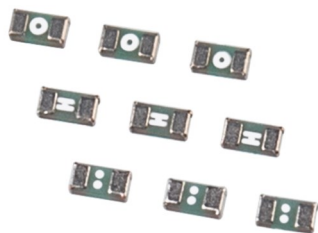


## TF-FUSE<sup>®</sup> Thin Film Surface Mount Fuses

### T0402FF Series (Very Fast Acting, 0402 Size)



#### Features:

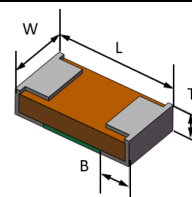
- Very fast acting
- Low DCR and low profile
- High inrush current withstanding capability
- Fiberglass enforced epoxy fuse body
- Copper termination with nickel and tin plating

#### Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100% (0.200A - 5.00A)	4 hours	-
200% (0.375A - 5.00A)	-	5 seconds
300% (0.200A - 0.25A)	-	5 seconds
300% (0.375A - 5.00A)	-	0.2 seconds

#### Shape and Dimensions:

Unit	Inch	mm
L	0.039 ± 0.004	1.00 ± 0.10
W	0.020 ± 0.004	0.51 ± 0.10
T	0.013 ± 0.004	0.33 ± 0.10
B	0.012 ± 0.004	0.30 ± 0.10



#### Applications:

- Panel
- Note book
- Toy
- HDD
- Finger print
- Smart lock
- Battery pack
- IoT

#### Ordering Information:

Part Number	Current Rating (A)	Voltage Rating (V DC)	Interrupting Rating	Nominal Cold DCR ( $\Omega$ ) <sup>1</sup>	Nominal $I^2t$ ( $A^2s$ ) <sup>2</sup>	Marking <sup>3</sup>
T0402FF0200TM	0.200	35	35A@35V DC	0.60	0.0017	⋯
T0402FF0250TM	0.250	35		:		
T0402FF0375TM	0.375	35		⋯		
T0402FF0500TM	0.50	35				
T0402FF0750TM	0.75	35		-		
T0402FF1000TM	1.00	35		+		
T0402FF1250TM	1.25	35		x		
T0402FF1500TM	1.50	35				
T0402FF1750TM	1.75	35		=		
T0402FF2000TM	2.00	35		≡		
T0402FF2500TM	2.50	35		H		
T0402FF3000TM	3.00	35		III		
T0402FF3500TM	3.50	35		HH		
T0402FF4000TM	4.00	35		□		
T0402FF5000TM	5.00	35		○		

