

The FT600 fuse series is designed to assist telecommunications equipment manufacturers in complying with North American overcurrent protection requirements, including Telcordia GR-1089, TIA-968-A (formerly FCC Part 68), and UL60950 3rd edition.

The low profile and small footprint of the FT600 fuse provide a reliable, non-resettable overcurrent protection solution. The device offers low temperature-rise performance under sneak current fault events to prevent damage to circuit traces or multilayer boards. When used in conjunction with SiBar™ thyristor devices, it provides designers with a complete overcurrent/overvoltage protection solution to help them comply with regulatory standards.

This fuse offering complements the telecom resettable PolySwitch device series for use in applications where intervention is desired after an overcurrent fault.



## Benefits

- High density placement in multi-port system designs
- Improved temperature rise performance over other similar SMT fuse devices under sneak-current testing
- The FT600 in conjunction with a SiBar overvoltage protection device, assists designers in meeting regulatory standards with no additional series components

## Features

- Low profile and small footprint
- The lightning robust surface-mount fuse offers overcurrent protection in case of power fault events
- Enables the design of equipment complying with applicable telecom specifications including UL60950, TIA-968-A (formerly FCC Part 68), and Telcordia GR-1089
- Low resistance

## Applications

- ADSL, ADSL2, ADSL2plus, SHDSL, VDSL linecards and modems
- T1/E1 systems
- Twisted-pair telecom ports requiring Telcordia GR-1089, UL60950 and FCC Part TIA-968-A (formerly FCC Part 68) compliance

## Protection Application Guide for Telecommunications and Networking Devices

To use this guide, follow the steps below:

1. Select your equipment type from the guide below.
2. Use the Key Device Selection Criteria (time-to-open, surface temperature) to determine best suitability for your application.
3. Use Agency Specification / Selection Guide on the next page to select a specific part number for each application based on the agency requirements.

Application	Specification	Key Device Selection Criteria		
		Faster Time-To-Open	Cooler Surface Temperature	SiBar Thyristor Surge Protectors*
<b>Customer premises equipment, IT equipment</b> Analog modems, V.90 modems, ISDN modems, xDSL modems, ADSL splitters, phone sets, fax machines, answering machines, caller ID, internet appliances, PBX systems, POS terminals, wall plugs	UL 60950	FT600-0500	FT600-2000	TVBxxxSC-L
	TIA-968-A	FT600-1250		
<b>Access network equipment</b> Remote terminals, line repeaters, multiplexers, cross-connects, WAN equipment	Telcordia GR-1089 TIA-968-A	FT600-1250	FT600-2000	TVBxxxSC-L
<b>Central office switching equipment</b> Analog/POTS linecards, ISDN linecards, xDSL modems, ADSL/VDSL splitters, T1/E1 linecards, multiplexers, CSU/DSU, servers	Telcordia GR-1089 TIA-968-A	FT600-1250	FT600-2000	TVBxxxSC-L

**Notes:** This list is not exhaustive. Raychem Circuit Protection welcomes our customers' input for additional application ideas for overcurrent protection of telecom applications.  
\* For more information on Raychem Circuit Protection SiBar thyristor surge protectors.

## Agency Specification/Selection Guide for FT600 Devices

Use the guide below to select FT600 devices appropriate for use in your application. The following pages contain specifications for part numbers recommended below. FT600 devices enable telecommunication equipment to meet the applicable protection requirements of these industry specifications. Refer to individual agency specifications for test procedures and circuit schematics. Users should independently evaluate the suitability of, and test each product for their application.

Family	Product	Lightning	Power Cross
FT600	FT600-0500	TIA-968-A (formerly FCC Part 68) - Type A & B	UL60950, 3rd Ed. - 600VAC, 40A
	FT600-1250	Telcordia GR-1089 - Level 1 and 2	Telcordia GR-1089 - 600 VAC, 40A
	FT600-2000	TIA-968-A	UL60950

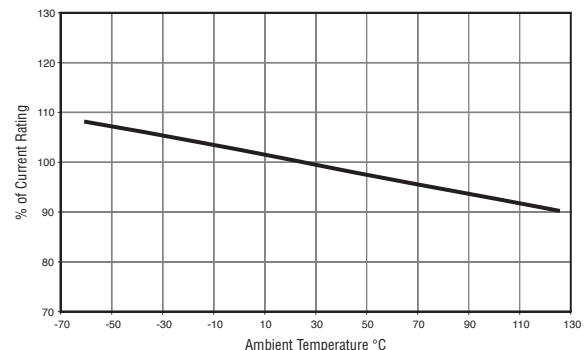
Note: FT600-1250 and FT600-2000 are designed to assist equipment in complying with Telcordia GR-1089 specifications. In-circuit testing is strongly recommended.  
The FT600-0500, FT600-1250 and FT600-2000 are designed to meet the UL60950 Power Cross and FCC TIA-968-A 68 lightning surge requirements. Note that Type A tests allow for an overcurrent protection component to fuse open during the surge.

