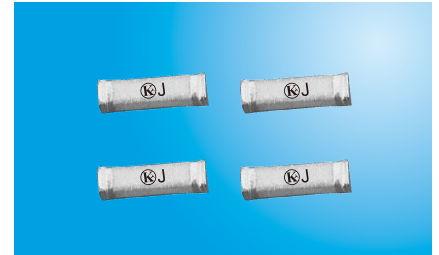


## Telecom Circuit Fuse TCF Series

### Description

- ▶ Designed to protect Consumer Premises Equipment from harmful overcurrents.
- ▶ Allows compliance with telecom regulatory standards including UL 1950/60950, and FCC part 68. Application circuit testing is recommended.
- ▶ Eliminates the need for a current limiting resistor




### Features

- ▶ Surface mount surge resistant Slo-Blo® fuse
- ▶ Meet UL 60950 3rd Edition power cross requirements standard alone
- ▶ Designed to allow compliance with Telcordia GR-1089-CORE and TIA-968-A (formerly FCC Part 68) Surge Specifications
- ▶ Provide coordinated protection with Littelfuse SIDACTor® Transient Voltage Suppressor (TVS) or a Greentube™ Gas Plasma Arrestor, without series resistors
- ▶ Designed to serve the requirements of a wide range of telecommunication and networking equipment
- ▶ 2A rating has improved temperature rise performance under 2.2A surge current testing when compared with 1.25A rating
- ▶ Product is Halogen Free and RoHS compliant and compatible with lead-free solder and higher temperature profiles when ordered with Standard Silver Plated Brass Caps
- ▶ Standard product is RoHS Compliant and compatible with lead-free solders and higher temperature profiles

## Telecom Circuit Fuse TCF Series

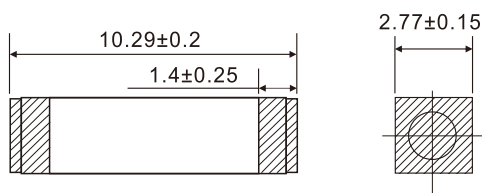
### Approvals

Safety Agency	Amp Range/Volt@I.R ability
	500mA-2A 250VAC@50A 500mA-2A 600VAC@60A

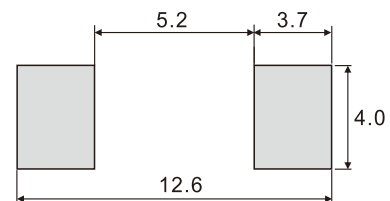
### Applications




- ▶ T1/E1/J1 and HDSL2/4
- ▶ SLIC interface portion of Fiber to the Curb (FTTC) and Fiber to the Premises (FTTP)
- ▶ Non-Fiber SLIC interface for Central Office (CO) locations and Remote Terminals (RT)
- ▶ xDSL applications such as ADSL, ADSL2+, VDSL, and VDSL2+
- ▶ Ethernet 10/100/1000BaseT
- ▶ POTS applications such as modems, answering machines, telephones, fax machines, and security systems
- ▶ ISDN “U” interface
- ▶ Baystation T1/E1/J1, T3 (DS3) trunk cards

### Dimensions(mm)



### Recommended Pad Layout(mm)



Catalog Number	Ampere Rated In	Marking	Voltage Rating(V)	Normal Resistance Cold(Ohm)	Normal Melting I <sup>2</sup> T(A <sup>2</sup> sec)
TCF500mA	500mA	 F	AC250V/AC600V	0.5300	1.30
TCF1.25A	1.25A	 J	AC250V/AC600V	0.0900	22.2
TCF2A	2A	 N	AC250V/AC600V	0.0750	30.0

## Telecom Circuit Fuse TCF Series

### Electrical Characteristics

Electrical Characteristics		
Ampere Rating	% of Amp Rating	Opening Time
500mA-2A	100%	4 Hours Minimum
	250%	1 Sec Min:120 Sec Max
	300%*	10 Seconds Maximum

- ▶ \*if the fuse does not open at 250% within 120 seconds, increase current to 300% In, fuse must open in 10 seconds max.