1. Measured at ≤10% rated current and 25 °C ambient.

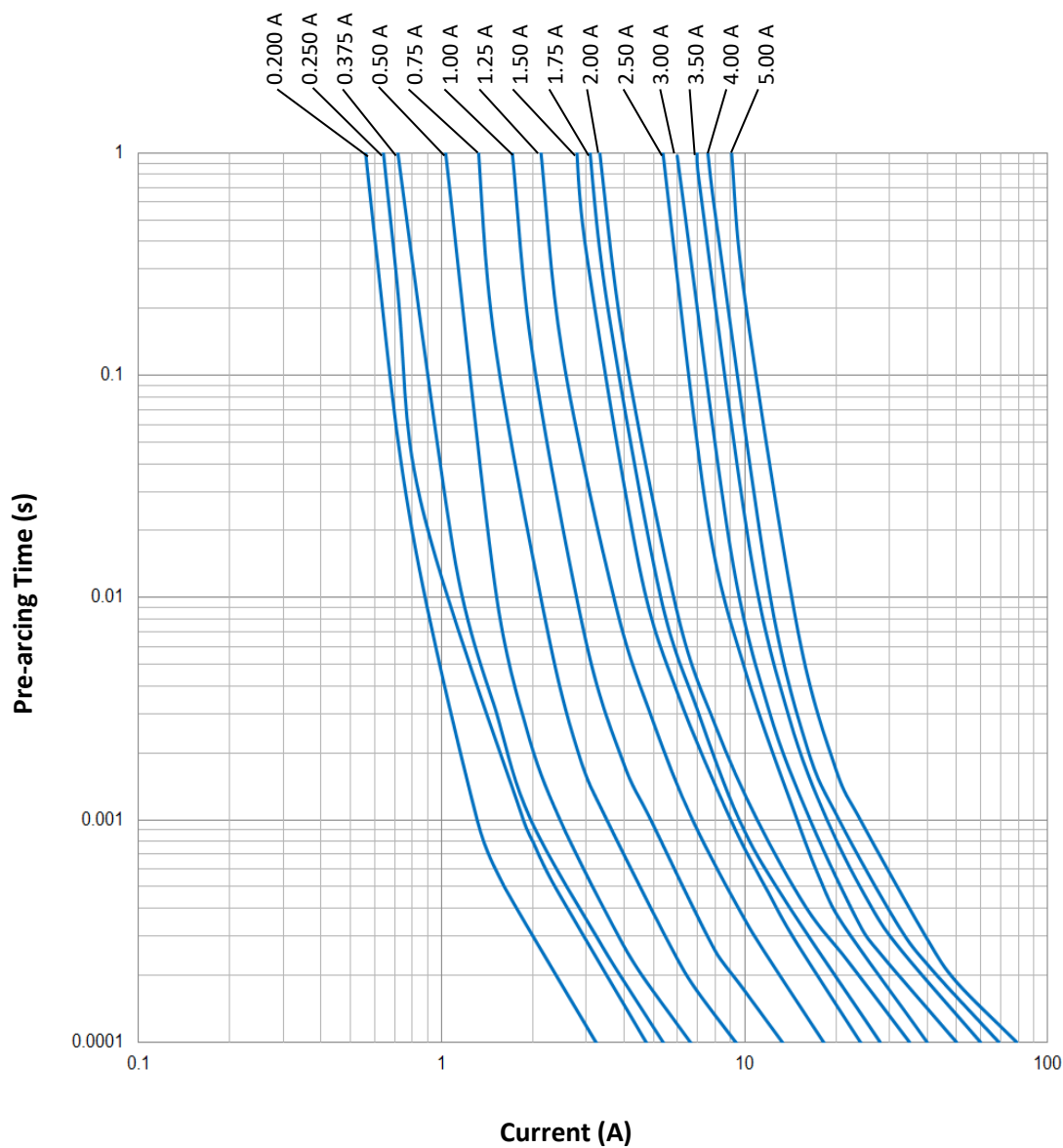
2. Melting  $I^2t$  at 0.001 second of current rating.

3. White marking character code.

## TF-FUSE<sup>®</sup> Thin Film Surface Mount Fuses

T0402FF Series (Very Fast Acting, 0402 Size)