## Interrupt Voltage and Current Ratings for FT600 Devices

Part Number	Ampere Rating (A)	Voltage Rating (V)	Typical Resistance ( $\Omega$ )	Typical $I^2t$ (A <sup>2</sup> S)*
FT600-0500	0.50	250	0.5	1
FT600-1250	1.25	250	0.1	16
FT600-2000	2.00	250	0.05	18

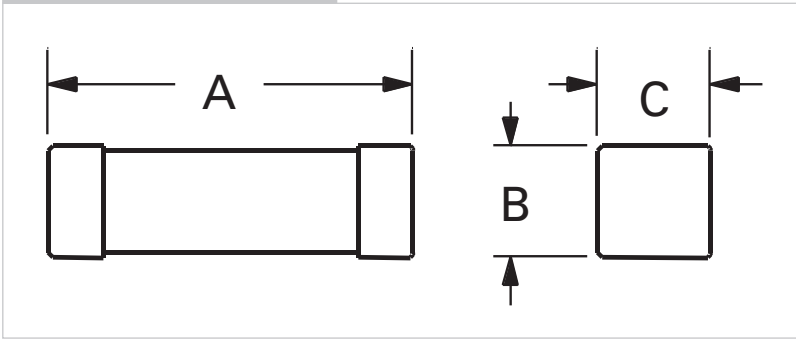
The FT600-xxxx devices are designed to carry 100% of rated current for 4 hours minimum and 250% of rated current for 1 second minimum, 120 seconds maximum.  
Resistance measured at 10% of rated current.  
\*I<sup>2</sup>t is calculated at 10 ms or less.

## Figure FT1 - Thermal Derating Curve (Normalized) for FT600 Devices



## Figure FT2 - Dimension Figures for FT600 Devices

Figure FT2 - Product Dimensions



### Table FT1 - Dimensions for FT600 Devices in Millimeters (Inches)

Part Number	Dimension A		Dimension B		Dimension C		Figure
	Min.	Max.	Min.	Max.	Min.	Max.	
FT600-0500	—	10.5 (0.413)	—	3.4 (0.133)	—	3.4 (0.133)	FT2
FT600-1250	—	10.5 (0.413)	—	3.4 (0.133)	—	3.4 (0.133)	FT2
FT600-2000	—	10.5 (0.413)	—	3.4 (0.133)	—	3.4 (0.133)	FT2

### Figure FT3 - Typical Time-to-open Characteristics (at 20°C) for FT600 Devices

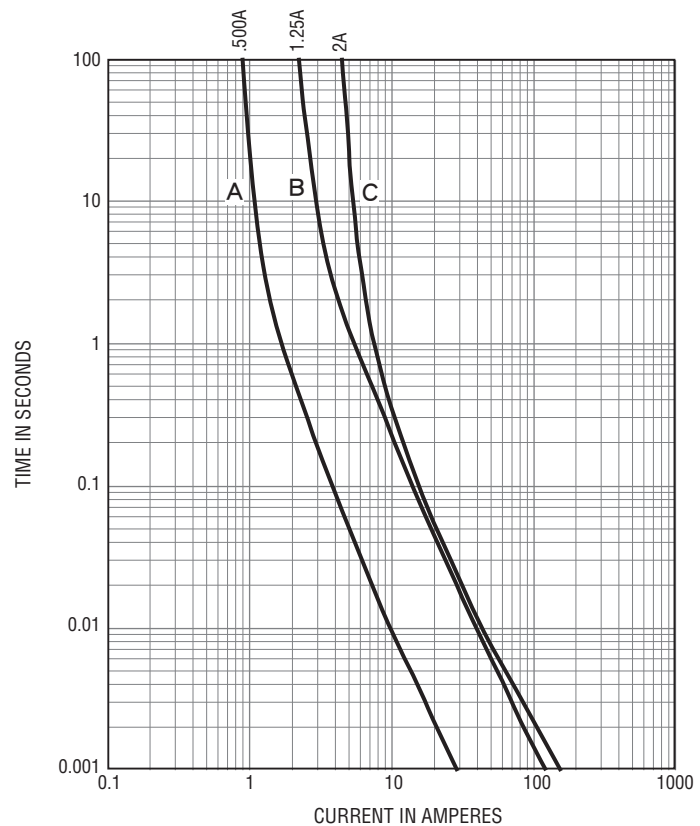
#### FT600

A = FT600-0500

B = FT600-1250

C = FT600-2000

Figure FT3



## Table FT2 - Physical Characteristics and Environmental Specifications for FT600 Devices\*

### FT600 Physical Characteristics

Terminal material	Silver-plated brass*
Body material	Ceramic
Termination solderability	Per IEC-60127-4

\*FT600 devices use high Pb content solder for internal construction. They are RoHS compliant.