### TIA-968-A(foumerlyFCC Part 68) Surge Waveforms(Fuse cannot open)

Surge	Voltage	Waveforms	Current	Reps	Fuse Choices
Metallic A	800V	10x560μs	100A	2	0.5/1.25A
Longitudinal A	1500V	10x160μs	200A	2	1.25/2A
Metallic B	800V	9x720us/5x320μs	25A	2	1.25/2A
Longitudinal B	1500V	9x720us/5x320μs	37.5A	2	0.5/1.25A

### Bellcore GR-1089-CORE Surge Waveforms(Fuse cannot open)

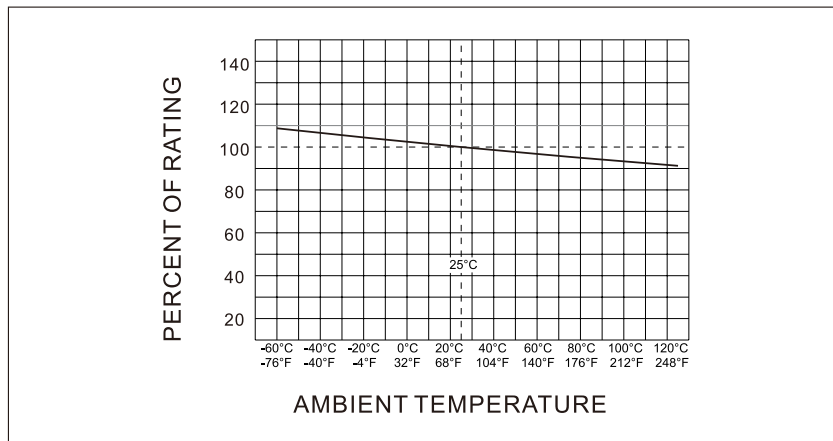
Surge	Voltage	Waveforms	Current	Reps	Fuse Choices
First Level Linhtning	1000V	10x1000μs	100A	50	1.25/2A
Second Level Linhtning	2500V	2x10μs	500A	50	1.25/2A

### ITU K.20 Surge Waveforms(Fuse cannot open)

Surge	Voltage	Waveforms	Current	Reps	Fuse Choices
A series	1500V	10x700us/5x310us	37.5A	10	1.25A

