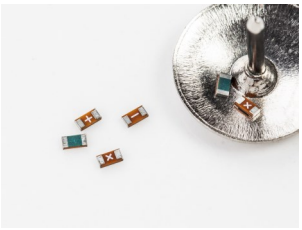
Revision of April 2022

TF-FUSE® Thin Film Surface Mount Fuses

FF Series (Very Fast Acting), 0603 Size



Features:

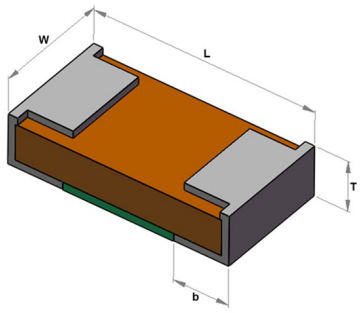
- Very fast acting at 200% overload current levels
- Low DCR
- High inrush current withstanding capability
- Fiberglass enforced epoxy fuse body
- Copper termination with nickel and tin plating
- Halogen free, RoHS compliance and lead-free

Clearing Time Characteristics:

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

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



Applications:

- Panel
- Note book
- Toy
- HDD
- Finger Print
- Smart lock
- Battery Pack
- IoT

Agency Approval:

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

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	0.15	65	50A@35Vdc/ac 13A@65Vdc	2.2	0.0006	·
T0603FF0200TM	0.2	65		1.3	0.0014	··
T0603FF0250TM	0.25	65		1.1	0.0016	⁚
T0603FF0375TM	0.375	65		0.48	0.004	···
T0603FF0500TM	0.5	65		0.185	0.012	I
T0603FF0750TM	0.75	65		0.112	0.021	—
T0603FF1000TM	1	65		0.069	0.042	+
T0603FF1250TM	1.25	65	35A@35V dc/ac 13A@65Vdc	0.048	0.052	×
T0603FF1500TM	1.5	65		0.037	0.071	II
T0603FF1750TM	1.75	35	35A@35Vdc/ac 50A@24Vdc/ac	0.031	0.1	=
T0603FF2000TM	2	35		0.026	0.14	⫧
T0603FF2500TM	2.5	35		0.021	0.24	H
T0603FF3000TM	3	35		0.0176	0.33	III
T0603FF3500TM	3.5	35		0.0148	0.49	HH
T0603FF4000TM	4	35		0.0125	0.63	□
T0603FF5000TM	5	35		0.0095	1.1	O