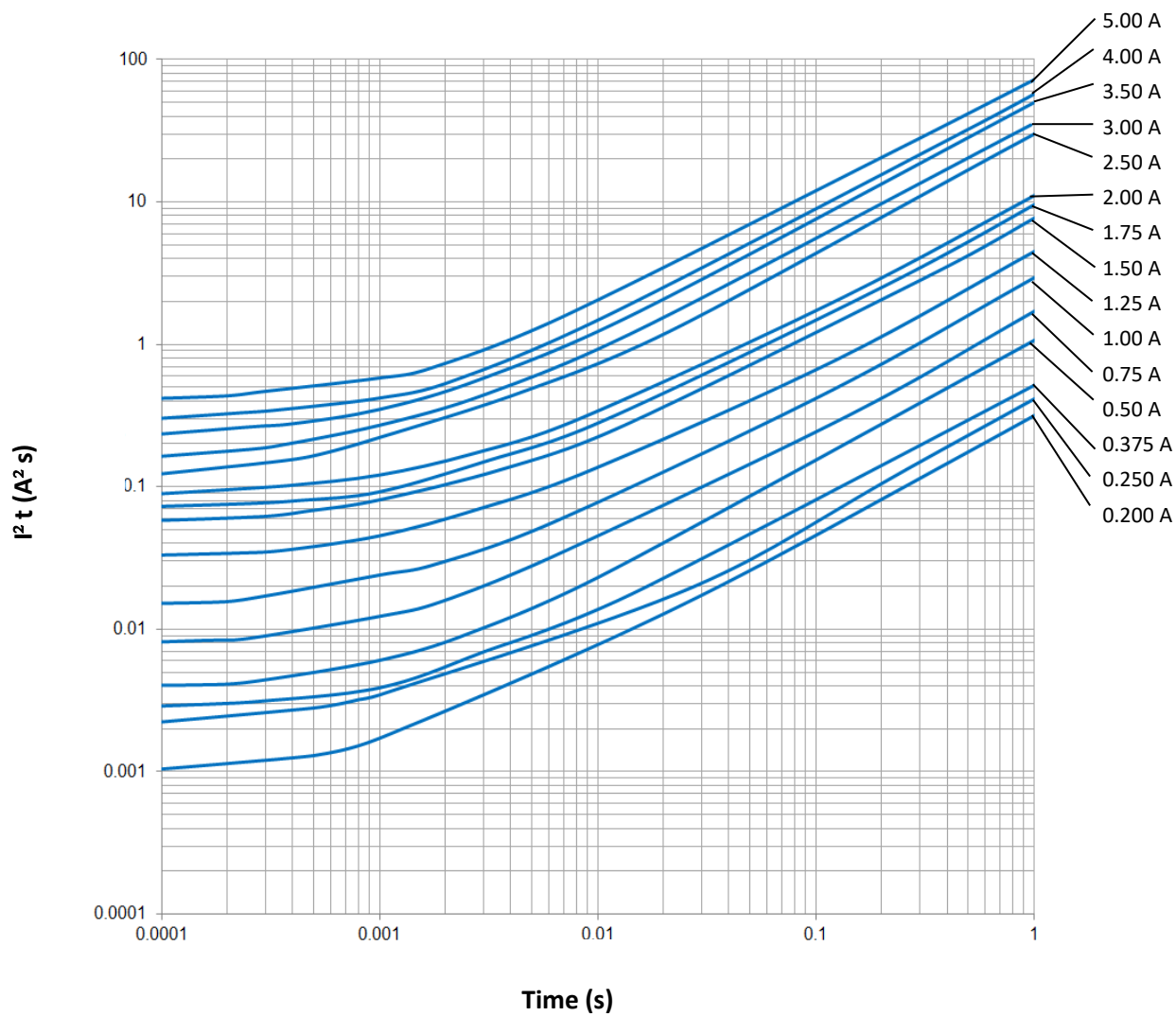
### Average Pre-arcing Time Curves:



**TF-FUSE<sup>®</sup> Thin Film Surface Mount Fuses**

**T0402FF Series (Very Fast Acting, 0402 Size)**

**Average  $I^2t$  vs. t Curves:**

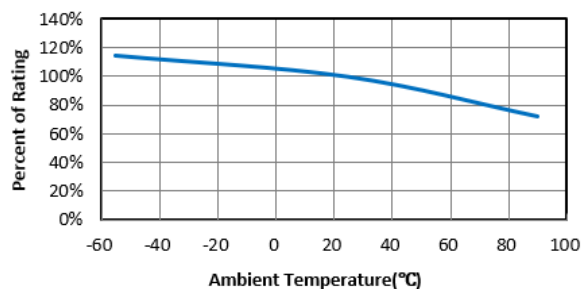


## TF-FUSE<sup>®</sup> Thin Film Surface Mount Fuses

### T0402FF Series (Very Fast Acting, 0402 Size)

#### Temperature De-rating:

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” according to the de-rating curve.