**Telecom Circuit Fuse TCF Series**

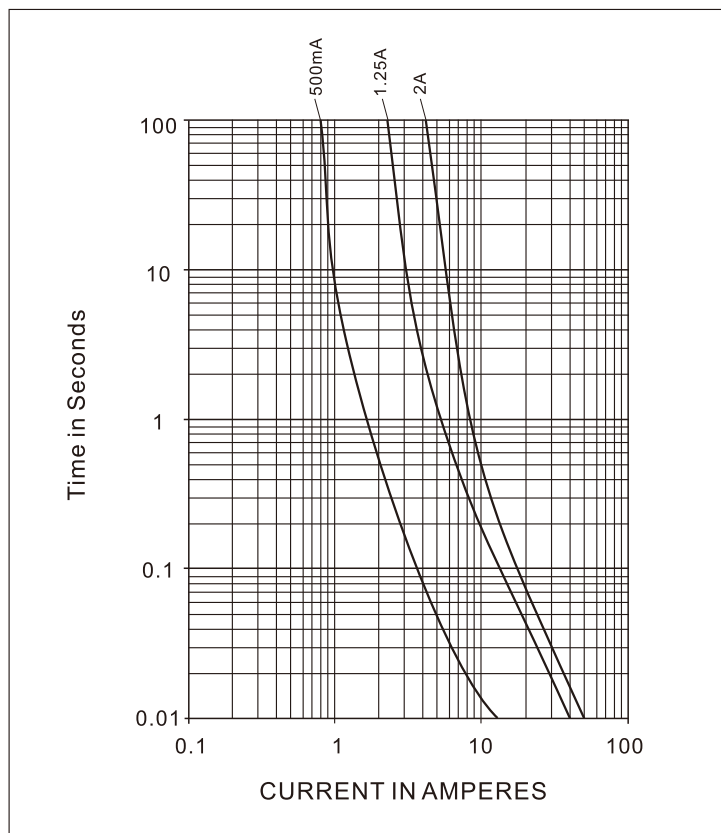
**Temperature Derating Curve**



**Note:**

- ▶ Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

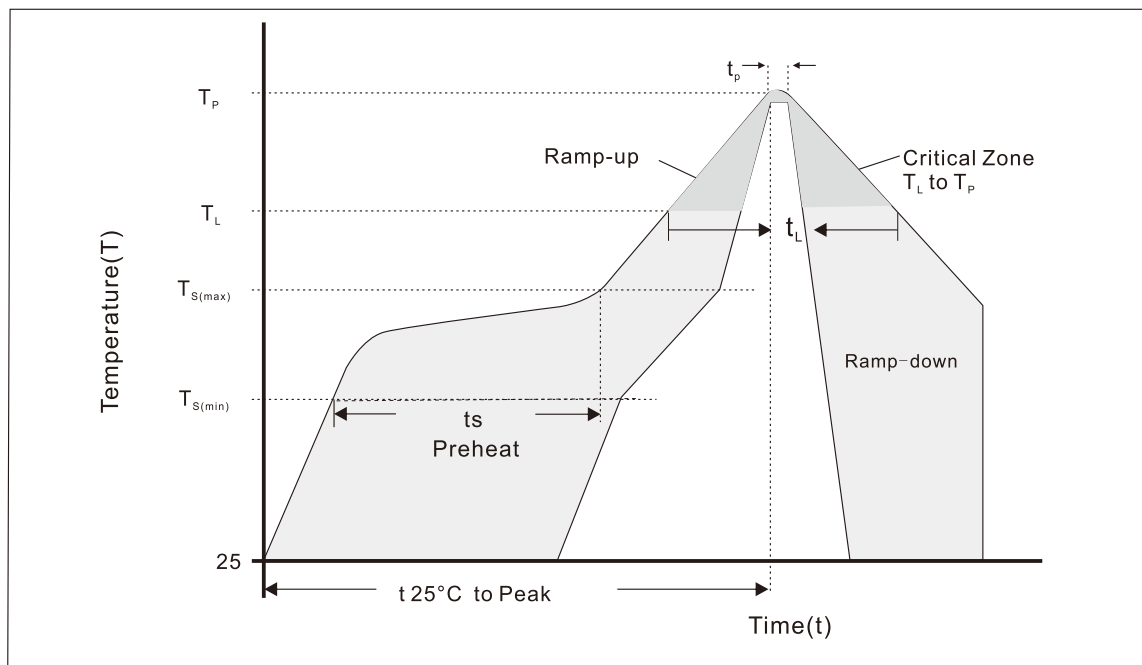
**Time-Current Characteristics**



## Telecom Circuit Fuse TCF Series

### Soldering Parameters

Reflow Condition		Pb- Free assembly
Heat Pre	Temperature Min( $T_s$ )	150°C
	Temperature Max( $T_s$ )	200°C
	Time (Min to Max)( $t_s$ )	60 -120 secs
Average ramp up rate (Liquidus)Temp ( $T_L$ ) to peak		5°C/second max
$T_s$ (max) to $T_L$ -Ramp-up Rate		5°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	Time (Min to Max) ( $t_L$ )	60 – 90 seconds
Peak Temperature ( $T_p$ )		250 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20-40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260°C



## Telecom Circuit Fuse TCF Series

### Operation Temperature

- ▶ -40°C to 125°C

### Physical Specification Materials

- ▶ Ceramic Body/Metallization of ceramic body
- ▶ Fuse Element:copper or copper Alloy
- ▶ End plate:copper
- ▶ High temperature solder preform  
End termination overcoat on both ends  
(Nickel Flash, Tin/Lead Overcoat)

### Packaging

- ▶ On Tape:TCF-2500pcs Per Reel
- ▶ TCF-15000pcs outer box