0603FF2500TM	2.50	35		0.0210	0.2400	H
T0603FF3000TM	3.00	35		0.0176	0.3300	III
T0603FF3500TM	3.50	35		0.0148	0.4900	ǂ
T0603FF4000TM	4.00	35		0.0125	0.6300	□
T0603FF5000TM	5.00	35		0.0095	1.1000	O

[1] Measured at ≤ 10% of rated current and 25˚C ambient .
[2] Melting I^2t at 0.001 sec.

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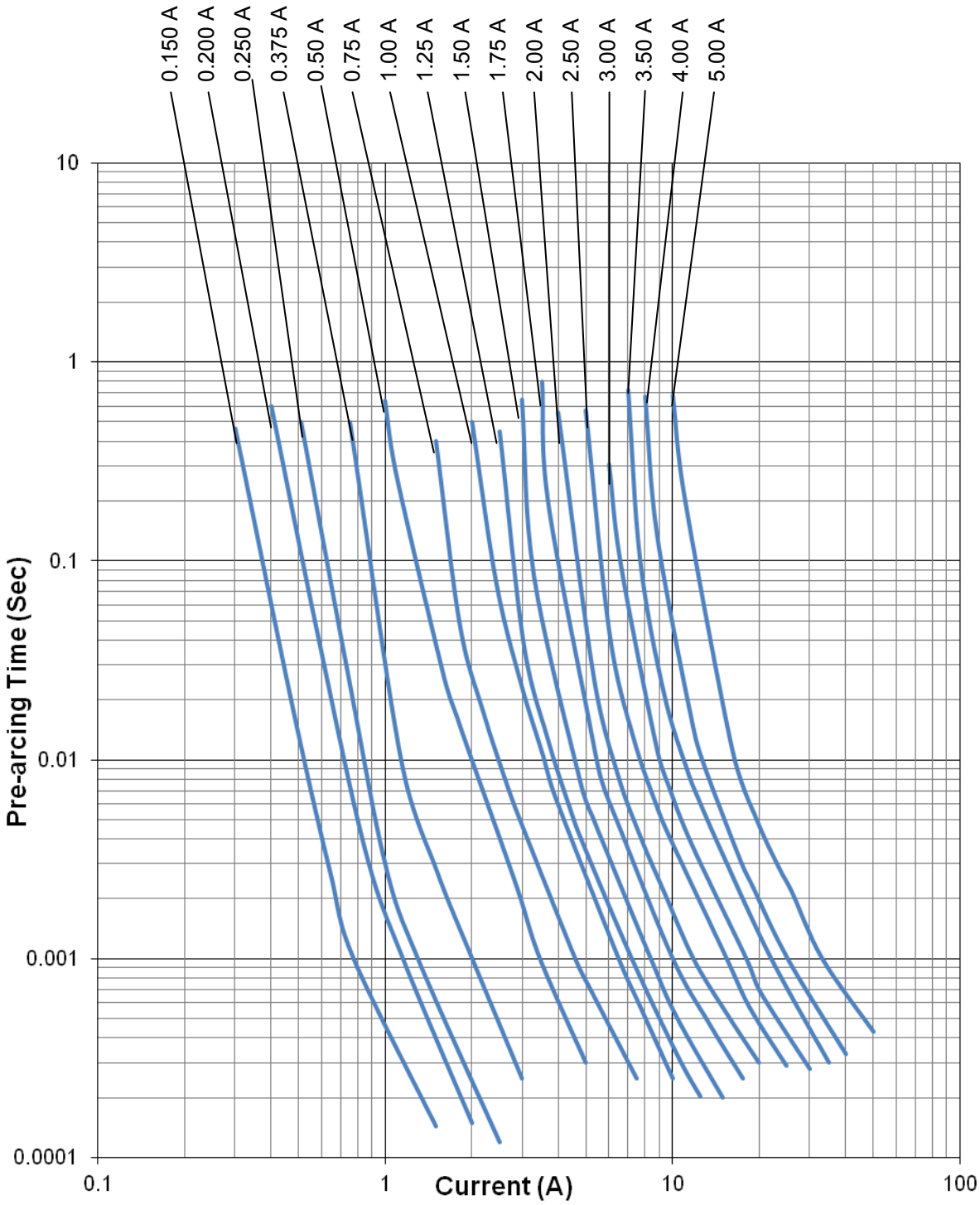
Average Pre-arcing Time Curves:



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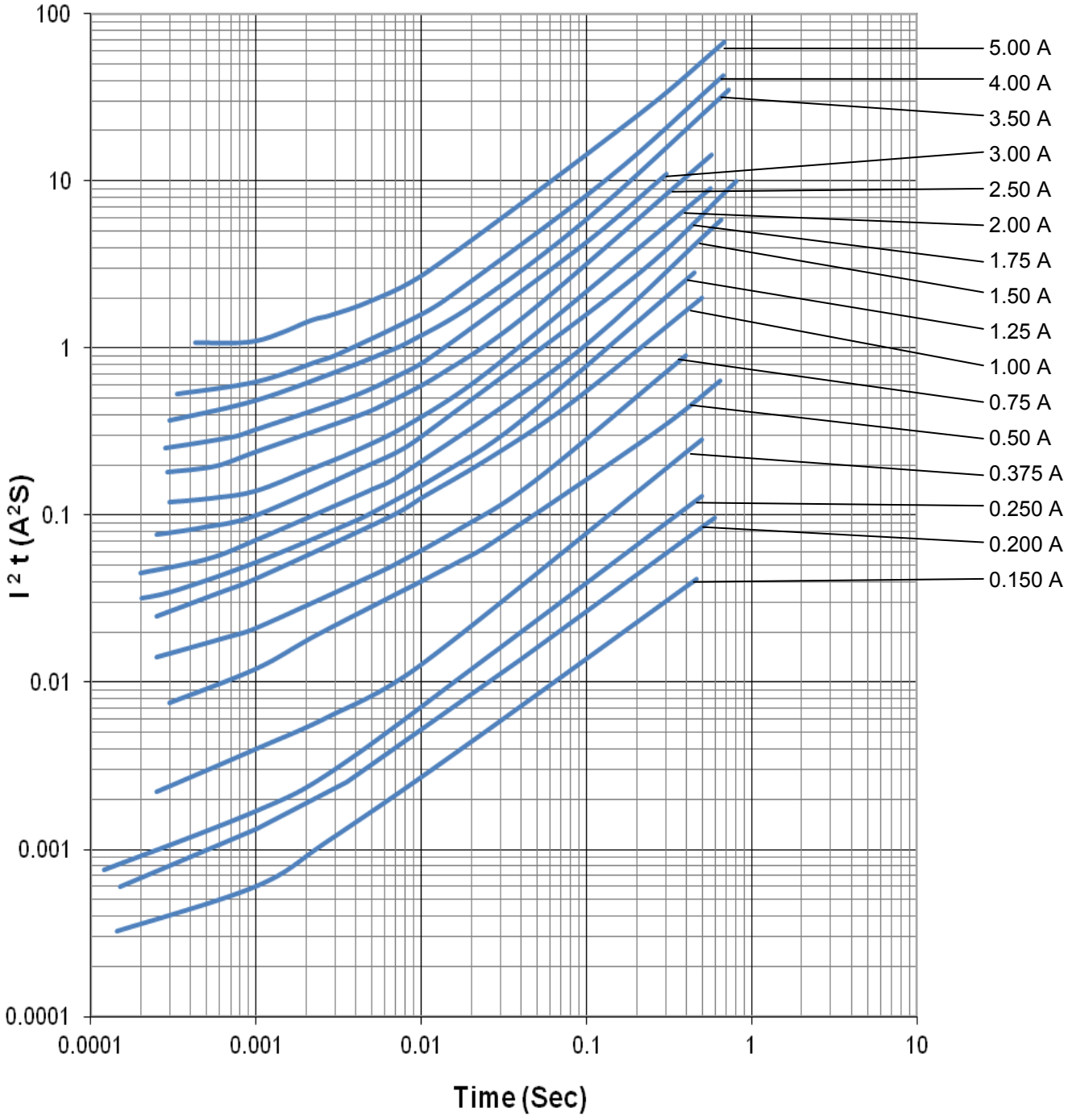
Average I^2t vs. t Curves:



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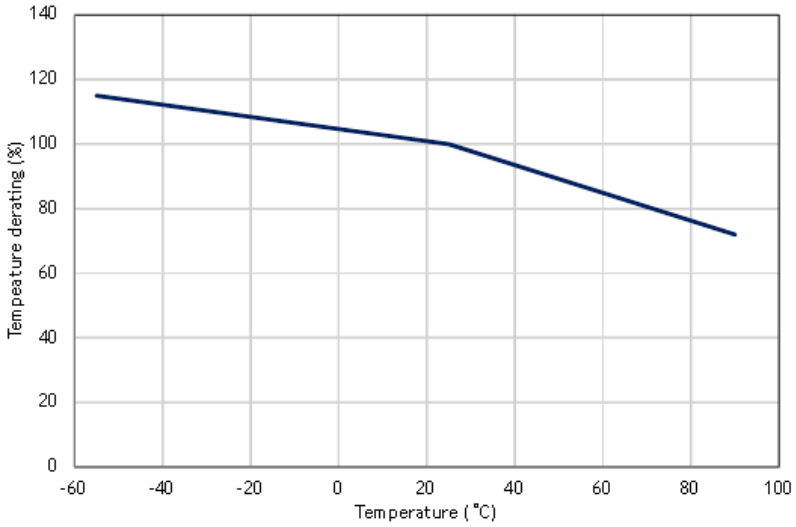
Temperature Effect on Current Rating:



Environmental Tests:

No.	Test item	Requirement	Test condition	Reference
1	Bending	≤1A: 10% DCR change max. >1A: 20% DCR change max.	2mm	Refer to AEM QIQ034
2	Solderability	95% coverage min.	One dip at 255°C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change within ±10% No mechanical damage	100 cycles between -55°C and +125°C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change within ±10% No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change within ≤ ±10% No excessive corrosion	5% salt solution, 48 hour exposure	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change within ≤ ±10% No mechanical damage	0.4” D.A. or 30G between 5 and 3000 Hz	MIL-STD-202 Method 204
7	Mechanical shock	DCR change within ≤ ±10% No mechanical damage	1500G, 0.5 ms, half sine shocks	MIL-STD-202 Method 213
8	Life	Change of voltage drop within ±10%, no open circuit	75% rated current, 2000 hours, ambient temperature +20°C to 30°C	Refer to AEM QIQ106

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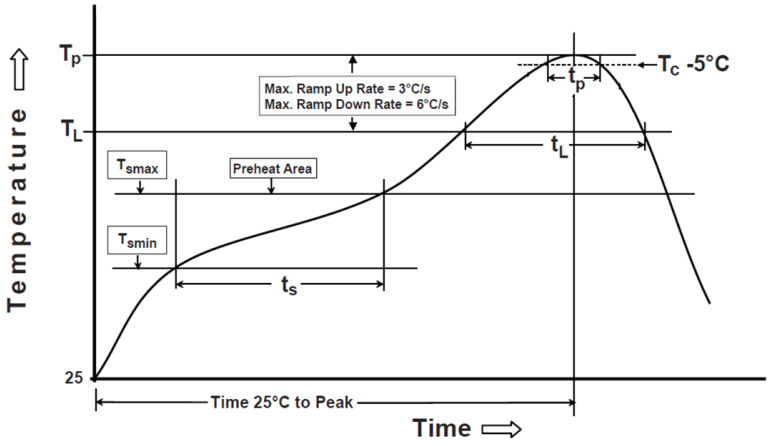
Packaging:

Chip Size	Parts on 7 inch (178mm) Reel
0603(1608)	8,000

Recommended Reflow Soldering Profile:

Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max(T_{smax}) Time(t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60~120 seconds
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature(T_L) Time(t_L) maintained above T_L	217°C 60~150 seconds
Peak package body temperature (T_p)	260°C
Time (t_p)*within 5°C of the specified classification temperature (T_c)	30 seconds *
Ramp-down rate (T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum	



Thermal Shock When Making Correction with a Soldering Iron:

- The temperature of solder iron tip should be controlled under 350°C and soldering time should be less than 3 sec.
- The soldering iron tip should not directly touch the top side termination of the component.

Fig 3 Correct handling method of soldering iron