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

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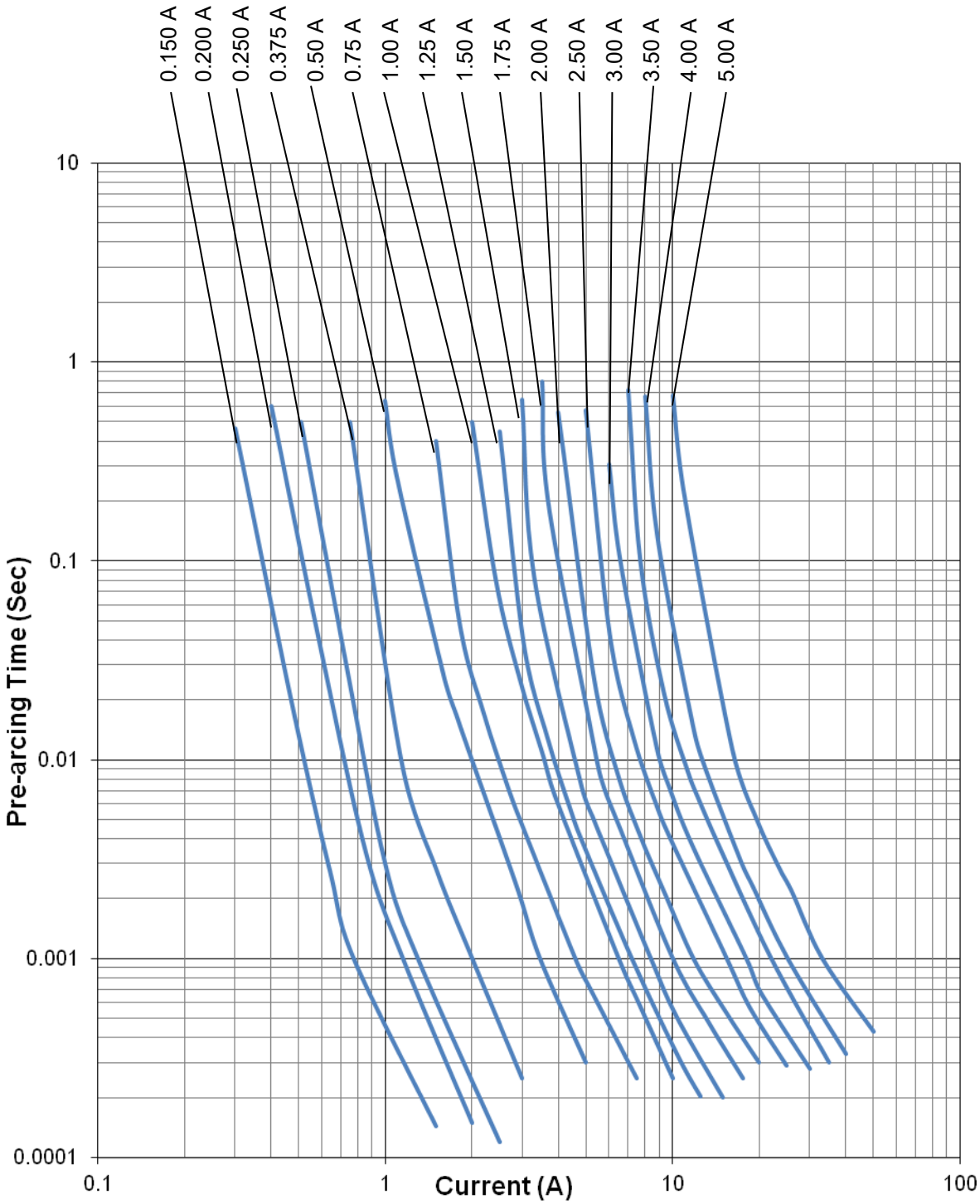
Average Pre-arcing Time Curves:



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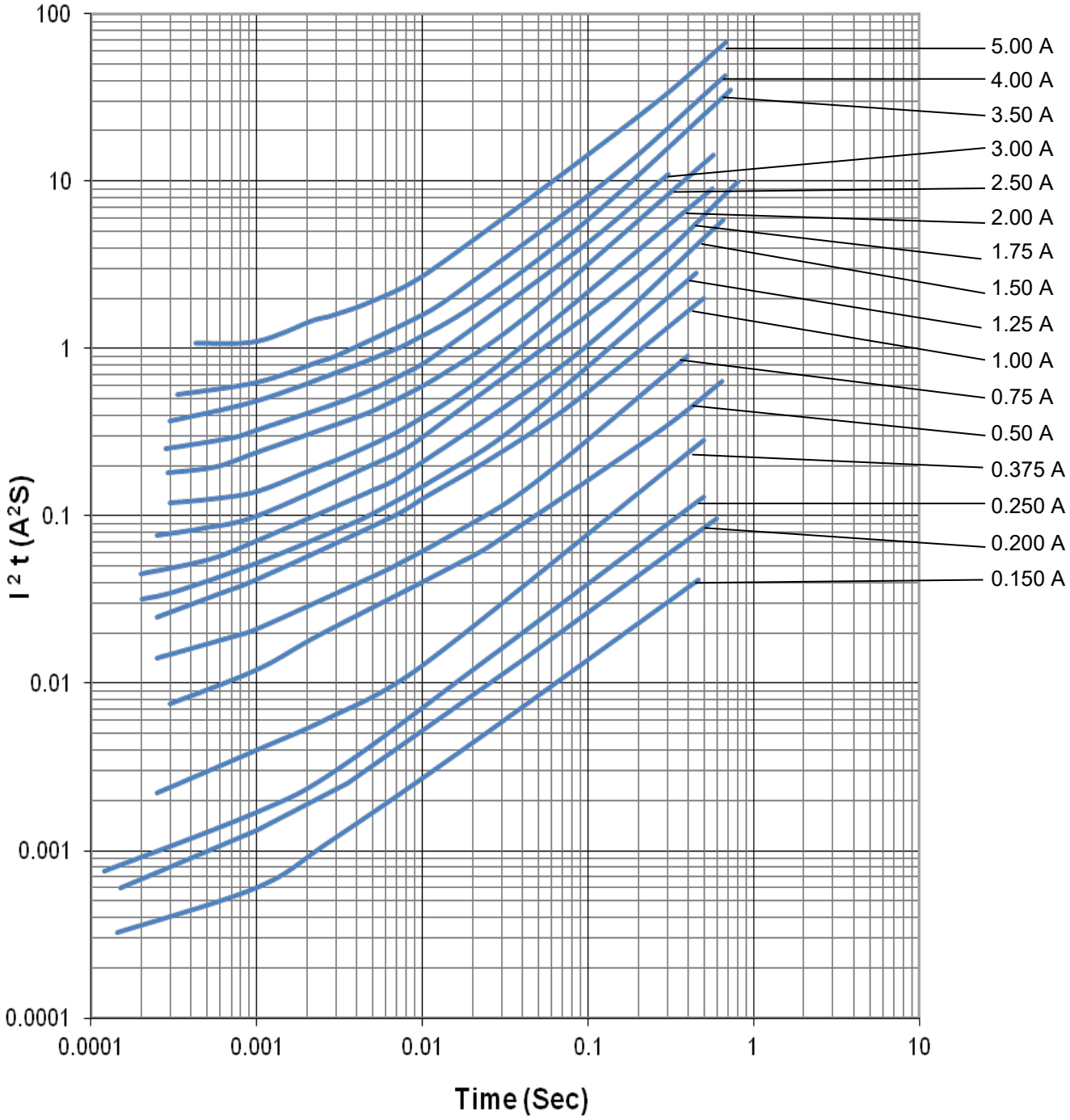
Average I^2t vs. t Curves:



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TF-FUSE® Thin Film Surface Mount Fuses

Product Identification:

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

(1) Product Code: T-Thin Film
(2) Size Code: Standard EIA chip sizes
(3) Series Code: FF—Very Fast Acting, HI—High Inrush
(4) Current Rating Code: 0500—0.5A, 1000—1.0A
(5) Package Code: T—Tape & Reel; B—Bulk
(6) Marking Code: M—With mark (optional)

Environmental Tests:

No.	Test item	Test Condition and Requirement	Reference
1	Bend	2 mm bend, DCR change within ±20%. (±10% for ≤1A), no mechanical damage	IEC60068-2-21
2	Solderability	245°C, 5 seconds, new solder coverage ≥95%	MIL-STD-202 Method 208
3	Thermal shock	DCR change ≤ ±10%. No mechanical damage. 100 cycles between -55°C and +125°C	MIL-STD-202 Method 107
4	Moisture resistance	10 cycles, DCR change within ±10%, no excessive corrosion	MIL-STD-202 Method 106
5	Salt spray	DCR change ≤ ±10%. No excessive corrosion. 5% salt solution, 48 hour exposure	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change ≤ ±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 ≤ ±10%. No mechanical damage. 1500G, 0.5 ms, half sine shocks	MIL-STD-202 Method 213
8	Life	75% rated current, 2000 hours at ambient temperature from +20°C to 30 °C, no open circuit, voltage drop change within ±10%	Refer to AEM QIQ106