### Environmental Specifications

Test	Conditions
Solder heat withstand	Per MIL-STD-202, Method 210, Test Condition J
Solvent resistance	Per MIL-STD-202F, Method 215J
Storage temperature	-40/+85°C
Storage humidity	Per MIL-STD-202F, Method 106F

\* FT600 devices use high Pb content solder for internal construction. They are RoHS compliant.

## Table FT3 - Packaging and Marking Information for FT600 Devices

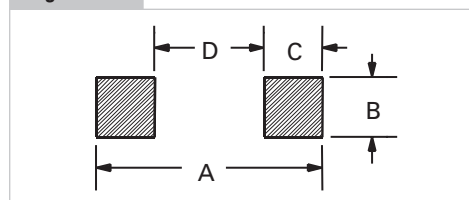
Part Number	Bag Quantity	Tape & Reel Quantity	Standard Package	Part Marking	Agency Recognition
FT600-0500-2	—	2,500	10,000	500	UL, CSA
FT600-1250-2	—	2,500	10,000	1250	UL, CSA
FT600-2000-2	—	2,500	10,000	2000	UL, CSA

Notes: The -2 designates tape and reel, the package style for this product.

## Table FT4 - Recommended Pad Layouts for FT600 Devices in millimeters (inches) Nominal

Device	A	B	C	D	Figures for Dimensions
FT600-0500	12.6 (0.496)	4.0 (0.157)	3.7 (0.145)	5.2 0.204	4
FT600-1250	12.6 (0.496)	4.0 (0.157)	3.7 (0.145)	5.2 0.204	4
FT600-2000	12.6 (0.496)	4.0 (0.157)	3.7 (0.145)	5.2 0.204	4

Figure FT4



## Solder Reflow and Rework Recommendations for FT600 Devices

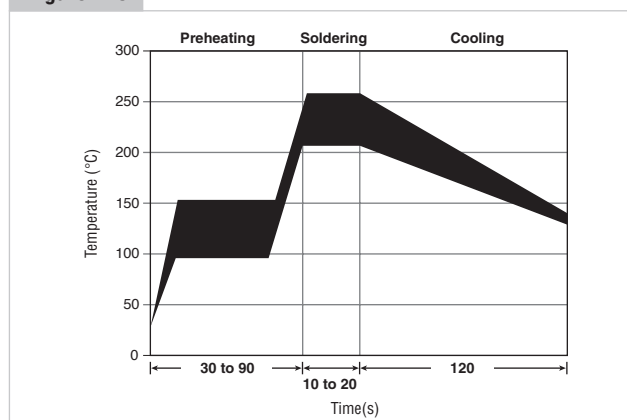
### Solder Reflow:

- Recommended reflow methods: IR, vapor phase oven, hot air oven
- Devices can be cleaned using standard industry methods and solvents

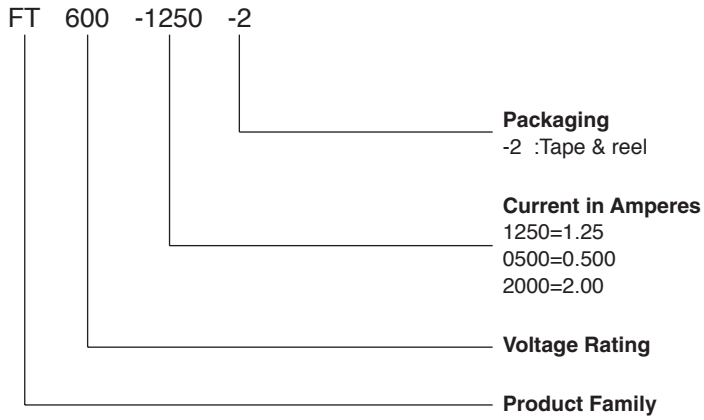
### Rework:

- If a device is removed from the board, it should be discarded and replaced by a new device

Figure FT5



## Part Numbering System for FT600 Devices



### **WARNING:**

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