#### Operating Temperature Range:

- 55°C ~+90°C (with de-rating)

#### Product Identification:

**T 0402 FF 0200 T M**

(1) (2) (3) (4) (5)(6)

- Series Code:** Thin Film Surface Mount Fuses
- Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- Characteristic Code:** FF - Very Fast Acting
- Current Rating Code:** 0200 - 0.20A
- Package Code:** T - Tape & Reel, B - Bulk
- Marking Code:** M—With marking

#### Agency Approval:

- Recognized Under the Components Program of Underwriters Laboratories.
- Certification #: UL-E232989

#### Reliability Tests:

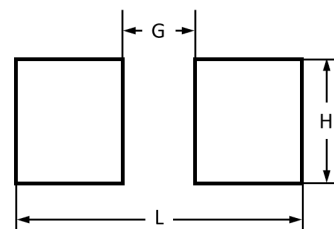
No.	Item	Condition	Criteria
1	Bend	2 mm bend	DCR change within ±20% ( ±10% for ≤1A), no mechanical damage
2	Solderability	245°C, 5 seconds	New solder coverage ≥95%
3	Life	75% rated current, 2000 hours, ambient temperature +20°C to +30°C	No open circuit, voltage drop change within ±10%
4	Thermal Shock	-55°C to +125°C, 100 cycles	DCR change within ±10%, no mechanical damage
5	Mechanical Vibration	5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak	DCR change within ±10%, no mechanical damage
6	Mechanical Shock	1500 G, 0.5 milliseconds, half-sine shocks	DCR change within ±10%, no mechanical damage
7	Salt Spray	5% salt solution, 48 hours exposure	DCR change within ±10%, no excessive corrosion
8	Moisture Resistance	10 cycles	DCR change within ±10%, no excessive corrosion

## TF-FUSE<sup>®</sup> Thin Film Surface Mount Fuses

### T0402FF Series (Very Fast Acting, 0402 Size)

#### Recommended Land Pattern:

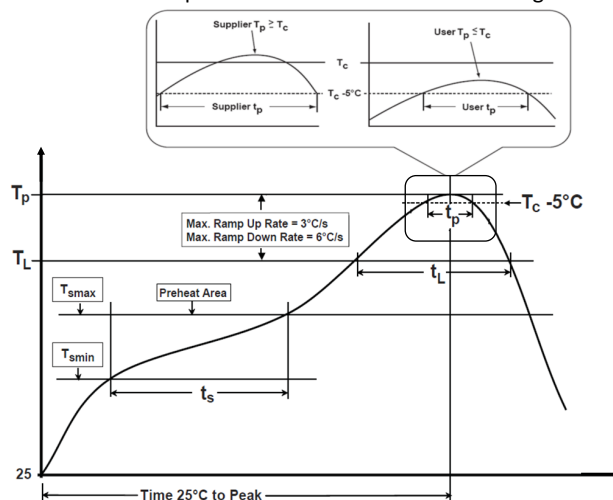
Chip Size	0402	Unit
L	0.063 (1.6)	Inch (mm)
G	0.016 (0.4)	Inch (mm)
H	0.028 (0.7)	Inch (mm)



#### Recommended Temperature Profile:

Profile Feature	Pb-Free Assembly
<b>Preheat/Soak</b>	
Temperature Min ( $T_{smin}$ )	150°C
Temperature Max ( $T_{smax}$ )	200°C
Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	60~120 seconds
Ramp-up rate ( $T_L$ to $T_p$ )	3°C/second max.
Liquidous temperature ( $T_L$ )	217°C
Time ( $t_L$ ) maintained above $T_L$	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 Reflow Soldering



#### Recommended conditions for hand soldering:

1. Appropriate temperature (max.) of soldering iron tip/soldering time (max.): 280°C / 10 s or 350°C / 3 s
2. Using hot air rework station with tip that can melt the solder on both terminations at the same time is strongly recommended. Do not directly contact the chip termination with the tip of soldering iron.

#### Storage:

1. The maximum ambient temperature shall not exceed 35°C . Storage temperatures higher than 35°C could result in the deformation of packaging materials.
2. The maximum relative humidity recommended for storage is 75%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components.
3. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.
4. MSL=1

#### Packaging:

Chip Size	Parts on 13 inch (330 mm) Reel
0402	20,000

## Disclaimer

*Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.*



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