Moisture Sensitivity Level 1

Packaging:

Chip Size	Parts on 7 inch (178mm) Reel
0603 (1608)	8,000
0402 (1005)	20,000

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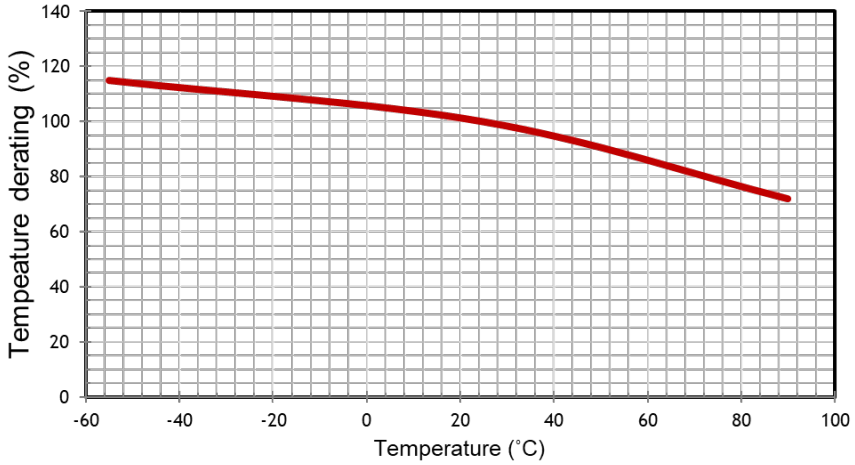
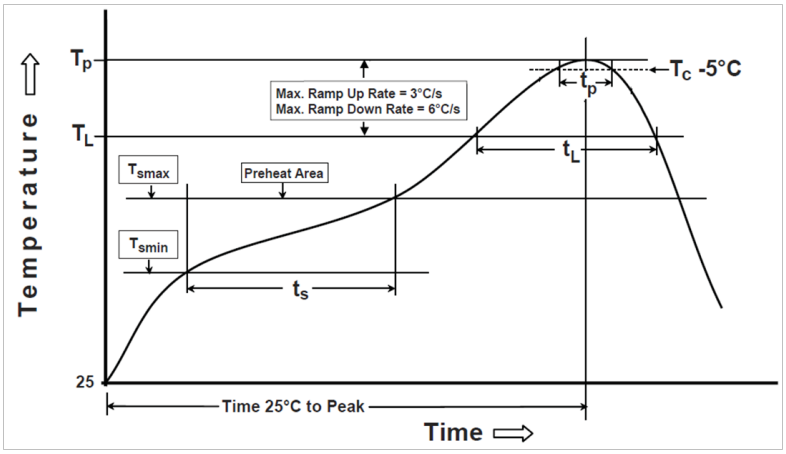
Temperature Effect on Current Rating:



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.

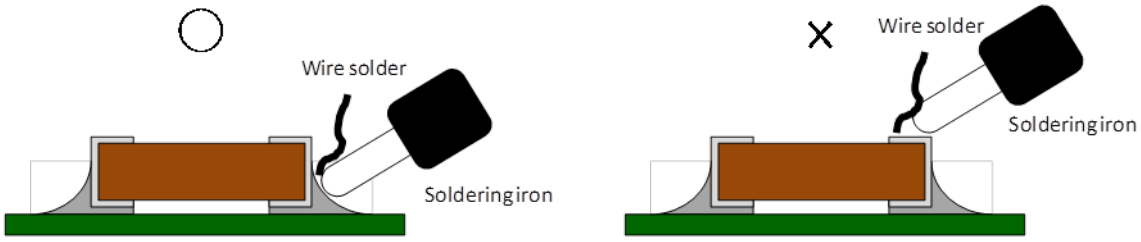


Fig 3 Correct handling method of soldering iron

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